Revision 1

Store at -20C

#9956

ER Stress Antibody Sampler Kit

1 Kit (7 x 20 microliters)

Cell Signaling TECHNOLOGY®

Orders: 877-616-CELL (2355)
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Web: info@cellsignal.com
cellsignal.com

3 Trask Lane | Danvers | Massachusetts | 01923 | USA

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Product Includes	Product #	Quantity	Mol. Wt	Isotype/Source
BiP (C50B12) Rabbit mAb	3177	20 µl	78 kDa	Rabbit IgG
Calnexin (C5C9) Rabbit mAb	2679	20 µl	90 kDa	Rabbit IgG
Ero1-Lα Antibody	3264	20 µl	60 kDa	Rabbit
IRE1α (14C10) Rabbit mAb	3294	20 µl	130 kDa	Rabbit IgG
PDI (C81H6) Rabbit mAb	3501	20 µl	57 kDa	Rabbit
CHOP (L63F7) Mouse mAb	2895	20 µl	27 kDa	Mouse IgG2a
PERK (D11A8) Rabbit mAb	5683	20 µl	140 kDa	Rabbit IgG
Anti-rabbit IgG, HRP-linked Antibody	7074	100 µl		Goat
Anti-mouse IgG, HRP-linked Antibody	7076	100 µl		Horse

Please visit cellsignal.com for individual component applications, species cross-reactivity, dilutions, protocols, and additional product information.

Description

The ER Stress Sampler Kit contains reagents to investigate ER stress within the cell. The kit contains enough primary and secondary antibodies to perform two Western blot experiments per primary antibody.

Storage

Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100 µg/ml BSA, 50% glycerol and less than 0.02% sodium azide. Store at –20°C. Do not aliquot the antibody.

Background

Secretory and transmembrane proteins are synthesized on polysomes and translocate into the endoplasmic reticulum (ER) where they are often modified by the formation of disulfide bonds, amino-linked glycosylation and folding. The ER contains a pool of molecular chaperone proteins including calnexin, BiP and protein disulfide isomerase (PDI). Calnexin is an ER membrane, calcium-binding protein that retains newly synthesized glycoproteins inside the ER to ensure proper folding and quality control (1,2). Irregular protein folding within the ER increases BiP synthesis, which binds misfolded proteins to prevent them from forming aggregates and to assist them to refold properly (3).
PDI catalyzes the formation and isomerization of disulfide bonds required for a protein to reach its native state (4). Studies have found that the resident ER protein endoplasmic oxidoreductin-1 (Ero1) provides oxidizing potential to the ER in *Saccharomyces cerevisiae* (5). Ero1-Lα is an ER membrane-associated N-glycoprotein that promotes oxidative protein folding (6). Disruptions of ER homeostasis leads to the accumulation of unfolded proteins. The ER has developed an adaptive mechanism called the unfolded protein response (UPR) to counteract compromised protein folding (7). This is regulated by proteins such as the membrane-bound transcription factor protease site 2 (MBTPS2) and the serine/threonine kinase IRE1 (8-12). The PERK eIF2α kinase is an ER resident transmembrane protein that couples ER stress signals to translation inhibition. ER stress increases PERK activity, which phosphorylates eIF2α to reduce protein translation. PERK activation during ER stress correlates with autophosphorylation of its cytoplasmic kinase domain (13,14). Phosphorylation of PERK at Thr980 can serve as a marker for its activation status.
During ER stress, the level of CHOP expression is elevated and CHOP functions to mediate programmed cell death (15).

Background References

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