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-Fibroblast Growth Factor Receptor-1 (FGFR-1)
Developed in Rabbit
Affinity Isolated Antibody

Product No. **F 5421**

Product Description

Anti-Fibroblast Growth Factor Receptor-1 (FGFR-1) is developed in rabbit using a synthetic peptide Glu-Ala-Leu-Glu-Glu-Arg-Pro-Ala-Val-Met-Thr-Ser-Pro-Leu-Lys conjugated to KLH with glutaraldehyde as immunogen. The peptide corresponds to amino acid residues 360-373 of the extracellular region of human FGFR-1 with a C-terminally added lysine.

Anti-FGFR-1 may be used for immunoblotting (approximately 110 kDa and 120 kDa), immunoprecipitation, and immunohistochemistry. Staining of the product is specifically inhibited with the FGFR-1 immunizing peptide. No reaction with human FGFR-2 and FGFR-3 is detected.

Fibroblast growth factors (FGFs) are members of a large family of structurally related polypeptides (17-38 kDa) that are potent physiological regulators of growth and differentiation of a wide variety of cells of mesodermal, ectodermal and endodermal origin.[1, 2, 3, 4] FGFs are substantially involved in normal development, wound healing and repair, angiogenesis, a variety of neurotrophic activities, in hematopoiesis as well as in tissue remodeling and maintenance. They also have been implicated in pathological conditions such as tumorigenesis and metastasis. To date, the FGF family consists of at least 23 members designated FGF-1 through FGF-23. Four genes encoding for high affinity cell surface FGF receptors (FGFRs) have been identified: FGFR-1 [flg-1(fms-like gene 1)]; FGFR-2 [bek (bacterial expressed kinase gene product)]; FGFR-3 (cek-2), and FGFR-4. Multiple additional variants (isoforms) arising by alternative splicing have been reported;[3, 5, 6, 7] soluble, secreted, or possibly cleaved forms of FGFR-1 and FGFR-2 have also been found in body fluids[8] or were artificially constructed,[9] [e.g. a soluble FGF-binding protein containing the extracellular region of FGFR-1 and the secreted form of placental alkaline phosphatase (FRAP-1)].

FGFRs are members of the tyrosine kinase family of growth factor receptors. They are glycosylated 110- 150 kDa proteins that are constructed of an extracellular ligand binding region with either two (β type) or typically three (α type) immunoglbulin (Ig)-like domains and an eight amino acid acidic box, a transmembrane region, and a cytoplasmic split tyrosine kinase domain that is activated following ligand binding and receptor dimerization. The ligand binding site of FGFRs is confined to the extracellular Ig-like domains 2 and 3.[10]

FGFRs exhibit overlapping recognition and redundant specificity. One receptor type may bind with a similar affinity several of the FGFs. Also one FGF type may bind similarly to several distinct receptors. This accounts for the rather identical effects of different FGF ligands on common cell types. FGF's binding to cellular FGFRs depend on or is markedly facilitated by the low-affinity interaction of FGF with the polysaccharide component of the cell surface or extracellular matrix heparan sulfate proteoglycans (HSPG).[11] For example, perlecan, a basement membrane HSPG, promotes high affinity binding of FGF-2 *in vitro* and angiogenesis *in vivo*.[12] Signal transduction by FGFRs requires dimerization or oligomerization and autophosphorylation of the receptors through their tyrosine kinase domain. Subsequent association with cytoplasmic signaling molecules leads to DNA synthesis or differentiation. The signaling and biological responses elicited by distinct FGFRs substantially differ and are dictated by the intracellular domain.[13, 14]

At the mRNA level, FGFR-1 is highly expressed in developing human tissues including the brain (preferentially in neurons), vascular basement membranes, skin, and bone growth plates. It may be found in most anchorage dependent cells on their membrane and also may be localized around and in nuclei. Pfeiffer syndrome, as well as other disorders of human skeletal development, is the result of a mutation in the extracellular domain of FGFR-1.[15]

Reagent
The product is an affinity-purified antibody prepared from pooled sera. The product is provided as a solution in 10 mM phosphate buffered saline, pH 7.4 containing 1% bovine serum albumin and 15 mM sodium azide.

Precautions and Disclaimer
Due to the sodium azide content a material safety sheet (MSDS) for this product has been sent to the attention of the safety officer of your institution. Consult the MSDS for information regarding hazardous and safe handling practices.

Storage/Stability
For continuous use, store at 2-8 °C for a maximum of one month. For extended storage freeze in working aliquots. Repeated freezing and thawing is not recommended. Storage in "frost-free" freezers is not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use.

Product Profile
A minimum working dilution of 1:400 is determined by immunoblotting using an extract of 293T cells transiently transfected with the pcDNA3/FGFR-1 plasmid.

A minimum working dilution of 1:100 is determined by indirect immunoperoxidase staining of trypsin-digested, formalin-fixed, paraffin-embedded human and animal tissue sections.

The epitopes recognized by the antibody are resistant to routine formalin-fixation and paraffin embedding, and to other fixatives e.g. Methacarn, Bouins solution, ethanol, and B5.

In order to obtain best results, it is recommended that each user determine the optimal working dilution for individual applications by titration assay.

References

1. Burgess, W.H. and Maciag, T., Ann. Rev. Biochem., **58**, 575 (1989).
2. Klagsburn, M., Prog. Growth Factor Res., **1**, 207 (1989).
3. Partenen, J., et al., Prog. Growth Factor Res., **4**, 69 (1992).
4. Baird, A., et al., Curr. Opin. Neurobiol., **4**, 78 (1994).
5. Lee, P. L., et al., Science, **245**, 57 (1989).
6. Givol, D. and Yayon, A., FASEB. J., **6**, 3362 (1992).
7. Fernig, D. and Gallagher, J., Prog. Growth Factor Res., **5**, 353 (1994).
8. Hanneken, A., et al., Proc. Natl. Acad. Sci. USA, **91**, 9170 (1994).
9. Ornitz, D.M., et al., Mol. Cell Biol., **12**, 240 (1992).
10. Zimmer, Y., et al., J. Biol. Chem., **268**, 7899 (1993).
11. Yayon, A., et al., Cell, **64**, 841 (1991).
12. Aviezer, D., et al., Cell, **79**, 1005 (1994).
13. Wang, J.K., et al., Mol. Cell Biol., **14,** 181 (1994).
14. Friesel, R.E. and Maciag, T., FASEB J., **9**, 919 (1995).
15. Muenke, M., et al., Nature Genet., **8**, 98 (1994).

Kaa 01/02