

# Serine racemase (A-4): sc-365217

## BACKGROUND

Known to be prominent in bacteria, D amino acids were generally thought to be absent in mammals. D-serine has since been found in high levels in the mammalian brain and in various mammalian fluids. D-serine activates N-methyl-D-aspartate (NMDA) receptors—molecules with important roles in learning, brain growth and brain cell death. Serine racemase is the enzyme catalyzing the formation of D-serine from L-serine. Serine racemase is a member of the family of pyridoxal-5' phosphate-dependent enzymes and is localized to glial cells in rat brain.

## CHROMOSOMAL LOCATION

Genetic locus: SRR (human) mapping to 17p13.3; Srr (mouse) mapping to 11 B5.

## SOURCE

Serine racemase (A-4) is a mouse monoclonal antibody raised against amino acids 191-340 mapping at the C-terminus of Serine racemase of human origin.

## PRODUCT

Each vial contains 200 µg IgG<sub>1</sub> kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Serine racemase (A-4) is available conjugated to agarose (sc-365217 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-365217 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-365217 PE), fluorescein (sc-365217 FITC), Alexa Fluor® 488 (sc-365217 AF488), Alexa Fluor® 546 (sc-365217 AF546), Alexa Fluor® 594 (sc-365217 AF594) or Alexa Fluor® 647 (sc-365217 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-365217 AF680) or Alexa Fluor® 790 (sc-365217 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

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## APPLICATIONS

Serine racemase (A-4) is recommended for detection of Serine racemase of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Serine racemase (A-4) is also recommended for detection of Serine racemase in additional species, including equine, canine, bovine and porcine.

Suitable for use as control antibody for Serine racemase siRNA (h): sc-42221, Serine racemase siRNA (m): sc-42222, Serine racemase shRNA Plasmid (h): sc-42221-SH, Serine racemase shRNA Plasmid (m): sc-42222-SH, Serine racemase shRNA (h) Lentiviral Particles: sc-42221-V and Serine racemase shRNA (m) Lentiviral Particles: sc-42222-V.

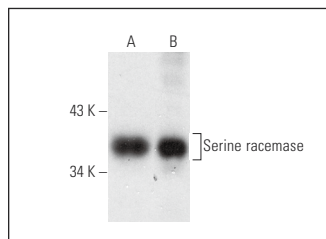
Molecular Weight of Serine racemase: 37 kDa.

Positive Controls: rat brain extract: sc-2392, HEK293 whole cell lysate: sc-45136 or mouse brain extract: sc-2253.

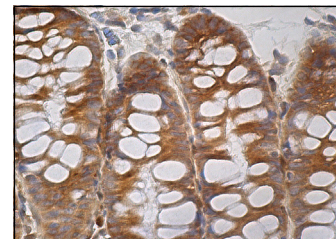
## STORAGE

Store at 4° C, \*\*DO NOT FREEZE\*\*. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

## DATA



Serine racemase (A-4): sc-365217. Western blot analysis of Serine racemase expression in HEK293 whole cell lysate (A) and mouse brain tissue extract (B).



Serine racemase (A-4): sc-365217. Immunoperoxidase staining of formalin fixed, paraffin-embedded human rectum tissue showing cytoplasmic staining of glangular cells.

## SELECT PRODUCT CITATIONS

1. Moon, J.Y., et al. 2015. Spinal  $\sigma$ -1 receptor activation increases the production of D-serine in astrocytes which contributes to the development of mechanical allodynia in a mouse model of neuropathic pain. *Pharmacol. Res.* 100: 353-364.
2. Wang, R., et al. 2019. Role of astrocytes-derived D-serine in PFOS-induced neurotoxicity through NMDARs in the rat primary hippocampal neurons. *Toxicology* 422: 14-24.
3. Tapanes, S.A., et al. 2022. Inhibition of glial D-serine release rescues synaptic damage after brain injury. *Glia* 70: 1133-1152.
4. Park, D.K., et al. 2022. Reduced D-serine levels drive enhanced non-ionicotropic NMDA receptor signaling and destabilization of dendritic spines in a mouse model for studying schizophrenia. *Neurobiol. Dis.* 170: 105772.
5. Folorunso, O.O., et al. 2022. The D-serine biosynthetic enzyme serine racemase is expressed by reactive astrocytes in the amygdala of human and a mouse model of Alzheimer's disease. *Neurosci. Lett.* 792: 136958.
6. Nakade, Y., et al. 2024. Urinary D-asparagine level is decreased by the presence of glioblastoma. *Acta Neuropathol. Commun.* 12: 122.

## RESEARCH USE

For research use only, not for use in diagnostic procedures.

## PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) for detailed protocols and support products.