OriGene Technologies, Inc.
9620 Medical Center Drive, Ste 200
Rockville, MD 20850, US
Phone: +1-888-267-4436
https://www.origene.com
techsupport@origene.com
EU: info-de@origene.com
CN: techsupport@origene.cn

Product datasheet for MR212124

Mtor (NM_020009) Mouse Tagged ORF Clone

Product data:

Product Type:	Expression Plasmids
Product Name:	Mtor (NM_020009) Mouse Tagged ORF Clone
Tag:	Myc-DDK
Symbol:	Mtor
Synonyms:	2610315D21Rik; AI327068; flat; FRAP; Frap1; FRAP2; RAFT1; RAPT1
Mammalian Cell Selection:	Neomycin
Vector:	pCMV6-Entry (PS100001)
E. coli Selection:	Kanamycin (25 ug/mL)

ORF Nucleotide Sequence:

>MR212124 representing NM_020009
Red=Cloning site Blue=ORF Green=Tags(s)

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Protein Sequence:

>MR212124 representing NM_020009
Red=Cloning site Green=Tags(s)

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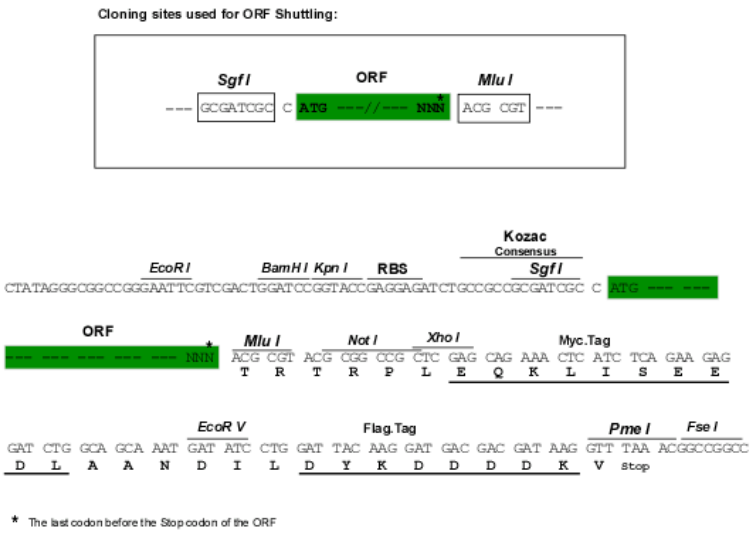
Chromatograms: https://cdn.origene.com/chromatograms/mm9008_f05.zip

Restriction Sites: SgfI-MluI

Cloning Scheme:



ACCN: NM_020009

ORF Size: 7647 bp

OTI Disclaimer: The molecular sequence of this clone aligns with the gene accession number as a point of reference only. However, individual transcript sequences of the same gene can differ through naturally occurring variations (e.g. polymorphisms), each with its own valid existence. This clone is substantially in agreement with the reference, but a complete review of all prevailing variants is recommended prior to use. More info

OTI Annotation: This clone was engineered to express the complete ORF with an expression tag. Expression varies depending on the nature of the gene.

Components: The ORF clone is ion-exchange column purified and shipped in a 2D barcoded Matrix tube containing 10ug of transfection-ready, dried plasmid DNA (reconstitute with 100 ul of water).

Reconstitution Method:
1. Centrifuge at 5,000xg for 5min.
2. Carefully open the tube and add 100ul of sterile water to dissolve the DNA.
3. Close the tube and incubate for 10 minutes at room temperature.
4. Briefly vortex the tube and then do a quick spin (less than 5000xg) to concentrate the liquid at the bottom.
5. Store the suspended plasmid at -20°C. The DNA is stable for at least one year from date of shipping when stored at -20°C.

RefSeq: NM_020009.2, NP_064393.2

RefSeq Size: 8612 bp

RefSeq ORF: 7650 bp

Locus ID: 56717

UniProt ID: Q9JLN9

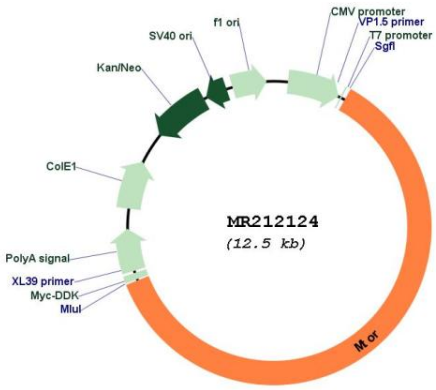
Cytogenetics: 4 78.76 cM

MW: 289.2 kDa

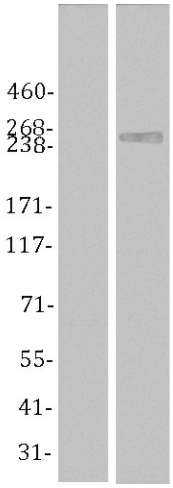
Gene Summary: Serine/threonine protein kinase which is a central regulator of cellular metabolism, growth and survival in response to hormones, growth factors, nutrients, energy and stress signals (PubMed:15467718, PubMed:15545625, PubMed:16221682, PubMed:16915281, PubMed:16962653, PubMed:18046414, PubMed:19440205, PubMed:21659604). MTOR directly or indirectly regulates the phosphorylation of at least 800 proteins (PubMed:15467718, PubMed:15545625, PubMed:16221682, PubMed:16915281, PubMed:16962653, PubMed:18046414, PubMed:19440205, PubMed:21659604). Functions as part of 2 structurally and functionally distinct signaling complexes mTORC1 and mTORC2 (mTOR complex 1 and 2) (PubMed:15467718, PubMed:16962653, PubMed:21659604). Activated mTORC1 up-regulates protein synthesis by phosphorylating key regulators of mRNA translation and ribosome synthesis (By similarity). 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 (By similarity). 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 (By similarity). Regulates ribosome synthesis by activating RNA polymerase III-dependent transcription through phosphorylation and inhibition of MAF1 an RNA polymerase III-repressor (By similarity). In parallel to protein synthesis, also regulates lipid synthesis through SREBF1/SREBP1 and LPIN1 (PubMed:11792863). To maintain energy homeostasis mTORC1 may also regulate mitochondrial biogenesis through regulation of PPARGC1A (PubMed:18046414). mTORC1 also negatively regulates autophagy through phosphorylation of ULK1 (PubMed:21258367). Under nutrient sufficiency, phosphorylates ULK1 at 'Ser-758', disrupting the interaction with AMPK and preventing activation of ULK1 (PubMed:21258367). Also prevents autophagy through phosphorylation of the autophagy inhibitor DAP (By similarity). Also prevents autophagy by phosphorylating RUBCNL/Pacer under nutrient-rich conditions (By similarity). 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 (By similarity). As part of the mTORC2 complex MTOR may regulate other cellular processes including survival and organization of the cytoskeleton (By similarity). 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 (By similarity). 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 (By similarity). mTORC2 also regulates the phosphorylation of SGK1 at 'Ser-422' (By similarity). Regulates osteoclastogenesis by adjusting the expression of CEBPB isoforms

(PubMed:19440205). Plays an important regulatory role in the circadian clock function; regulates period length and rhythm amplitude of the suprachiasmatic nucleus (SCN) and liver clocks (PubMed:29750810).[UniProtKB/Swiss-Prot Function]

Product images:



Circular map for MR212124



Western blot validation of overexpressed Mtor protein using anti-DDK antibody (Cat# [TA50011-100]). Left: Cell lysates from un-transfected HEK293T cells; Right: Cell lysates from HEK293T cells transfected with MR212124 using transfection reagent MegaTran 2.0 (Cat# [TT210002]).