Postsynaptic density protein 95 (PSD-95), also known as SAP-90 (synapse-associated protein 90), belongs to a class of proteins referred to as MAGUKs (membrane-associated guanylate kinases). Canonical MAGUK proteins contain one or three PDZ (PSD-95/discs large/zona occludens-1) domains, an SH3 domain, and a guanylate kinase homology domain. PSD-95 and several other MAGUK and PDZ containing proteins (e.g., PSD-93, SAP-97, SAP-102, MALs/Veli proteins) are enriched in the post synaptic density. These proteins appear to regulate synaptic function by acting as molecular scaffolds for signaling machinery at synapses, in part by interaction of their PDZ domains with carboxy-terminal T/SXV motifs present on synaptic proteins including NMDA receptors and Shaker type K+ channels. PSD-95 has also been shown to link NMDA receptors to neuronal nitric oxide synthetase (nNOS), a downstream signal transduction protein, via a novel PDZ:PDZ interaction with nNOS. PSD-95 interacts with the cytoplasmic tail of NMDA receptor subunits and shaker-type potassium channels, which is important for synaptic plasticity associated with NMDA receptor signaling. Overexpression or depletion of PSD-95 changes the ratio of excitatory to inhibitory synapses in hippocampal neurons. PSD-95 has been associated with autism, drug addiction, learning, and memory. Phosphorylation is critical for the regulation of PSD-95 function. The MSD PSD-95 assay is available on 96-well, 4-spot plates. This datasheet outlines the performance of the assay.

**Typical Data**

Representative results for the PSD-95 Kit are illustrated below. The signal and ratio values provided are examples; individual results will vary depending upon the samples tested.

This assay was developed using recombinant human PSD-95 protein (data shown below) as well as with mouse brain tissue lysates (data not shown). Recombinant protein or mouse brain tissue lysates were added to MSD MULTI-SPOT® 4-spot plates coated with anti-PSD-95 antibody on one of the four spatially distinct electrodes in each well. PSD-95 was detected with anti-PSD-95 antibody conjugated with MSD SULFO-TAG™ label.
The MSD Advantage

- **Multiplexing:** Multiple analytes can be measured in one well using typical sample volumes of 25 µL or less without compromising speed or performance.
- **Large dynamic range:** Linear range of up to five logs enables the measurement of native levels of biomarkers in normal and diseased samples without multiple dilutions.
- **Minimal background:** The stimulation mechanism (electricity) is decoupled from the response (light signal), minimizing matrix interference.
- **Simple protocols:** Only labels bound near the electrode surface are excited, enabling assays with fewer washes.
- **Flexibility:** Labels are stable, non-radioactive, and conveniently conjugated to biological molecules.

References