RAF1 Antibody – Rabbit Polyclonal

PRODUCT OVERVIEW

Product Name	RAF1, Polyclonal Antibody
Full Product Name	RAF1, Phosphorylated (Ser338) (RAF Proto-oncogene Serine/Threonine-protein Kinase, Proto-oncogene c-RAF, Raf-1, C-RAF, cRaf, RAF) (MaxLight 490)
Product Gene Name	anti-RAF1 antibody
Clonality	Polyclonal
Isotype	IgG
Host	Rabbit
Species Reactivity	Human
Form/Format	Supplied as a liquid in PBS, pH 7.2. No preservative added. Labeled with MaxLight490.
Purity/Purification	Purified by Immunoaffinity chromatography.
Specificity	Recognizes human RAF1 when phosphorylated at Ser338.
Preparation and Storage	Store product at 4 degree C in the dark. DO NOT FREEZE! Stable at 4 degree C for 12 months after receipt as an undiluted liquid. Dilute required amount only prior to immediate use. Further dilutions can be made in assay buffer. Caution: MaxLight490 conjugates are sensitive to light. For maximum recovery of product, centrifuge the original vial prior to removing the cap.
Molecular Weight	75,395 Da
OMIM	164760
3D Structure	ModBase 3D Structure for P04049
Immunogen	Synthetic phosphopeptide corresponding to amino acid residues surrounding Ser338 of human RAF1 (KLH).
Conjugate	MaxLight490
Antigen Modification	Phosphorylated
Note	Preservative Free
Product Categories/Family for anti-RAF1 antibody	Antibodies; Protein Kinases
Applications Tested/Suitable for anti-RAF1 antibody	FLISA, Western Blot (WB), Dot Blot (DB)
Application Notes for anti-RAF1 antibody	FLISA: 1:1,000 Dot Blot: 1:500 WB: 1:50-1:200 Applications are based on unconjugated antibody.
Related Product Information for anti-RAF1 antibody	MBS6496711 is an antibody targeting RAF1. Also known as RAF1, Phosphorylated (Ser338) (RAF Proto-oncogene Serine/Threonine-protein Kinase, Proto-oncogene c-RAF, Raf-1, C-RAF, cRaf, RAF) (MaxLight 490). Reactive in Human. Host: Rabbit.
Product References and Citations for anti-RAF1 antibody	1. Pandit, B., Nat. Genet. 39(8), 1007-1012 (2007). 2. Razzaque, M.A., Nat. Genet. 39 (8), 1013-1017 (2007).

Other Notes	Small volumes of anti-RAF1 antibody vial(s) may occasionally become entrapped in the seal of the product vial during shipment and storage. If necessary, briefly centrifuge the vial on a tabletop centrifuge to dislodge any liquid in the container`s cap. Certain products may require to ship with dry ice and additional dry ice fee may apply.

ADDITIONAL DETAILS

NCBI/Uniprot data below describe general gene information for RAF1. It may not necessarily be applicable to this product.

NCBI GI #	4506401
NCBI GeneID	5894
NCBI Accession #	NP_002871
UniProt Primary Accession #	P04049
UniProt Secondary Accession #	Q15278; Q9UC20; B0LPH8; B2R5N3
UniProt Related Accession #	P04049
GenBank Nucleotide #	NM_002880.3
NCBI Official Full Name	RAF proto-oncogene serine/threonine-protein kinase
NCBI Official Synonym Full Names	Raf-1 proto-oncogene, serine/threonine kinase
NCBI Official Symbol	RAF1
NCBI Official Synonym Symbols	NS5; CRAF; Raf-1; c-Raf; CMD1NN
UniProt Protein Name	RAF proto-oncogene serine/threonine-protein kinase
UniProt Synonym Protein Names	Proto-oncogene c-RAF; cRaf; Raf-1
Protein Family	RAF proto-oncogene serine/threonine-protein kinase
UniProt Gene Name	RAF1
UniProt Synonym Gene Names	RAF; cRaf
UniProt Entry Name	RAF1_HUMAN
NCBI Protein Information	RAF proto-oncogene serine/threonine-protein kinase; Oncogene RAF1; proto-oncogene c-RAF; C-Raf proto-oncogene, serine/threonine kinase; v-raf-1 murine leukemia viral oncogene homolog 1; raf proto-oncogene serine/threonine protein kinase
NCBI Summary for RAF1	This gene is the cellular homolog of viral raf gene (v-raf). The encoded protein is a MAP kinase kinase kinase (MAP3K), which functions downstream of the Ras family of membrane associated GTPases to which it binds directly. Once activated, the cellular RAF1 protein can phosphorylate to activate the dual specificity protein kinases MEK1 and MEK2, which in turn phosphorylate to activate the serine/threonine specific protein kinases, ERK1 and ERK2. Activated ERKs are pleiotropic effectors of cell physiology and play an important role in the control of gene expression involved in the cell division cycle, apoptosis, cell differentiation and cell migration. Mutations in this gene are associated with Noonan syndrome 5 and LEOPARD syndrome 2. [provided by RefSeq, Jul 2008]

UniProt Comments for RAF1

Function: Serine/threonine-protein kinase that acts as a regulatory link between the membrane-associated Ras GTPases and the MAPK/ERK cascade, and this critical regulatory link functions as a switch determining cell fate decisions including proliferation, differentiation, apoptosis, survival and oncogenic transformation. RAF1 activation initiates a mitogen-activated protein kinase (MAPK) cascade that comprises a sequential phosphorylation of the dual-specific MAPK kinases (MAP2K1/MEK1 and MAP2K2/MEK2) and the extracellular signal-regulated kinases (MAPK3/ERK1 and MAPK1/ERK2). The phosphorylated form of RAF1 (on residues Ser-338 and Ser-339, by PAK1) phosphorylates BAD/Bcl2-antagonist of cell death at 'Ser-75'. Phosphorylates adenylyl cyclases: ADCY2, ADCY5 and ADCY6, resulting in their activation. Phosphorylates PPP1R12A resulting in inhibition of the phosphatase activity. Phosphorylates TNNT2/cardiac muscle troponin T. Can promote NF-kB activation and inhibit signal transducers involved in motility (ROCK2), apoptosis (MAP3K5/ASK1 and STK3/MST2), proliferation and angiogenesis (RB1). Can protect cells from apoptosis also by translocating to the mitochondria where it binds BCL2 and displaces BAD/Bcl2-antagonist of cell death. Regulates Rho signaling and migration, and is required for normal wound healing. Plays a role in the oncogenic transformation of epithelial cells via repression of the TJ protein, occludin (OCLN) by inducing the up-regulation of a transcriptional repressor SNAI2/SLUG, which induces down-regulation of OCLN. Restricts caspase activation in response to selected stimuli, notably Fas stimulation, pathogen-mediated macrophage apoptosis, and erythroid differentiation. Ref.11 Ref.16 Ref.17 Ref.24 Ref.25 Ref.28 Ref.33

Catalytic activity: ATP + a protein = ADP + a phosphoprotein.

Cofactor: Binds 2 zinc ions per subunit.

Enzyme regulation: Regulation is a highly complex process involving membrane recruitment, protein-protein interactions, dimerization, and phosphorylation/dephosphorylation events. Ras-GTP recruits RAF1 to the membrane, thereby promoting its activation. The inactive conformation of RAF1 is maintained by autoinhibitory interactions occurring between the N-terminal regulatory and the C-terminal catalytic domains and by the binding of a 14-3-3 protein that contacts two phosphorylation sites, Ser-259 and Ser-621. Upon mitogenic stimulation, Ras and PPP2R1A cooperate to release autoinhibition and the subsequent phosphorylation of activating sites: Ser-338, Tyr-341, Thr-491, and Ser-494, yields a fully active kinase. Through a negative feedback mechanism involving MAPK1/ERK2, RAF1 is phosphorylated on Ser-29, Ser-43, Ser-289, Ser-296, Ser-301 and Ser-642 by MAPK1/ERK2, which yields an inactive, desensitized kinase. The signaling-competent conformation of RAF1 is finally re-established by the coordinated action of PIN1, a prolyl isomerase that converts pSer and pThr residues from the cis to the trans conformation, which is preferentially recognized and dephosphorylated by PPP2R1A. Activated by homodimerization and heterodimerization (with BRAF). Also regulated through association with other proteins such as KSR2, CNKSR1/CNK1, PEBP1/RKIP, PHB/prohibitin and SPRY4. PEBP1/RKIP acts by dissociating RAF1 from its substrates MAP2K1/MEK1 and MAP2K2/MEK2. PHB/prohibitin facilitates the displacement of 14-3-3 from RAF1 by activated Ras, thereby promoting cell membrane localization and phosphorylation of RAF1 at the activating Ser-338. SPRY4 inhibits Ras-independent, but not Ras-dependent, activation of RAF1. CNKSR1/CNK1 regulates Src-mediated RAF1 activation. Ref.14 Ref.15 Ref.18 Ref.21 Ref.35 Ref.41

Subunit structure: Monomer. Homodimer. Heterodimerizes with BRAF and this heterodimer possesses a highly increased kinase activity compared to the respective homodimers or monomers. Heterodimerization is mitogen-regulated and enhanced by 14-3-3 proteins. MAPK1/ERK2 activation can induce a negative feedback that promotes the dissociation of the heterodimer. Forms a multiprotein complex with Ras (M-Ras/MRAS), SHOC2 and protein phosphatase 1 (PPP1CA, PPP1CB and PPP1CC). Interacts with Ras proteins; the interaction is antagonized by RIN1. Weakly interacts with RIT1. Interacts (via N-terminus) with RGS14 (via RBD domains); the interaction mediates the formation of a ternary complex with BRAF, a ternary complex inhibited by GNAI1

By similarity. Interacts with STK3/MST2; the interaction inhibits its pro-apoptotic activity. Interacts (when phosphorylated at Ser-259) with YWHAZ (unphosphorylated at 'Thr-232'). Interacts with MAP2K1/MEK1 and MAP2K2/MEK2

By similarity. Interacts with MAP3K5/ASF1 (via N-terminus) and this interaction inhibits the proapoptotic function of MAP3K5/ASK1. Interacts with PAK1 (via kinase domain). The phosphorylated form interacts with PIN1. The Ser-338 and Ser-339 phosphorylated form (by PAK1) interacts with BCL2. Interacts with PEBP1/RKIP and this interaction is enhanced if RAF1 is phosphorylated on residues Ser-338, Ser-339, Tyr-340 and Tyr-341. Interacts with ADCY2, ADCY5, ADCY6, DGKH, RCAN1/DSCR1, ROCK2, PPP1R12A, PKB/AKT1, PPP2CA, PPP2R1B, SPRY2, SPRY4, CNKSR1/CNK1, KSR2 and PHB/prohibitin. In its active form, interacts with PRMT5. Ref.7 Ref.11 Ref.14 Ref.15 Ref.16 Ref.17 Ref.18 Ref.21 Ref.24 Ref.25 Ref.26 Ref.28 Ref.30 Ref.31 Ref.35 Ref.41

Subcellular location: Cytoplasm. Cell membrane. Mitochondrion. Nucleus. Note: Colocalizes with RGS14 and BRAF in both the cytoplasm and membranes. Phosphorylation at Ser-259 impairs its membrane accumulation. Recruited to the cell membrane by the active Ras protein. Phosphorylation at Ser-338 and Ser-339 by PAK1 is required for its mitochondrial localization. Retinoic acid-induced Ser-621 phosphorylated form of RAF1 is predominantly localized at the nucleus. Ref.19 Ref.28 Ref.40 Ref.41

Tissue specificity: In skeletal muscle, isoform 1 is more abundant than isoform 2. Ref.9

Post-translational modification: Phosphorylation at Thr-269, Ser-338, Tyr-341, Thr-491 and Ser-494 results in its

Research Articles on RAF1	**1.** These data suggest that miR-7-5p functions as a tumor suppressor gene to regulate glioblastoma microvascular endothelial cell proliferation potentially by targeting the RAF1 oncogene
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