

Qty: 100 μg/400 μL Rabbit anti-Sigma-1 Receptor Catalog No. 42-3300 Lot No.

# Rabbit anti-Sigma-1 Receptor

# FORM

This polyclonal antibody is supplied as a 400 µL aliquot at a concentration of 0.25 mg/mL in phosphate buffered saline (pH 7.4) containing 0.1% sodium azide. This antibody is epitope-affinity purified from rabbit antiserum.

PAD: ZMD.554

# IMMUNOGEN

Synthetic peptide derived from the C-terminal region of the rat sigma-1 receptor, which differs from mouse and human by one conservative amino acid change and is predicted to be identical to dog, bovine, and ermine

#### SPECIFICITY

This antibody is specific for the sigma-1 receptor (sigma-1R, Oprs1 protein, opioid receptor sigma 1) protein. On Western blots, it identifies the target band at ~25 kDa.

## REACTIVITY

Reactivity has been confirmed with rat brain, rat liver and mouse brain homogenates. Based on amino acid sequence identity, reactivity with human, bovine, dog, and ermine is expected.

Sample	Western Blotting
Rat	+++
Mouse	+++
Human	ND
Bovine	ND
Dog	ND
Ermine	ND

(Excellent +++, Good++, Poor +, No reactivity 0, Not applicable N/A, Not Determined ND)

#### USAGE

Working concentrations for specific applications should be determined by the investigator. Appropriate concentrations will be affected by several factors, including secondary antibody affinity, antigen concentration, sensitivity of detection method, temperature and length of incubations, etc. The suitability of this antibody for applications other than those listed below has not been determined. The following concentration ranges are recommended starting points for this product.

Western Blotting: 2 µg/mL

#### STORAGE

PI423300

Store at 2-8°C for up to one month. Store at -20°C for long-term storage. Avoid repeated freezing and thawing.

(cont'd)

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### BACKGROUND

The sigma ( $\sigma$ ) receptor (sigma-1R, Oprs1 protein, opioid receptor sigma 1) and its agonists are implicated in a variety of cellular functions, biological processes and diseases, including cancer biology, psychosis, regulation of neurotransmitter function, motor, endocrine and immune systems.<sup>1</sup> Two sigma receptors, -1 and -2 are presently known and classified based on their ability to bind a variety of ligands. The sigma-1 receptor interacts with a variety of psychotomimetic drugs, including cocaine and amphetamines. It is distinct from any known receptor class and lacks significant homology to known mammalian proteins but possesses some homology with fungal sterol isomerases. The predicted structure of this 25 kDa protein depicts two transmembrane domains with both N- and C-terminal tails residing in the cytoplasm.<sup>1</sup>

The sigma-1 receptor is highly expressed in the central nervous system, heart, ovary, kidney, testes, liver, placenta and embryonic stem cells.<sup>2</sup> Both sigma receptors are also highly expressed in tumor cell lines from various tissues, including small- and non-small-cell lung carcinoma, large-cell carcinoma, renal carcinoma, colon carcinoma, sarcoma, brain tumors, breast cancer, emlanoma, glioblastoma, neuroblastoma and prostate cancer.<sup>3-4</sup> The exact mechanism how sigma-1R affects cancer biology is not known. Some hypotheses include modulation of ion channel activity, cytoskeletal proteins such as ankyrin, intracellular calcium levels<sup>5</sup>, or sphingolipid levels<sup>1</sup>. Recent evidence also suggests that sigma-1R is important in the compartmentalization/transport of ER-synthesized lipids.<sup>6</sup> Two polymorphisms of the sigma-1R gene, which decrease expression of the gene, are associated with occurrence of Alzheimer's disease.<sup>7</sup>

# REFERENCES

- 1. Aydar E, et al. Cancer Res 64(15):5029-5035, 2004.
- 2. Palacios G, et al. Brain Res 961(1):92-99, 2003.
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- 4. Vilner BJ, et al. Cancer Res 55(2):408-413, 1995.
- 5. Hayashi T, et al. J Pharmacol Exp Ther 293(3):788-798, 2000.
- 6. Hayashi T & Su TP. PNAS 101(41):14949-14954, 2004.
- 7. Uchida N, et al. Am J Geriatr Psychiatry 13(12):1062-1066, 2005.

RELATED PRODUCTS		
Product	Conjugate	Cat. No.
Protein A	Sepharose <sup>®</sup> 4B	10-1041
rec-Protein G	Sepharose <sup>®</sup> 4B	10-1241

Conjugate	ZyMAX™ Goat x Rabbit IgG (H+L)	ZyMAX™ Goat x Mouse IgG (H+L)
Purified	81-6100	81-6500
FITC	81-6111	81-6511
TRITC	81-6114	81-6514
Cy™3	81-6115	81-6515
Cy™5	81-6116	81-6516
HRP	81-6120	81-6520
AP	81-6122	81-6522
Biotin	81-6140	81-6540

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