FGFR2b ligand binding and activation

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This is just an excerpt of a full-length report for this pathway. To access the complete report, please download it at the Reactome Textbook.

15/12/2022
Introduction

Reactome is open-source, open access, manually curated and peer-reviewed pathway database. Pathway annotations are authored by expert biologists, in collaboration with Reactome editorial staff and cross-referenced to many bioinformatics databases. A system of evidence tracking ensures that all assertions are backed up by the primary literature. Reactome is used by clinicians, geneticists, genomics researchers, and molecular biologists to interpret the results of high-throughput experimental studies, by bioinformaticians seeking to develop novel algorithms for mining knowledge from genomic studies, and by systems biologists building predictive models of normal and disease variant pathways.

The development of Reactome is supported by grants from the US National Institutes of Health (P41 HG003751), University of Toronto (CFREF Medicine by Design), European Union (EU STRP, EMI-CD), and the European Molecular Biology Laboratory (EBI Industry program).

Literature references


Reactome database release: 83

This document contains 1 pathway and 3 reactions (see Table of Contents)
FGFR2b ligand binding and activation

**Stable identifier:** R-HSA-190377

This pathway depicts the binding of an experimentally-verified range of ligands to FGFR2b. While binding affinities may vary considerably within this set, the ligands listed have been established to bring about receptor activation at their reported physiological concentrations.

**Literature references**


**Editions**

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FGFR2b binds to FGF ➡

**Location:** FGFR2b ligand binding and activation

**Stable identifier:** R-HSA-190260

**Type:** omitted

**Compartments:** plasma membrane

In this reaction, FGF receptor 2b in the plasma membrane binds an associating extracellular ligand, a requisite step for subsequent activation. The resulting complex consists of dimerized receptor, two ligand molecules, and heparan sulfate. Two isoforms of FGFR2b generated by alternative splicing and differing only by the presence ("long") or absence ("short") of two amino acid residues at positions 428-429 are equally active in ligand binding and dimerization but differ in their abilities to interact with downstream targets.

**Followed by:** Autocatalytic phosphorylation of FGFR2b

**Literature references**


**Editions**

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https://reactome.org
Autocatalytic phosphorylation of FGFR2b

Location: FGFR2b ligand binding and activation

Stable identifier: R-HSA-190408

Type: transition

Compartments: plasma membrane, extracellular region, cytosol

The intrinsic protein tyrosine kinase activity of the activated FGFR2b receptor leads to multiple phosphorylation events, creating a number of binding sites on its cytoplasmic tail for membrane bound docking proteins to gather intracellular signaling mediators. Two isoforms of FGFR2b generated by alternative splicing and differing only by the presence ("long") or absence ("short") of two amino acid residues at positions 428-429 are equally active in ligand binding and dimerization but differ in their abilities to interact with downstream targets. Based on sequence alignment, FGFR2 contains all 8 of the cytoplasmic tyrosine residues identified in FGFR1.

Preceded by: FGFR2b binds to FGF

Literature references


## Editions

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FGFBPs bind FGFs

**Location:** FGFR2b ligand binding and activation

**Stable identifier:** R-HSA-5656070

**Type:** binding

**Compartments:** extracellular region

Fibroblast growth factor binding proteins (FGFBPs) are extracellular proteins that bind to FGFs and extract them from the extracellular matrix, thereby increasing their mitogenic potential (Wu et al, 1991; Tassi et al, 2001; Beer et al, 2005; reviewed in Abuharbeid et al, 2005). FGFBP1 has been shown to bind to FGF1, 2, 7, 10 and 22 by co-immunoprecipitation and/or competition assay (Tassi et al, 2001; Beer et al, 2005). Furthermore, it has been shown that stimulation of FGF7 along with FGFBP1 enhances the proliferation of FGFR2b-expressing cells (Beer et al, 2005). FGFBP expression is upregulated in some cancers and contributes to tumor growth and angiogenesis (reviewed in Abuharbeid et al, 2005).

**Literature references**


**Editions**

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