

**Phospho-MTOR(T2444) Blocking Peptide**  
**Synthetic peptide**  
**Catalog # BP3855a****Specification****Phospho-MTOR(T2444) Blocking Peptide - Product Information**

Primary Accession [P42345](#)  
Other Accession [P42346](#), [O9JLN9](#),  
[NP\\_004949.1](#)

**Phospho-MTOR(T2444) 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 2437-2451 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(T2444) Blocking Peptide - Protein Information****Phospho-MTOR(T2444) 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(T2444) 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:<a href="http://www.uniprot.org/citations/12087098" target="\_blank">12087098</a>, PubMed:<a href="http://www.uniprot.org/citations/12150925" target="\_blank">12150925</a>, PubMed:<a href="http://www.uniprot.org/citations/12150926" target="\_blank">12150926</a>, PubMed:<a href="http://www.uniprot.org/citations/12231510" target="\_blank">12231510</a>, PubMed:<a href="http://www.uniprot.org/citations/12718876" target="\_blank">12718876</a>, PubMed:<a href="http://www.uniprot.org/citations/14651849" target="\_blank">14651849</a>, PubMed:<a href="http://www.uniprot.org/citations/15268862" target="\_blank">15268862</a>, PubMed:<a href="http://www.uniprot.org/citations/15467718" target="\_blank">15467718</a>, PubMed:<a href="http://www.uniprot.org/citations/15545625" target="\_blank">15545625</a>, PubMed:<a href="http://www.uniprot.org/citations/15718470" target="\_blank">15718470</a>, PubMed:<a href="http://www.uniprot.org/citations/18497260" target="\_blank">18497260</a>, PubMed:<a href="http://www.uniprot.org/citations/18762023" target="\_blank">18762023</a>, PubMed:<a href="http://www.uniprot.org/citations/18925875" target="\_blank">18925875</a>, PubMed:<a href="http://www.uniprot.org/citations/20516213" target="\_blank">20516213</a>, PubMed:<a href="http://www.uniprot.org/citations/20537536" target="\_blank">20537536</a>, PubMed:<a href="http://www.uniprot.org/citations/21659604" target="\_blank">21659604</a>)

target="\_blank">21659604</a>,  
PubMed:<a href="http://www.uniprot.org/citations/23429703"  
target="\_blank">23429703</a>,  
PubMed:<a href="http://www.uniprot.org/citations/23429704"  
target="\_blank">23429704</a>,  
PubMed:<a href="http://www.uniprot.org/citations/25799227"  
target="\_blank">25799227</a>,  
PubMed:<a href="http://www.uniprot.org/citations/26018084"  
target="\_blank">26018084</a>). 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</a>,  
PubMed:<a href="http://www.uniprot.org/citations/15467718"  
target="\_blank">15467718</a>,  
PubMed:<a href="http://www.uniprot.org/citations/18925875"  
target="\_blank">18925875</a>,  
PubMed:<a href="http://www.uniprot.org/citations/18497260"  
target="\_blank">18497260</a>,  
PubMed:<a href="http://www.uniprot.org/citations/20516213"  
target="\_blank">20516213</a>,  
PubMed:<a href="http://www.uniprot.org/citations/21576368"  
target="\_blank">21576368</a>,  
PubMed:<a href="http://www.uniprot.org/citations/21659604"  
target="\_blank">21659604</a>,  
PubMed:<a href="http://www.uniprot.org/citations/23429704"  
target="\_blank">23429704</a>).  
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</a>,  
PubMed:<a href="http://www.uniprot.org/citations/12150925"  
target="\_blank">12150925</a>,  
PubMed:<a href="http://www.uniprot.org/citations/12150926"  
target="\_blank">12150926</a>,  
PubMed:<a href="http://www.uniprot.org/citations/12231510"  
target="\_blank">12231510</a>,

PubMed:<a href="http://www.uniprot.org/citations/12718876" target="\_blank">12718876</a>, PubMed:<a href="http://www.uniprot.org/citations/14651849" target="\_blank">14651849</a>, PubMed:<a href="http://www.uniprot.org/citations/15268862" target="\_blank">15268862</a>, PubMed:<a href="http://www.uniprot.org/citations/15467718" target="\_blank">15467718</a>, PubMed:<a href="http://www.uniprot.org/citations/15545625" target="\_blank">15545625</a>, PubMed:<a href="http://www.uniprot.org/citations/15718470" target="\_blank">15718470</a>, PubMed:<a href="http://www.uniprot.org/citations/18497260" target="\_blank">18497260</a>, PubMed:<a href="http://www.uniprot.org/citations/18762023" target="\_blank">18762023</a>, PubMed:<a href="http://www.uniprot.org/citations/18925875" target="\_blank">18925875</a>, PubMed:<a href="http://www.uniprot.org/citations/20516213" target="\_blank">20516213</a>, PubMed:<a href="http://www.uniprot.org/citations/20537536" target="\_blank">20537536</a>, PubMed:<a href="http://www.uniprot.org/citations/21659604" target="\_blank">21659604</a>, PubMed:<a href="http://www.uniprot.org/citations/23429703" target="\_blank">23429703</a>, PubMed:<a href="http://www.uniprot.org/citations/23429704" target="\_blank">23429704</a>, PubMed:<a href="http://www.uniprot.org/citations/25799227" target="\_blank">25799227</a>, PubMed:<a href="http://www.uniprot.org/citations/26018084" target="\_blank">26018084</a>). 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:<a href="http://www.uniprot.org/citations/12150925" target="\_blank">12150925</a>, PubMed:<a href="http://www.uniprot.org/citations/12087098" target="\_blank">12087098</a>, PubMed:<a href="http://www.uniprot.org/citations/18925875" target="\_blank">18925875</a>). 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:<a href="http://www.uniprot.org/citations/22576015" target="\_blank">22576015</a>, PubMed:<a href="http://www.uniprot.org/citations/22343943" target="\_blank">22343943</a>, PubMed:<a href="http://www.uniprot.org/citations/22692423" target="\_blank">22692423</a>). Upon starvation or lysosomal stress, inhibition of mTORC1 induces dephosphorylation and nuclear translocation of TFEB and TFE3, promoting their transcription factor activity (PubMed:<a href="http://www.uniprot.org/citations/22576015" target="\_blank">22576015</a>, PubMed:<a href="http://www.uniprot.org/citations/22343943" target="\_blank">22343943</a>, PubMed:<a href="http://www.uniprot.org/citations/22692423" target="\_blank">22692423</a>). 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:<a href="http://www.uniprot.org/citations/23429704" target="\_blank">23429704</a>, PubMed:<a href="http://www.uniprot.org/citations/23429703" target="\_blank">23429703</a>). Regulates ribosome synthesis by activating RNA polymerase III-dependent transcription through phosphorylation and inhibition of MAF1 an RNA polymerase III-repressor

(PubMed:<a href="http://www.uniprot.org/citations/20516213" target="\_blank">20516213</a>). 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:<a href="http://www.uniprot.org/citations/20537536" target="\_blank">20537536</a>). Also prevents autophagy by phosphorylating RUBCNL/Pacer under nutrient-rich conditions (PubMed:<a href="http://www.uniprot.org/citations/30704899" target="\_blank">30704899</a>). mTORC1 exerts a feedback control on upstream growth factor signaling that includes phosphorylation and activation of GRB10 a INSR-dependent signaling suppressor (PubMed:<a href="http://www.uniprot.org/citations/21659604" target="\_blank">21659604</a>). Among other potential targets mTORC1 may phosphorylate CLIP1 and regulate microtubules (PubMed:<a href="http://www.uniprot.org/citations/12231510" target="\_blank">12231510</a>). As part of the mTORC2 complex MTOR may regulate other cellular processes including survival and organization of the cytoskeleton (PubMed:<a href="http://www.uniprot.org/citations/15268862" target="\_blank">15268862</a>, PubMed:<a href="http://www.uniprot.org/citations/15467718" target="\_blank">15467718</a>). 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:<a href="http://www.uniprot.org/citations/15718470" target="\_blank">15718470</a>). 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](http://www.uniprot.org/citations/15268862)"  
target="\_blank">15268862</a>). mTORC2  
also regulates the phosphorylation of SGK1  
at 'Ser-422' (PubMed:<a href="http://www.  
uniprot.org/citations/18925875"  
target="\_blank">18925875</a>).  
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(T2444) Blocking Peptide - Protocols**

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

- [Blocking Peptides](#)