

# PRODUCT INFORMATION



## FSP1 (human, recombinant)

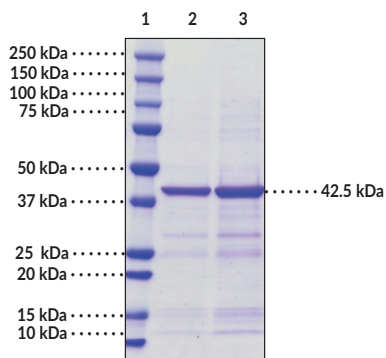
Item No. 29611

### Overview and Properties

<b>Synonyms:</b>	AIFM2, Apoptosis-inducing Factor Homologous Mitochondrion-associated Inducer of Death, Apoptosis-inducing Factor Mitochondria-associated 2, Ferroptosis Suppressor Protein 1, p53-Responsive Gene 3 Protein, PRG3
<b>Source:</b>	Active recombinant N-terminal His-tagged human FSP1 expressed in <i>E. coli</i>
<b>Amino Acids:</b>	2-373
<b>Uniprot No.:</b>	Q9BRQ8
<b>Molecular Weight:</b>	42.5 kDa
<b>Storage:</b>	-80°C (as supplied)
<b>Stability:</b>	≥1 year
<b>Purity:</b>	<i>batch specific</i> (≥70% estimated by SDS-PAGE)
<b>Supplied in:</b>	50 mM potassium phosphate, pH 7.8, with 200 mM sodium chloride, 10% glycerol, and 0.1 mM TCEP
<b>Concentration:</b>	<i>batch specific</i> mg/ml
<b>Activity:</b>	<i>batch specific</i> U/ml
<b>Specific Activity:</b>	<i>batch specific</i> U/mg
<b>Unit Definition:</b>	One unit is defined as the amount of enzyme required to produce 1 nmol of NAD <sup>+</sup> per minute at 25°C in 25 mM Tris-HCl, pH 7.4, with 150 mM sodium chloride and 200 μM coenzyme Q <sub>1</sub> .

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

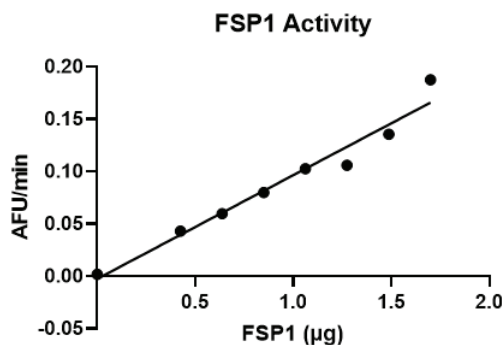
### Images



Lane 1: MW Markers  
Lane 2: FSP1 (2 μg)  
Lane 3: FSP1 (4 μg)

SDS-PAGE Analysis of FSP1.

Representative gel image shown; actual purity may vary between each batch.



Activity of FSP1. FSP1 activity was determined by measuring oxidation of the cofactor NADH at 340 nm during enzymatic reduction of coenzyme Q<sub>1</sub> (Item No. 18741) to ubiquinol.

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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Ferroptosis suppressor protein 1 (FSP1), also known as apoptosis-inducing factor mitochondria-associated 2 (AIFM2), is a flavoprotein and NAD(P)H-dependent oxidoreductase that inhibits ferroptosis in a glutathione peroxidase 4- and glutathione-independent manner.<sup>1-3</sup> It is encoded by *AIFM2* in humans and is composed of a short N-terminal hydrophobic region followed by a flavin adenine dinucleotide-dependent oxidoreductase domain.<sup>2</sup> FSP1 localizes to the plasma membrane in a myristoylation-dependent manner, where it reduces coenzyme Q<sub>10</sub> (CoQ<sub>10</sub>; Item No. 11506) to CoQ<sub>10</sub>H<sub>2</sub>. Reduced CoQ<sub>10</sub> functions as a radical-trapping antioxidant and inhibits lipid peroxidation. *AIFM2* expression positively correlates with resistance to glutathione peroxidase 4 (GPX4) inhibitors, including (1S,3R)-RSL3 (Item No. 19288), ML-210 (Item No. 23282), and ML-162 (Item No. 20455) in cancer cell lines. Withdrawal of the ferroptosis inhibitor ferrostatin-1 (Item No. 17729) reduces tumor growth in an *Fsp1/Gpx4* double knockout, but not a *Gpx4* single knockout, H460 lung cancer mouse xenograft model, indicating that FSP1 confers resistance to ferroptotic cell death. Cayman's FSP1 (human, recombinant) protein can be used for enzyme assay applications.

## References

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1. Doll, S., Freitas, F.P., Shah, R., *et al.* FSP1 is a glutathione-independent ferroptosis suppressor. *Nature* **575(7784)**, 693-698 (2019).
2. Bersuker, K., Hendricks, J., Li, Z., *et al.* The CoQ oxidoreductase FSP1 acts parallel to GPX4 to inhibit ferroptosis. *Nature* **575(7784)**, 688-692 (2019).
3. Marshall, K.R., Gong, M., Wodke, L., *et al.* The human apoptosis-inducing protein AMID is an oxidoreductase with a modified flavin cofactor and DNA binding activity. *J. Biol. Chem.* **280(35)**, 30735-30740 (2005).

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