

# PRODUCT INFORMATION



## SIRP $\alpha$ Extracellular Domain (human, recombinant)

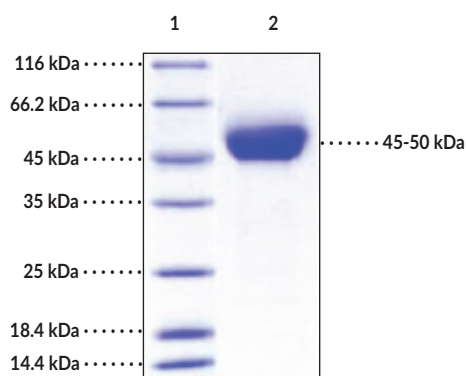
Item No. 32082

### Overview and Properties

<b>Synonyms:</b>	CD172A, CD172 Antigen-like Family Member A, MyD-1 Antigen, SHPS-1, SHP Substrate 1, Signal Regulatory Protein $\alpha$
<b>Source:</b>	Active recombinant human C-terminal His-tagged SIRP $\alpha$ expressed in HEK293 cells
<b>Amino Acids:</b>	31-370
<b>Uniprot No.:</b>	P78324-2
<b>Molecular Weight:</b>	39 kDa
<b>Storage:</b>	-80°C (as supplied)
<b>Stability:</b>	$\geq 1$ year
<b>Purity:</b>	$\geq 98\%$ estimated by SDS-PAGE
<b>Supplied in:</b>	Lyophilized from sterile PBS, pH 7.4
<b>Endotoxin Testing:</b>	$< 1.0$ EU/ $\mu$ g, determined by the LAL endotoxin assay
<b>Bioactivity:</b>	See figures for details

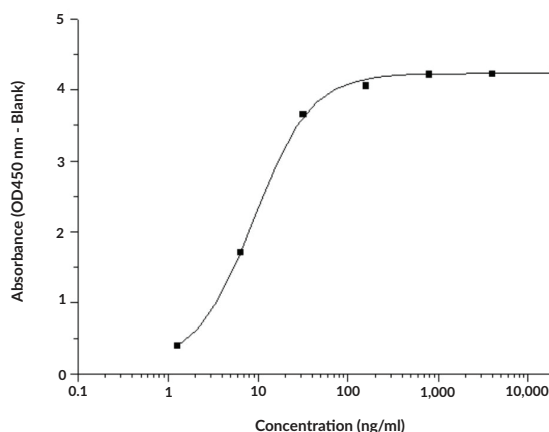
Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

### Images



Lane 1: MW Markers  
Lane 2: SIRP $\alpha$  Extracellular Domain

**SDS-PAGE Analysis of SIRP $\alpha$  Extracellular Domain.** This protein has a calculated molecular weight of 39 kDa. It has an apparent molecular weight of approximately 45-50 kDa by SDS-PAGE under reducing conditions due to glycosylation.



**SIRP $\alpha$  binding in functional ELISA.** Immobilized human SIRP $\alpha$  at 10  $\mu$ g/ml (100  $\mu$ l/well) can bind human CD47-Fc. The EC<sub>50</sub> value of human CD47-Fc is 10.1-23.5 ng/ml.

**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**  
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## Description

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Signal regulatory protein  $\alpha$  (SIRP $\alpha$ ) is an inhibitory transmembrane receptor encoded by *SIRPA* in humans.<sup>1,2</sup> It is composed of three extracellular immunoglobulin-like (Ig-like) domains, a single transmembrane region, and a cytoplasmic domain that contains four tyrosine residues with immunoreceptor tyrosine-based inhibitory motifs (ITIMs) that are essential to SIRP $\alpha$  interaction with the Src homology region 2 (SH2) domain-containing phosphatases SHP-1 and SHP-2.<sup>2</sup> SIRP $\alpha$  is expressed on monocytes, macrophages, granulocytes, subsets of dendritic cells in lymphoid tissues, some bone marrow progenitor cells, and neurons. Binding of CD47 (Item No. 32085), a receptor expressed on healthy cells but often overexpressed in cancer cells, to SIRP $\alpha$  induces phosphorylation of the SIRP $\alpha$  ITIMs, coupling to SHP-1 or SHP-2, and repression of immune cell activation and phagocytosis.<sup>1,2</sup> Knockout of *Sirpa* increases dopaminergic neuronal loss in the substantia nigra pars compacta and enhances striatal microglia activation in a mouse model of MPTP-induced Parkinson's disease.<sup>3</sup> *Sirpa*<sup>-/-</sup> mice exhibit increased age-related podocyte injury and proteinuria compared with wild-type mice.<sup>4</sup> *SIRPA* expression is decreased in patients with focal segmental glomerular sclerosis and in mouse models of renal injury induced by puromycin aminonucleoside (Item No. 15509), doxorubicin (Item No. 15007), or streptozotocin (Item No. 13104). Cayman's SIRP $\alpha$  Extracellular Domain (human, recombinant) protein can be used for ELISA. This protein consists of 351 amino acids, has a calculated molecular weight of 39 kDa, and a predicted N-terminus of Glu31 after signal peptide cleavage. By SDS-PAGE, under reducing conditions, the apparent molecular mass of this protein is 45 to 50 kDa due to glycosylation.

## References

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1. Veillette, A. and Chen, J. SIRP $\alpha$ -CD47 immune checkpoint blockade in anticancer therapy. *Trends Immunol.* **39**(3), 173-184 (2018).
2. Barclay, A.N. and Van den Berg, T.K. The interaction between signal regulatory protein alpha (SIRP $\alpha$ ) and CD47: Structure, function, and therapeutic target. *Annu. Rev. Immunol.* **32**, 25-50 (2014).
3. Wang, J., Ding, X., Wu, X., *et al.* SIRP $\alpha$  deficiency accelerates the pathologic process in models of Parkinson disease. *Glia* **67**(12), 2343-2359 (2019).
4. Li, L., Liu, Y., Li, S., *et al.* Signal regulatory protein  $\alpha$  protects podocytes through promotion of autophagic activity. *JCI Insight* **5**(9), e124747 (2019).

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