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# DATASHEET

## Sulforhodamine 101 (SR101)

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### Product overview

**Name** Sulforhodamine 101 (SR101)  
**Cat No** HB0838  
**Biological description** Overview

Sulforhodamine 101 (SR101) is a red fluorescent dye which is water-soluble and non-fixable.

It is a preferential astrocyte marker both in vitro and in vivo and is frequently used in neurophysiological experiments. It also labels oligodendrocytes.

The exact uptake mechanism of SR101 is unclear. It is thought that SR-101 is taken up by astrocytes and diffuses through the astrocyte syncytium via gap junctions.

#### Uses and applications

The dye is commonly used for in vivo brain imaging and allows in vivo imaging of oligodendrocytes. It may be applied topically to the exposed cortex or administered via injection.

The dye has a wide range of applications. For example, it is often used to identify astrocytes, to counterstain astrocytes and has been extensively used with calcium-sensitive dyes to distinguish calcium signals derived from neurons and astrocytes.

#### Caution and care

Care should be taken when using the dye as it is not as specific for astrocytes as initially reported and as the dye labels oligodendrocytes, it cannot be assumed that all SR101 labelled cells are astrocytes.

The dye also differs in staining intensity depending on the brain region being investigated (it does not label astrocytes in brainstem slices as strongly or specifically as in the hippocampus or cortex).

SR101 also has effects on excitatory neuronal activity and can induce cortical seizure-like activity.

Hülsmann et al (2017) recommend that to minimize excitatory side effects, SR101 concentrations should be kept as low as possible or the labelling procedure could be carried out after the experiment.

If possible, researchers should carry out additional measures to confirm specificity of SR101 staining in their experiments (e.g. electrophysiological whole-cell recordings of SR101-labeled cells and post hoc IHC).

**Biological action** Dyes & stains  
**Purity** >98%  
**Description** Red fluorescent dye. Preferential astrocyte marker. Also labels oligodendrocytes.

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### Images



## Solubility & Handling

### Storage instructions Solubility overview Important

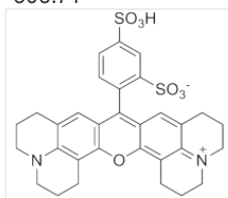
+4 °C  
Soluble in water (50 mM), and in DMSO (50 mM)  
This product is for RESEARCH USE ONLY and is not intended for therapeutic or diagnostic use. Not for human or veterinary use

## Chemical Data

### Chemical name

9-(2,4-Disulfophenyl)-2,3,6,7,12,13,16,17-octahydro-1H,5H,11H,15H-xantheno[2,3,4-ij:5,6,7-ij]diquinolizin-18-ium inner salt  
606.71

### Molecular Weight Chemical structure



### Molecular Formula CAS Number PubChem identifier SMILES

$C_{31}H_{30}N_2O_7S_2$   
60311-02-6  
122180  
C1CC2=C3C(=C4C(=C2)C(=C5C=C6CCC[N+]7=C6C(=C5O4)CCC7)C8=C(C=C(C=C8)S(=O)(=O)O)S(=O)(=O)[O-])CCCN3C1  
COIVODZMVVUETJ-UHFFFAOYSA-N  
MFCD00012407  
586 nM  
606 nM

### InChiKey MDL number Excitation Emission

## References

<https://www.ncbi.nlm.nih.gov/pubmed/15782150>

Nimmerjahn et al (2004) Nat Methods 1(1)

PubMedID 15782150

### Limitations of Sulforhodamine 101 for Brain Imaging.

Hülsmann et al (2017) Front Cell Neurosci. 28

PubMedID 28293173

### Sulforhodamine 101, a widely used astrocyte marker, can induce cortical seizure-like activity at concentrations commonly used.

Rasmussen et al (2016) Sci Rep. 26

PubMedID 27457281

### In vivo imaging of oligodendrocytes with sulforhodamine 101.

Hill et al (2014) Nat Methods 11(11)

PubMedID 25357236

### In Vivo Two Photon Imaging of Astrocytic Structure and Function in Alzheimer's Disease.

Kelly et al (2018) Front Aging Neurosci 19

