

# PRODUCT INFORMATION



## Citrullinated GRP78 (human recombinant)

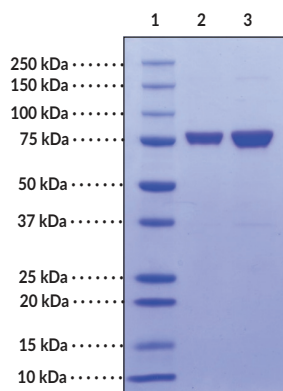
Item No. 25107

### Overview and Properties

<b>Synonyms:</b>	BiP, Endoplasmic Reticulum Luminal Ca <sup>2+</sup> -Binding Protein GRP78, Glucose-Related Protein 78, Heat Shock Protein 5 (70 kDa), Hsp5 (70 kDa), Immunoglobulin Heavy Chain-Binding Protein
<b>Source:</b>	N-Terminal histidine-tagged human GRP78 purified from <i>E. coli</i> , citrullinated by PAD2
<b>Amino Acids:</b>	2-654
<b>Uniprot No.:</b>	P11021
<b>Molecular Weight:</b>	74.6 kDa
<b>Storage:</b>	-80°C (as supplied)
<b>Stability:</b>	≥1 year
<b>Purity:</b>	<i>batch specific</i> (≥90% estimated by SDS-PAGE)
<b>Supplied in:</b>	PBS, pH 7.4, with 10% glycerol
<b>Protein Concentration:</b>	<i>batch specific</i> mg/ml

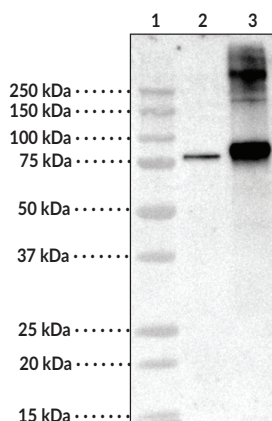
Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

### Images



Lane 1: MW Markers  
Lane 2: Citrullinated GRP78 (human recombinant) (2 µg)  
Lane 3: Citrullinated GRP78 (human recombinant) (4 µg)

**SDS-PAGE analysis of citrullinated GRP78 (human recombinant).** Citrullinated GRP78 at 2 µg (Lane 2) and 4 µg (Lane 3) stained with Coomassie on 4-20% SDS-PAGE.



Lane 1: MW Markers  
Lane 2: GRP78 (human recombinant)  
Lane 3: Citrullinated GRP78 (human recombinant)

**Analysis of GRP78 citrullination.** GRP78 and citrullinated GRP78 were reacted with Cayman's Citrulline-specific Probe-biotin (Item No. 17450) and detected using Streptavidin:HRP (Item No. 16747).

**WARNING**  
THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

**SAFETY DATA**  
This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

**WARRANTY AND LIMITATION OF REMEDY**  
Buyer agrees to purchase the material subject to Cayman's Terms and Conditions. Complete Terms and Conditions including Warranty and Limitation of Liability information can be found on our website.

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## Description

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Glucose-regulated protein 78 kDa (GRP78) is a molecular chaperone that is ubiquitously expressed in the endoplasmic reticulum of mammalian cells.<sup>1-3</sup> GRP78 can be citrullinated at its 27 arginine residues by protein deiminases (PADs).<sup>4</sup> The accumulation of citrullinated proteins *in vivo* leads to the production of anti-citrullinated protein antibodies (ACPAs) which perpetuate the inflammatory process.<sup>5</sup> *In vitro*, ACPAs bind to citrullinated GRP78 expressed on the cell surface of peripheral blood mononuclear cells PMBCs and U937 cells leading to the production of TNF- $\alpha$ .<sup>6,7</sup> In a mouse model of collagen-induced arthritis (CIA), anti-citrullinated GRP78 antibodies are found in the serum.<sup>4</sup> Pre-immunization with citrullinated GRP78 prior to CIA induction shortens the time to joint inflammation and increases arthritis scores compared with non-citrullinated GRP78-immunized and non-immunized control mice. In autoimmune diseases such as rheumatoid arthritis, patient-derived serum contains higher levels of anti-citrullinated GRP78 antibodies than serum derived from patients with systemic lupus erythematosus and healthy controls.<sup>4</sup>

## References

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2. Simons, J.F., Ferro-Novick, S., Rose, M.D., *et al.* BiP/Kar2p serves as a molecular chaperone during carboxypeptidase Y folding in yeast. *J. Cell. Biol.* **130(1)**, 41-49 (1995).
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