

Phospho-MTOR(T2164) Blocking Peptide
Synthetic peptide
Catalog # BP3854a**Specification****Phospho-MTOR(T2164) Blocking Peptide -
Product Information**

Primary Accession [P42345](#)
Other Accession [P42346](#), [O9JLN9](#),
[NP_004949.1](#),
[Q96QW8](#)

**Phospho-MTOR(T2164) Blocking Peptide -
Additional Information**

Gene ID 2475

Other Names

Serine/threonine-protein kinase mTOR,
FK506-binding protein 12-rapamycin
complex-associated protein 1,
FKBP12-rapamycin complex-associated
protein, Mammalian target of rapamycin,
mTOR, Mechanistic target of rapamycin,
Rapamycin and FKBP12 target 1,
Rapamycin target protein 1, MTOR, FRAP,
FRAP1, FRAP2, RAFT1, RAPT1

Target/Specificity

The synthetic peptide sequence is selected
from aa 2158-2171 of HUMAN MTOR

Format

Peptides are lyophilized in a solid powder
format. Peptides can be reconstituted in
solution using the appropriate buffer as
needed.

Storage

Maintain refrigerated at 2-8°C for up to 6
months. For long term storage store at
-20°C.

Precautions

This product is for research use only. Not
for use in diagnostic or therapeutic
procedures.

**Phospho-MTOR(T2164) Blocking Peptide - Protein
Information****Phospho-MTOR(T2164) Blocking Peptide -
Background**

The protein encoded by this gene belongs to a
family of
phosphatidylinositol kinase-related kinases.
These kinases mediate
cellular responses to stresses such as DNA
damage and nutrient
deprivation. This protein acts as the target for
the cell-cycle
arrest and immunosuppressive effects of the
FKBP12-rapamycin
complex. The ANGPTL7 gene is located in an
intron of this gene.

**Phospho-MTOR(T2164) Blocking Peptide -
References**

Toschi, A., et al. Cancer Lett.
299(1):72-79(2010)
Kim, H.W., et al. Mol. Cell. Biol.
30(22):5406-5420(2010)
Perotti, A., et al. J. Clin. Oncol.
28(30):4554-4561(2010)
Haidinger, M., et al. J. Immunol.
185(7):3919-3931(2010)
Pasini, E., et al. Cardiovasc Diabetol 9, 46
(2010) :

Name MTOR**Synonyms** FRAP, FRAP1, FRAP2, RAFT1, RAPT1**Function**

Serine/threonine protein kinase which is a central regulator of cellular metabolism, growth and survival in response to hormones, growth factors, nutrients, energy and stress signals (PubMed:12087098, PubMed:12150925, PubMed:12150926, PubMed:12231510, PubMed:12718876, PubMed:14651849, PubMed:15268862, PubMed:15467718, PubMed:15545625, PubMed:15718470, PubMed:18497260, PubMed:18762023, PubMed:18925875, PubMed:20516213, PubMed:20537536, PubMed:21659604)

target="_blank">21659604,
PubMed:<a href="http://www.uniprot.org/citations/23429703"
target="_blank">23429703,
PubMed:<a href="http://www.uniprot.org/citations/23429704"
target="_blank">23429704,
PubMed:<a href="http://www.uniprot.org/citations/25799227"
target="_blank">25799227,
PubMed:<a href="http://www.uniprot.org/citations/26018084"
target="_blank">26018084). MTOR
directly or indirectly regulates the
phosphorylation of at least 800 proteins.
Functions as part of 2 structurally and
functionally distinct signaling complexes
mTORC1 and mTORC2 (mTOR complex 1
and 2) (PubMed:<a href="http://www.uniprot.org/citations/15268862"
target="_blank">15268862,
PubMed:<a href="http://www.uniprot.org/citations/15467718"
target="_blank">15467718,
PubMed:<a href="http://www.uniprot.org/citations/18925875"
target="_blank">18925875,
PubMed:<a href="http://www.uniprot.org/citations/18497260"
target="_blank">18497260,
PubMed:<a href="http://www.uniprot.org/citations/20516213"
target="_blank">20516213,
PubMed:<a href="http://www.uniprot.org/citations/21576368"
target="_blank">21576368,
PubMed:<a href="http://www.uniprot.org/citations/21659604"
target="_blank">21659604,
PubMed:<a href="http://www.uniprot.org/citations/23429704"
target="_blank">23429704).
Activated mTORC1 up-regulates protein
synthesis by phosphorylating key regulators
of mRNA translation and ribosome synthesis
(PubMed:<a href="http://www.uniprot.org/citations/12087098"
target="_blank">12087098,
PubMed:<a href="http://www.uniprot.org/citations/12150925"
target="_blank">12150925,
PubMed:<a href="http://www.uniprot.org/citations/12150926"
target="_blank">12150926,
PubMed:<a href="http://www.uniprot.org/citations/12231510"
target="_blank">12231510,

PubMed:12718876, PubMed:14651849, PubMed:15268862, PubMed:15467718, PubMed:15545625, PubMed:15718470, PubMed:18497260, PubMed:18762023, PubMed:18925875, PubMed:20516213, PubMed:20537536, PubMed:21659604, PubMed:23429703, PubMed:23429704, PubMed:25799227, PubMed:26018084). This includes phosphorylation of EIF4EBP1 and release of its inhibition toward the elongation initiation factor 4E (eIF4E) (By similarity). Moreover, phosphorylates and activates RPS6KB1 and RPS6KB2 that promote protein synthesis by modulating the activity of their downstream targets including ribosomal protein S6, eukaryotic translation initiation factor EIF4B, and the

inhibitor of translation initiation PDCD4 (PubMed:12150925, PubMed:12087098, PubMed:18925875). This also includes mTORC1 signaling cascade controlling the MiT/TFE factors TFEB and TFE3: in the presence of nutrients, mediates phosphorylation of TFEB and TFE3, promoting their cytosolic retention and inactivation (PubMed:22576015, PubMed:22343943, PubMed:22692423). Upon starvation or lysosomal stress, inhibition of mTORC1 induces dephosphorylation and nuclear translocation of TFEB and TFE3, promoting their transcription factor activity (PubMed:22576015, PubMed:22343943, PubMed:22692423). Stimulates the pyrimidine biosynthesis pathway, both by acute regulation through RPS6KB1-mediated phosphorylation of the biosynthetic enzyme CAD, and delayed regulation, through transcriptional enhancement of the pentose phosphate pathway which produces 5-phosphoribosyl-1- pyrophosphate (PRPP), an allosteric activator of CAD at a later step in synthesis, this function is dependent on the mTORC1 complex (PubMed:23429704, PubMed:23429703). Regulates ribosome synthesis by activating RNA polymerase III-dependent transcription through phosphorylation and inhibition of MAF1 an RNA polymerase III-repressor

(PubMed:20516213). In parallel to protein synthesis, also regulates lipid synthesis through SREBF1/SREBP1 and LPIN1 (By similarity). To maintain energy homeostasis mTORC1 may also regulate mitochondrial biogenesis through regulation of PPARGC1A (By similarity). mTORC1 also negatively regulates autophagy through phosphorylation of ULK1 (By similarity). Under nutrient sufficiency, phosphorylates ULK1 at 'Ser- 758', disrupting the interaction with AMPK and preventing activation of ULK1 (By similarity). Also prevents autophagy through phosphorylation of the autophagy inhibitor DAP (PubMed:20537536). Also prevents autophagy by phosphorylating RUBCNL/Pacer under nutrient-rich conditions (PubMed:30704899). mTORC1 exerts a feedback control on upstream growth factor signaling that includes phosphorylation and activation of GRB10 a INSR-dependent signaling suppressor (PubMed:21659604). Among other potential targets mTORC1 may phosphorylate CLIP1 and regulate microtubules (PubMed:12231510). As part of the mTORC2 complex MTOR may regulate other cellular processes including survival and organization of the cytoskeleton (PubMed:15268862, PubMed:15467718). Plays a critical role in the phosphorylation at 'Ser-473' of AKT1, a pro-survival effector of phosphoinositide 3-kinase, facilitating its activation by PDK1 (PubMed:15718470). mTORC2 may regulate the actin cytoskeleton, through phosphorylation of PRKCA, PXN and activation of the Rho-type guanine nucleotide exchange factors RHOA and RAC1A or RAC1B (PubMed:<a href="http://

www.uniprot.org/citations/15268862"
target="_blank">15268862). mTORC2
also regulates the phosphorylation of SGK1
at 'Ser-422' (PubMed:<a href="http://www.
uniprot.org/citations/18925875"
target="_blank">18925875).
Regulates osteoclastogenesis by adjusting
the expression of CEBPB isoforms (By
similarity). Plays an important regulatory
role in the circadian clock function;
regulates period length and rhythm
amplitude of the suprachiasmatic nucleus
(SCN) and liver clocks (By similarity).
Phosphorylates SQSTM1, promoting
interaction between SQSTM1 and KEAP1
and subsequent inactivation of the
BCR(KEAP1) complex (By similarity).

Cellular Location

Endoplasmic reticulum membrane;
Peripheral membrane protein; Cytoplasmic
side. Golgi apparatus membrane; Peripheral
membrane protein; Cytoplasmic side.
Mitochondrion outer membrane; Peripheral
membrane protein; Cytoplasmic side.
Lysosome. Cytoplasm. Nucleus, PML body
{ECO:0000250|UniProtKB:Q9JLN9}.
Microsome membrane. Lysosome
membrane. Cytoplasmic vesicle,
phagosome. Note=Shuttles between
cytoplasm and nucleus. Accumulates in the
nucleus in response to hypoxia (By
similarity). Targeting to lysosomes depends
on amino acid availability and RRAGA and
RRAGB (PubMed:18497260,
PubMed:20381137). Lysosome targeting
also depends on interaction with MEAK7.
Translocates to the lysosome membrane in
the presence of TM4SF5
(PubMed:30956113)
{ECO:0000250|UniProtKB:Q9JLN9,
ECO:0000269|PubMed:18497260,
ECO:0000269|PubMed:20381137,
ECO:0000269|PubMed:29750193,
ECO:0000269|PubMed:30956113}

Tissue Location

Expressed in numerous tissues, with
highest levels in testis.

Phospho-MTOR(T2164) Blocking Peptide - Protocols

Provided below are standard protocols that you
may find useful for product applications.

- [Blocking Peptides](#)