RAF1-S296 Antibody – Rabbit Polyclonal

PRODUCT OVERVIEW

Product Name	RAF1-S296, Polyclonal Antibody
Full Product Name	Phospho-RAF1-S296 pAb
Product Gene Name	anti-RAF1-S296 antibody
Product Synonym Names	NS5; CRAF; Raf-1; c-Raf; CMD1NN
Clonality	Polyclonal
Isotype	IgG
Host	Rabbit
Species Reactivity	Human
Form/Format	PBS with 50% glycerol, pH7.3.
Purity/Purification	Affinity purification
Preparation and Storage	Store at -20 degree C. Avoid freeze/thaw cycles.
Molecular Weight	73,052 Da
Chromosome Location	Chromosome: 3; NC_000003.11 (12625100..12705700, complement). Location: 3p25
OMIM	164760
3D Structure	ModBase 3D Structure for P04049
Immunogen	A synthetic phosphorylated peptide around S296 of human RAF1
Product Categories/Family for anti-RAF1-S296 antibody	Phosphorylated Antibodies
ISO Certification	Manufactured in an ISO 9001:2015 Certified Laboratory.
Applications Tested/Suitable for anti-RAF1-S296 antibody	Western Blot (WB)
Application Notes for anti-RAF1-S296 antibody	WB: 1:500-1:2000 IP: 1:50-1:100
Related Product Information for anti-RAF1-S296 antibody	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.
Other Notes	Small volumes of anti-RAF1-S296 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.
Searchable Terms for RAF1-S296 purchase	MBS8579053 is an antibody targeting RAF1-S296. Also known as Phospho-RAF1-S296 pAb. Reactive in Human. Host: Rabbit.

ADDITIONAL DETAILS

NCBI/Uniprot data below describe general gene information for RAF1-S296. It may not necessarily be applicable to this product.

NCBI GI #	4506401
NCBI GeneID	5894
NCBI Accession #	NP_002871.1
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	v-raf-1 murine leukemia viral oncogene homolog 1
NCBI Official Symbol	RAF1
NCBI Official Synonym Symbols	NS5; CRAF; Raf-1; c-Raf
UniProt Protein Name	RAF proto-oncogene serine/threonine-protein kinase
UniProt Synonym Protein Names	Proto-oncogene c-RAF; cRaf; Raf-1
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; raf proto-oncogene serine/threonine protein kinase

UniProt Comments for RAF1-S296

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-S296	**1.** these findings establish RanBPM as a novel inhibitor of the ERK pathway through an interaction with the c-Raf complex and a regulation of c-Raf stability
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