

Product Information

Anti-Fibroblast Growth Factor Receptor-3, Cytoplasmic

produced in rabbit, affinity isolated antibody

Catalog Number **F0425**

Product Description

Anti-Fibroblast Growth Factor Receptor-3 (FGFR-3), Cytoplasmic, is produced in rabbit using as immunogen a synthetic peptide (K-DLLPPAPPSSGGSRT) corresponding to amino acid residues 792-806 of the cytoplasmic region of human FGFR-3 with N-terminal added lysine. The peptide is conjugated to KLH with glutaraldehyde. The antibody is affinity-purified using the immunogen peptide immobilized on agarose.

Anti-Fibroblast Growth Factor Receptor-3, Cytoplasmic reacts specifically with FGFR-3 by immunoblotting and immunoprecipitation (doublet at 110-120 kDa) using whole cell lysates of transfected 293T (embryonic kidney) cells expressing recombinant human FGFR-3. The antibody may also be used for detection of FGFR-3 by immunohistochemistry. The epitope(s) recognized by the antibody is resistant to routine formalin-fixation and paraffin-embedding. No reaction with human FGFR-1 and FGFR-2 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 in a wide variety of cells of mesodermal, ectodermal and endodermal origin.¹⁻⁴ FGFs are substantially involved in normal development, wound healing and repair, angiogenesis, a variety of neurotrophic activities, and in hematopoiesis, as well as in tissue remodeling and maintenance. They have also been implicated in pathological conditions such as tumorigenesis and metastasis. The FGF family consists of at least seventeen members designated FGF-1 through FGF-17. To date, four genes encoding for high affinity cell surface FGF receptors (FGFRs) have been identified: FGFR-1 (flg-1, cek-1), FGFR-2 (bek, cek-3), FGFR-3 (cek-2) and FGFR-4. Multiple additional variants (isoforms) arising by alternative splicing have been reported.⁵⁻⁸ Soluble, secreted⁸ or possibly cleaved⁹ forms of FGFR-1 and FGFR-2 have also been found in body fluids or were artificially constructed.

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 or typically three immunoglobulin (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 all 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 several of the FGFs with a similar affinity. 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. FGFs binding to cellular FGFRs depends on, or is markedly facilitated by, the low-affinity interaction of FGFs with the polysaccharide component of cell surface or extracellular matrix heparan sulfate proteoglycans (HSPG).¹¹ For example, perlecan, a basement membrane HSPG, promotes high affinity binding of FGF2 *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}

FGFR-3 is widely expressed in many fetal and adult human and animal tissues. The FGFR-3 expression profile largely correlates with its tissue specific expression at the mRNA level.¹⁵ It is considered the only FGFR expressed in the Organ of Corti of the rat cochlea.¹⁶ Tissue cultured cells transfected with the full length FGFR-3 cDNA display the expected membrane localization of the receptor. Interestingly, nuclear localization (nucleoli excluded) of FGFR-3 attributable to a 110 kDa splice variant, has been reported for normal and breast cancer cells.¹⁷ Deletions of

chromosome 4p encompassing the FGFR-3 gene cause the Wolf-Hirschhorn syndrome (growth failure, mental retardation, cardiac and bone malformations). Achondroplasia is an inherited disorder in which growth abnormality of bone or cartilage leads to skeletal maldevelopment and dwarfism. It is associated with recurrent mutations of a single amino acid in the transmembrane domain of the FGFR-3 protein.¹⁸

Reagent

Solution in 0.01 M phosphate buffered saline, pH 7.4, containing 1% BSA and 15 mM sodium azide as a preservative.

Protein concentration is ~1 mg/mL by absorbance at 280 nm.

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

Store at -20 °C. For continuous use, the product may be stored at 2-8 °C for up to one month. For extended storage, freeze in working aliquots at -20 °C. Repeated freezing and thawing, or storage in "frost-free" freezers, is not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use. Working dilution samples should be discarded if not used within 12 hours.

Product Profile

Immunoblotting: a minimum working antibody dilution of 1:1,000 is determined using a whole cell extract of transfected 293T cells expressing recombinant human FGFR-3.

Immunohistochemistry: a minimum working antibody dilution of 1:250 is determined by (indirect immunoperoxidase) staining of protease-digested, formalin-fixed, paraffin-embedded human and animal tissue sections.

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

References

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