ARG51712
anti-mTOR phospho (Ser2448) antibody

Package: 100 µl, 50 µl
Store at: -20°C

Summary

Product Description	Rabbit Polyclonal antibody recognizes mTOR phospho (Ser2448)
Tested Reactivity	Hu, Ms, Rat
Tested Application	ICC/IF, IHC-P, WB
Host	Rabbit
Clonality	Polyclonal
Isotype	IgG
Target Name	mTOR
Species	Human
Immunogen	Peptide sequence around phosphorylation site of serine 2448 (T-D-S(p)-Y-S) derived from Human mTOR.
Conjugation	Un-conjugated
Alternate Names	Mammalian target of rapamycin; RAFT1; Mechanistic target of rapamycin; Rapamycin target protein 1; FRAP1; FRAP2; Rapamycin and FKBP12 target 1; FK506-binding protein 12-rapamycin complex-associated protein 1; mTOR; RAPT1; FKBP12-rapamycin complex-associated protein; FRAP; Serine/threonine-protein kinase mTOR; EC 2.7.11.1

Application Instructions

Application table

Application	Dilution
ICC/IF	1:100 - 1:200
IHC-P	1:50 - 1:100
WB	1:500 - 1:1000

Application Note: * The dilutions indicate recommended starting dilutions and the optimal dilutions or concentrations should be determined by the scientist.

Properties

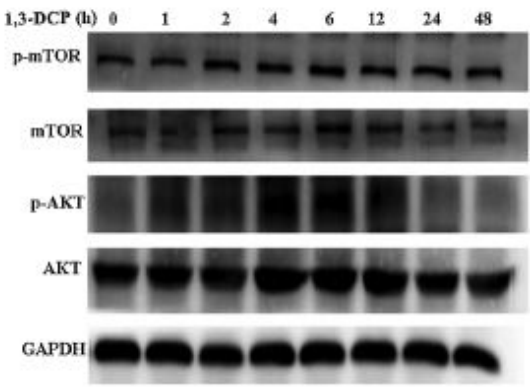
Form	Liquid
Purification	Antibodies were produced by immunizing rabbits with KLH-conjugated synthetic phosphopeptide. Antibodies were purified by affinity-chromatography using epitope-specific phosphopeptide. In addition, non-phospho specific antibodies were removed by chromatogramphy using non-phosphopeptide.
Buffer	PBS (without Mg2+ and Ca2+, pH 7.4), 150mM NaCl, 0.02% Sodium azide and 50% Glycerol.
Preservative	0.02% Sodium azide
Stabilizer	50% Glycerol
Concentration	1 mg/ml

Storage instruction	For continuous use, store undiluted antibody at 2-8°C for up to a week. For long-term storage, aliquot and store at -20°C. Storage in frost free freezers is not recommended. Avoid repeated freeze/thaw cycles. Suggest spin the vial prior to opening. The antibody solution should be gently mixed before use.
Note	For laboratory research only, not for drug, diagnostic or other use.

Bioinformation

Gene Symbol	MTOR
Gene Full Name	mechanistic target of rapamycin (serine/threonine kinase)
Background	Kinase subunit of both mTORC1 and mTORC2, which regulate cell growth and survival in response to nutrient and hormonal signals. mTORC1 is activated in response to growth factors or amino-acids. Amino-acid-signaling to mTORC1 is mediated by Rag GTPases, which cause amino-acid-induced relocalization of mTOR within the endomembrane system. Growth factor-stimulated mTORC1 activation involves AKT1-mediated phosphorylation of TSC1-TSC2, which leads to the activation of the RHEB GTPase that potently activates the protein kinase activity of mTORC1. Activated mTORC1 up-regulates protein synthesis by phosphorylating key regulators of mRNA translation and ribosome synthesis. mTORC1 phosphorylates EIF4EBP1 and releases it from inhibiting the elongation initiation factor 4E (eiF4E). mTORC1 phosphorylates and activates S6K1 at 'Thr-421', which then promotes protein synthesis by phosphorylating PDCD4 and targeting it for degradation. mTORC2 is also activated by growth factors, but seems to be nutrient-insensitive. mTORC2 seems to function upstream of Rho GTPases to regulate the actin cytoskeleton, probably by activating one or more Rho-type guanine nucleotide exchange factors. mTORC2 promotes the serum-induced formation of stress-fibers or F-actin. mTORC2 plays a critical role in AKT1 'Ser-473' phosphorylation, which may facilitate the phosphorylation of the activation loop of AKT1 on 'Thr-308' by PDK1 which is a prerequisite for full activation. mTORC2 regulates the phosphorylation of SGK1 at 'Ser-422'. mTORC2 also modulates the phosphorylation of PRKCA on 'Ser-657'.
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. 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). Activated mTORC1 up-regulates protein synthesis by phosphorylating key regulators of mRNA translation and ribosome synthesis. This includes phosphorylation of EIF4EBP1 and release of its inhibition toward the elongation initiation factor 4E (eiF4E). 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. 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. Regulates ribosome synthesis by activating RNA polymerase III-dependent transcription through phosphorylation and inhibition of MAF1 an RNA polymerase III-repressor. In parallel to protein synthesis, also regulates lipid synthesis through SREBF1/SREBP1 and LPIN1. To maintain energy homeostasis mTORC1 may also regulate mitochondrial biogenesis through regulation of PPARGC1A. mTORC1 also negatively regulates autophagy through phosphorylation of ULK1. Under nutrient sufficiency, phosphorylates ULK1 at 'Ser-758', disrupting the interaction with AMPK and preventing activation of ULK1. Also prevents autophagy through phosphorylation of the autophagy inhibitor DAP. mTORC1 exerts a feedback control on upstream growth factor signaling that includes phosphorylation and activation of GRB10 a INSR-dependent signaling suppressor. Among other potential targets mTORC1 may phosphorylate CLIP1 and regulate microtubules. As part of the mTORC2 complex MTOR may regulate other cellular processes including survival and organization of the cytoskeleton. 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. 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. mTORC2 also regulates the phosphorylation of SGK1 at 'Ser-422'. Regulates osteoclastogensis by adjusting the expression of CEBPB isoforms (By similarity). [UniProt]
Highlight	Related Antibody Duos and Panels: ARG30052 Phospho mTOR Antibody Duo (Total, pS2448) Related products: mTOR antibodies; mTOR Duos / Panels; Anti-Rabbit IgG secondary antibodies;
Research Area	Cancer antibody; Cell Biology and Cellular Response antibody; Gene Regulation antibody; Metabolism antibody
Calculated Mw	289 kDa
PTM	Autophosphorylates when part of mTORC1 or mTORC2. Phosphorylation at Ser-1261, Ser-2159 and Thr-2164 promotes autophosphorylation. Phosphorylation in the kinase domain modulates the interactions of MTOR with RPTOR and PRAS40 and leads to increased intrinsic mTORC1 kinase activity.

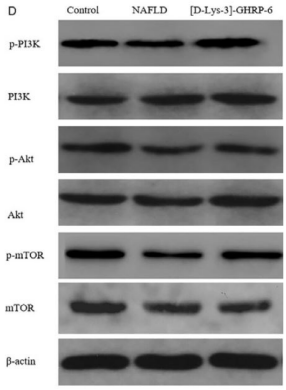
Images



ARG51712 anti-mTOR phospho (Ser2448) antibody WB image

Western blot: HepG2 stained with ARG51712 anti-mTOR phospho (Ser2448) antibody and ARG51558 anti-Akt phospho (Ser473) antibody.

From Lu J et al. Toxicology- (2021), doi: 10.1016/j.tox.2021.152716, Fig. 2. A.



ARG51712 anti-mTOR phospho (Ser2448) antibody WB image

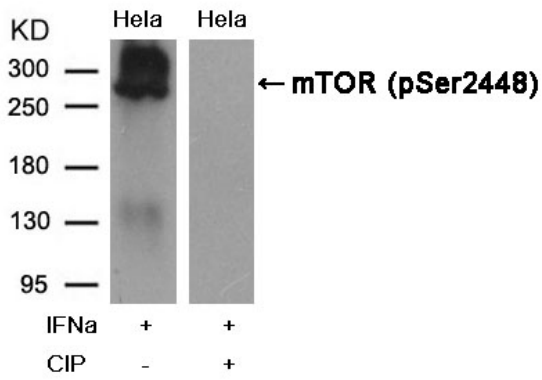
Western blot: Rat liver stained with ARG51712 anti-mTOR phospho (Ser2448) antibody and ARG57640 anti-mTOR antibody.

From Gong Y et al. Iran J Basic Med Sci (2022), doi: 10.22038/IJBMS.2022.64792.14272, Fig. 6D.

ARG51712 anti-mTOR phospho (Ser2448) antibody WB image

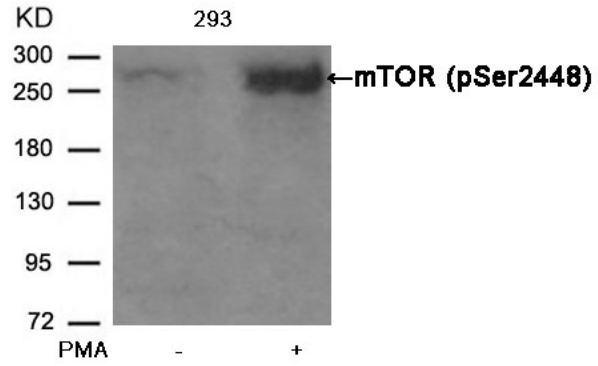
Western blot: Rat myocardial tissue stained with ARG51712 anti-mTOR phospho (Ser2448) antibody.

From Ying Liu et al. Pharmacognosy Magazine (2024), doi: 10.1177/09731296231220433, Fig. 5. A.



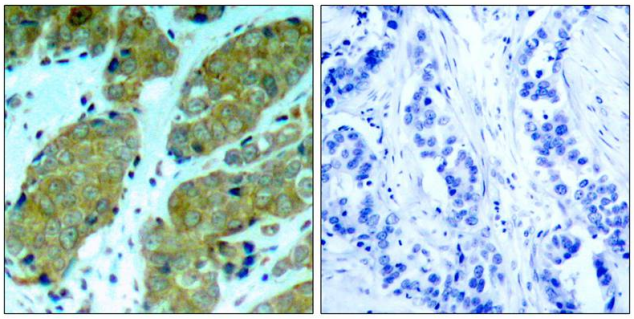
ARG51712 anti-mTOR phospho (Ser2448) antibody WB image

Western blot: Extracts from HeLa cells, treatedwith IFNa or calf intestinal phosphatase (CIP), stained with ARG51712 anti-mTOR phospho (Ser2448) antibody.



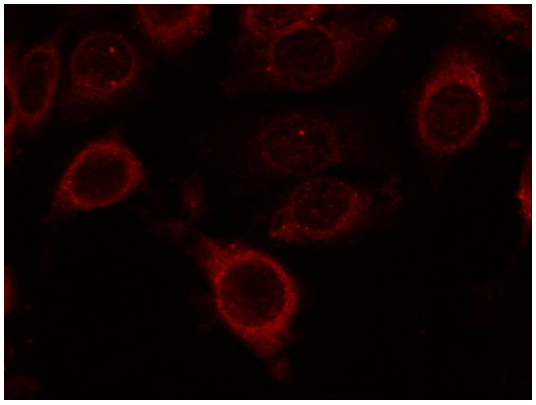
ARG51712 anti-mTOR phospho (Ser2448) antibody WB image

Western blot: Extracts from 293 cells untreatedor treated with PMA stained with ARG51712 anti-mTOR phospho (Ser2448) antibody.



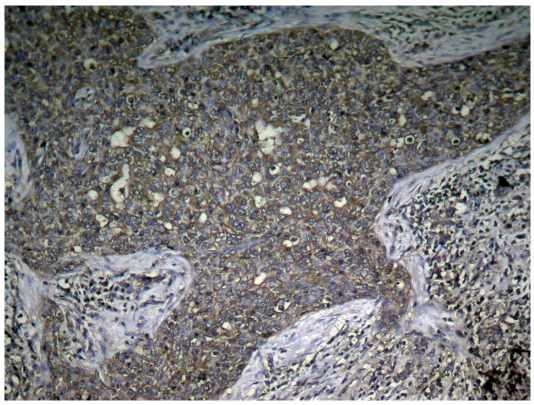
ARG51712 anti-mTOR phospho (Ser2448) antibody IHC-P image

Immunohistochemistry: Paraffin-embedded Human breast carcinoma tissue stained with ARG51712 anti-mTOR phospho (Ser2448) antibody (left) or the same antibody preincubated with blocking peptide (right).



ARG51712 anti-mTOR phospho (Ser2448) antibody ICC/IF image

Immunofluorescence: methanol-fixed MCF cells stained with ARG51712 anti-mTOR phospho (Ser2448) antibody.



ARG51712 anti-mTOR phospho (Ser2448) antibody IHC-P image

Immunohistochemistry: Paraffin-embedded Human breast carcinomatissue stained with ARG51712 anti-mTOR phospho (Ser2448) antibody.