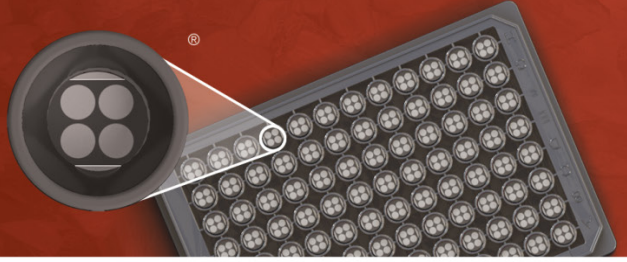
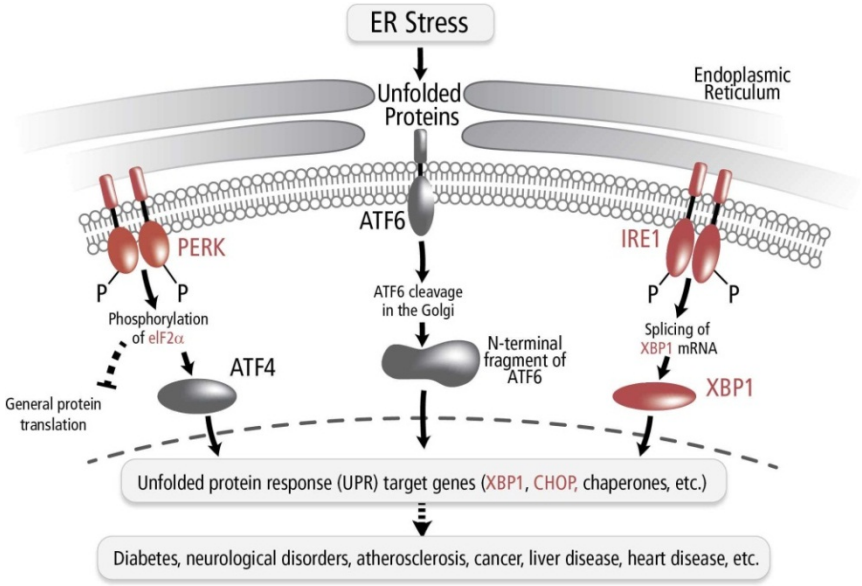
MSD® Endoplasmic Reticulum (ER) Stress Assays



Alzheimer's Disease
BioProcess
Cardiac
Cell Signaling
Clinical Immunology
Cytokines
Growth Factors
Hypoxia
Immunogenicity
Inflammation
Metabolic
Oncology
Toxicology
Vascular



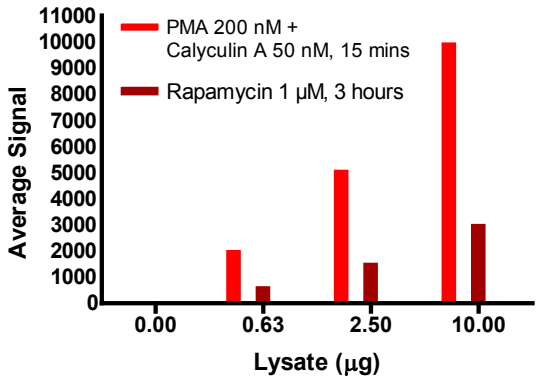
ER stress and unfolded protein response[1]

The endoplasmic reticulum is a central organelle in the cell responsible for protein folding and maturation, and maintenance of cellular homeostasis. Perturbations in the proper functioning of the cell can often lead to accumulation of unfolded or misfolded proteins in the ER lumen, overwhelming the capacity of the ER and causing ER stress. In order to restore homeostasis during ER stress, cells have evolved a specific process called the unfolded protein response (UPR). The three major arms of the unfolded protein response to ER stress are depicted above. The accumulation of unfolded proteins in the ER stimulates the activation of the three stress receptors, PKR-like ER kinase (PERK), activating transcription factor 6 (ATF6), and inositol-requiring enzyme-1 (IRE-1). The signaling pathways in the UPR have been associated with numerous pathological conditions including obesity, type II diabetes, atherosclerosis, cancer, liver disease, heart disease, and neurological diseases such as Alzheimer's and Huntington disease. Therefore, biomarkers of ER stress have gained increasing importance in understanding disease pathogenesis and as therapeutic targets.

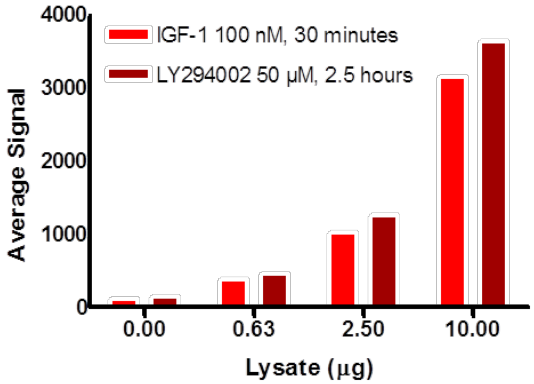
MSD is at the forefront of developing highly sensitive, rapid, and precise immunoassays for biomarkers of ER stress. Simple protocols and streamlined assay formats allow you to obtain absolute quantification of intracellular signaling molecules faster than the time-consuming Western blot.

The primary ER stress response pathways are illustrated in the graphic above. Targets in the pathway illustrated in the graphic that can be analyzed using MSD products are highlighted in red. Representative results from some of the MSD ER stress focused biomarker assays follow.

Total eIF2α



Total IRE-1α



Ordering Information

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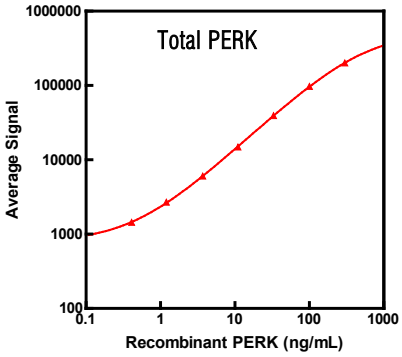
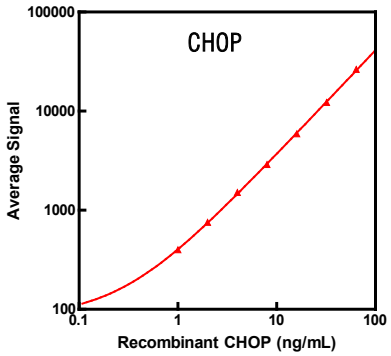
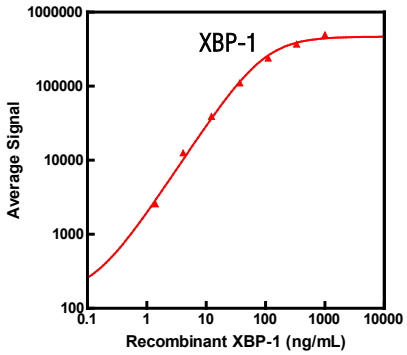
MSD Endoplasmic Reticulum Stress Assays







Catalog Numbers

Kit Name	Species	Catalog Number		
		1 plate	5 plate	20 or 25 plate
Phospho-PERK (Thr980) Kit	Rat	K150OED-1	K150OED-2	K150OED-4
Phospho-PERK (Thr981) Kit	Human	K151NJD-1	K151NJD-2	K151NJD-4
Total PERK Kit	Human, Mouse, Rat	K150NID-1	K150NID-2	K150NID-4
Total eIF2α Kit	Human, Mouse, Rat	K150NGD-1	K150NGD-2	K150NGD-4
Phospho-eIF4E (Ser209) Kit	Human	K150LGD-1	K150LGD-2	K150LGD-4
Total eIF4E Kit	Human	K150LHD-1	K150LHD-2	K150LHD-4
Phospho-FOXO3a (Thr32) Whole Cell Lysate Kit	Human, Mouse, Rat	K150KKD-1	K150KKD-2	K150KKD-3
Phospho-JNK Whole Cell Lysate Kit	Human, Mouse, Rat	K150CUD-1	K150CUD-2	K150CUD-3
Total JNK Whole Cell Lysate Kit	Human	K150CVD-1	K150CVD-2	K150CVD-3
Phospho/Total JNK Whole Cell Lysate Kit	Human	K15111D-1	K15111D-2	K15111D-3
Phospho-p38 Whole Cell Lysate Kit	Human, Mouse, Rat	K150CYD-1	K150CYD-2	K150CYD-3
Total p38 Whole Cell Lysate Kit	Human, Mouse, Rat	K150CZD-1	K150CZD-2	K150CZD-3
Phospho/Total p38 Whole Cell Lysate Kit	Human, Mouse, Rat	K15112D-1	K15112D-2	K15112D-3
MAP Kinase Whole Cell Lysate Kit	Human, Mouse, Rat	K15101D-1	K15101D-2	K15101D-3
Total IRE-1α Kit	Human, Mouse, Rat	K153OHD-1	K153OHD-2	K153OHD-4
CHOP Kit	Human, Mouse, Rat	K150QJD-1	K150QJD-2	K150QJD-4
XBP-1 Kit	Human, Mouse, Rat	K150QKD-1	K150QKD-2	K150QKD-4
Phospho-IRE1 (Ser274) Kit	Human	Coming soon	Coming soon	Coming soon

We are continually expanding our portfolio by developing new and improved assays for disease-focused biomarkers. For the most up-to-date information, and a complete listing of our products, please visit www.mesoscale.com.

Customization

The MSD platform is highly amenable to customization. MULTI-SPOT® plates from MSD can quantify up to 10 analytes in a single well. Our field applications scientists and scientific support team can help you design a custom panel to match your research needs. Please contact our Customer Service department to discuss custom assay requirements.

Reference

1. Simone Fulda, Adrienne M. Gorman, Osamu Hori, and Afshin Samali, "Cellular Stress Responses: Cell Survival and Cell Death," International Journal of Cell Biology, vol. 2010, Article ID 214074, 23 pages, 2010. doi:10.1155/2010/214074