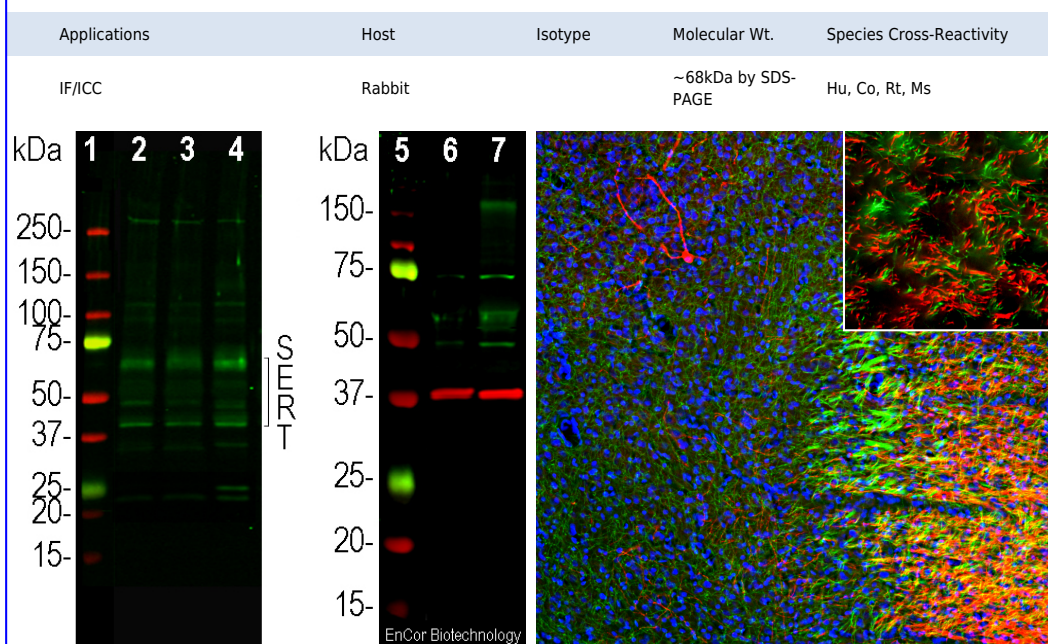


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Serotonin Transporter Rabbit Polyclonal Antibody

RPCA-SERT



Western blot analysis of different tissue and cell lysates using rabbit pAb to the serotonin transporter (SERT), RPCA-SERT, dilution 1:1,000 in green. Left: [1] protein standard, [2] rat brain caudate/putmen region, [3] rat brain striatum region and [4] mouse brain. The prominent band at ~68kDa corresponds to SERT protein, and lower bands are likely are proteolytic products of SERT. Right: [5] protein standard, [6] non-transfected HEK293 cells and [7] HEK293 cells transfected with an expression construct containing a Myc-DDK tagged full length human SERT cDNA. The bands between 50-75kDa mark in the transfected cells demonstrate overexpression of SERT, and the band at about 150kDa presumably corresponds to an aggregated form of SERT. The blot was probed with mouse mAb to GAPDH, MCA-1D4, dilution 1:5,000, in red, which reveals the single band at ~37kDa in both transfected and non-transfected cells. Note that HEK293 cells express SERT endogenously (7).

Immunofluorescent analysis of a rat brain section stained with RPCA-Sert in green and counterstained with chicken polyclonal antibody to tyrosine hydroxylase CPCA-TH (TH) in red. The axons of serotonergic neurons course throughout the section but are clearly distinct from the cholinergic processes and cell bodies revealed with the TH antibody. The blue stain reveals DNA in cell nuclei.

Background:

Serotonin, also known as 5-hydroxytryptamine, is an important neurotransmitter in the CNS and has many important functions outside the CNS (1). Serotonergic neuron cell bodies in the CNS are found in the raphe nucleus and send their fine beaded processes throughout the brain and spinal cord. The serotonergic system modulates mood, perception, emotion, aggression, stress responses, sleep and appetite and contributes to learning and memory formation. The processes of serotonergic neurons express the Na⁺/Cl⁻ dependent serotonin transporter (SERT), which is responsible for uptake of serotonin from the extracellular space following synaptic release. SERT is a member of the neurotransmitter sodium symporter family of proteins, which includes transporters specific for dopamine, GABA, glycine and other important small molecules. These transporter proteins are localized in the plasma membrane and have a complex structure including 12 transmembrane domains (2). SERT is only expressed in serotonergic neurons and their processes so that SERT antibodies are useful to study these important cells and their processes (3-5). The SERT molecule functions by exchanging extracellular serotonin with Na⁺ and Cl⁻ ions and is dependent on the membrane potential and ionic gradients generated by the Na⁺/K⁺ ATPase. A large class of drugs, the selective serotonin reuptake inhibitors (SSRIs), bind to SERT and inhibit it, increasing the level of extracellular serotonin. These drugs are important anti-depressants including the well known drug Prozac (a.k.a. fluoxetine, 6).

The RPCA-SERT antibody was made against a peptide identical to the C-terminal 21 amino acids of human SERT and can be used to visualize serotonergic neurons and their processes in cell culture and in sectioned material. The homologous rodent peptide differs by one conservative amino acid substitution and we have shown that this antibody works well on rodent and bovine tissues and, based on sequence conservation, is expected to be widely applicable to other mammals.

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Abbreviation Key:

mAb—Monoclonal Antibody pAb—Polyclonal Antibody WB—Western Blot IF—Immunofluorescence ICC—Immunocytochemistry IHC—Immunohistochemistry E—ELISA Hu—Human Mo—Monkey Do—Dog Rt—Rat Ms—Mouse Co—Cow Pi—Pig Ho—Horse Ch—Chicken Dr—D. rerio Dm—D. melanogaster Sm—S. mutans Ce—C. elegans Sc—S. cerevisiae Sa—S. aureus Ec—E. coli.

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