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Product Information

Anti-IRE1α
produced in rabbit, affinity isolated antibody

Product Number **I6785**

Product Description

Anti-IRE1α is produced in rabbit using as immunogen a synthetic peptide corresponding to a fragment of human IRE1α (GeneID: 2081), conjugated to KLH. The corresponding sequence differs by 3 amino acids in mouse and 4 amino acids in rat. The antibody is affinity-purified using the immunizing peptide immobilized on agarose.

Anti-IRE1α recognizes human IRE1α. The antibody may be used in various immunochemical techniques including immunoblotting (~110 kDa) and immunoprecipitation. Detection of the IRE1α band by immunoblotting is specifically inhibited by the immunizing peptide.

Inositol-requiring enzyme-1 (IRE1), also known as endoplasmic reticulum (ER) to nucleus signaling 1 (ERN1), is an ER-resident transmembrane protein with dual protein kinase and ribonuclease activities. In mammals, there are two IRE1 homologues, IRE1α that is ubiquitously expressed and IRE1β, which is expressed primarily in gut epithelium.[1] IRE1 is involved in the unfolded protein response (UPR), a transcriptional program induced by ER stress.[2,3]

IRE1 consists of an N-terminal ER luminal domain, a transmembrane domain, and a C-terminal cytoplasmic region composed of a Ser/Thr protein kinase domain and a site-specific endoribonuclease (RNase) domain. IRE1 senses the status of luminal protein folding in the ER via its N-terminal luminal domain. Presence of unfolded and misfolded proteins leads to dimerization, trans-autophosphorylation and activation of IRE1. The active endoribonuclease domain splices XBP1 mRNA in a spliceosome-independent manner, converting it into a potent unfolded-protein response transcriptional activator that drives transcription of genes such as ER chaperones and other UPR targets.[3, 4] The endonuclease activity of IRE1 autoregulates its mRNA and is required for the UPR.[3]

IRE1 also mediates the rapid degradation of specific ER-localized mRNAs through an XBP1-independent pathway during UPR.[5] If the overload of unfolded proteins in the ER is not alleviated by the UPR, prolonged activation of IRE1 will cause the activation of the Jun-amino-terminal kinase (JNK) signaling pathway, which can lead to apoptosis.[6]

Reagent

Supplied as a solution in 0.01 M phosphate buffered saline, pH 7.4, containing 15 mM sodium azide as a preservative.

Antibody concentration: ~1.0 mg/mL

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Safety Data Sheet for information regarding hazards and safe handling practices.

Storage/Stability

For continuous use, store at 2–8 °C for up to one month. For extended storage, freeze in working aliquots. Repeated freezing and thawing is not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use. Working dilution samples should be discarded if not used within 12 hours.

Product Profile

Immunoblotting: a working antibody concentration of 1-2 μg/mL is recommended using a whole extract of HEK-293T cells expressing human IRE1α.

Immunoprecipitation: a working antibody amount of 2-5 μg is recommended using a lysate of HEK-293T cells expressing human IRE1α.

Note: In order to obtain best results in various techniques and preparations, it is recommended to determine optimal working dilutions by titration.

References

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3. Tirasophon, W. et al., *Genes Dev*., **14**, 2725-2736 (2000).
4. Lee, K.P.K. et al., *Cell*, **132**, 89-100 (2008).
5. Hollien, J. and Weissman, J.S., *Science*, **313**, 104-107 (2006).
6. Urano, F. et al., *Science*, **287**, 664-666 (2000).

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