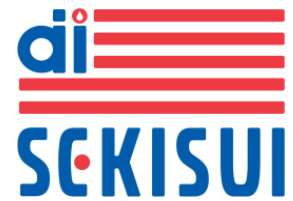


# LDL receptor relative with 11 ligand-binding repeats (LR11, SorLA, SORL1)



## Description

The LDL receptor relative with 11 ligand-binding repeats (LR11, also known as SorLA or SORL1) is a member of the LDL receptor family and is highly expressed in atheromatous plaques, particularly in the intimal smooth muscle cells (SMCs). Overproduction of LR11 protein promotes the enhanced migration of SMCs via the upregulation of urokinase-type plasminogen activator receptor. LR11 plays an essential role in the angiotensin II-induced mobility of SMCs, and angiotensin II type 1 receptor blockers have been found to reduce intimal thickness through the inhibition of the LR11/urokinase-type plasminogen activator receptor-mediated pathway of intimal SMCs in cuffinjured mice. The extracellular domain of the membrane-spanning LR11 is released to yield an active soluble form of LR11 (sLR11).

## Indication

- Atherosclerosis
- Coronary Organic Stenosis
- Alzheimer's Disease

## Pathophysiology

The soluble form sLR11 was detected in the serum, and the circulating sLR11 levels are positively correlated with intima-media thickness of carotid arteries in dyslipidemic subjects. The relationship of the sLR11 levels in serum with other risk factors for atherosclerosis, such as age, sex, smoking, blood pressures, serum lipids, and plasma glucose was not observed.

It is reported that arterial intimal thickening after balloon catheter injury was enhanced in diabetic animals than control. Clinically, increased intimal-medial thickness of carotid artery in type 2 diabetes was reported. Thus, a relationship between coronary stenosis and sLR11 level, and also a relationship between sLR11 and diabetic condition were suspected.

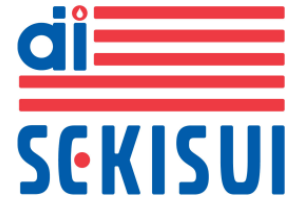
The neuronal receptor LR11 is genetically associated with Alzheimer disease. Polymorphism of the LR11 gene has been found to be related to the onset of Alzheimer disease. Reduced expression of LR11, as occurs in the brains of individuals with Alzheimer's disease (AD), increases amyloidogenesis, and variants in the gene that encodes LR11 have recently been linked to risk for late-onset AD.

## References

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- Molecular characterization of a novel human hybrid-type receptor that binds the  $\alpha$ 2-macroglobulin receptor associated protein (RAP). Jacobsen L et al. J Biol Chem 1996;271:31379-83.
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- Enhanced expression of the LDL receptor family member LR11 increases migration of smooth muscle cells in vitro. Zhu Y et al. Circulation 2002;105:1830-6.
- SorLA signaling by regulated intramembrane proteolysis. Böhm C et al. J Biol Chem 2006;281:14547-14553.
- A secreted soluble form of LR11, specifically expressed in intimal smooth muscle cells, accelerates formation of lipid-laden macrophages. Ohwaki K et al. Arterioscler Thromb Vasc Biol 2007;27:1050-6.
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- The neuronal sortilin-related receptor SORL1 is genetically associated with Alzheimer disease. Rogava E et al. Nat Genet 2007;39:168-77.
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Product information LR11 ELISA ....over

# sLR11 ELISA



## Principle of the assay

The sLR11 ELISA kit is an *in vitro* quantitative assay for quantification of soluble LR11/SorLA in human serum and cerebrospinal fluid.

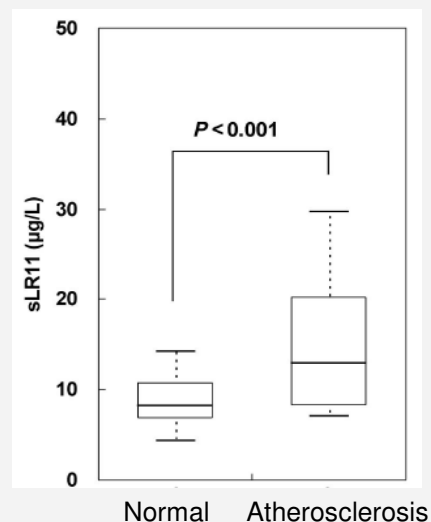
The assay is based on two different monoclonal antibodies that were raised by synthetic peptide immunization. Test wells are coated with anti-LR11 mAb (M3). LR11 in the sample is captured by the antibody in the 1<sup>st</sup> incubation. After the 1<sup>st</sup> incubation and washing to remove all of the unbound material, biotinylated anti-LR11 mAb (R14) is added. After the 2<sup>nd</sup> incubation and subsequent washing HRP-conjugated streptavidin is added to the LR11-mAb complex. After the 3<sup>rd</sup> incubation and subsequent washing, substrate solution is added. Next, stop reagent is added. The intensity of color that develops is read by a microplate reader. The absorbance is proportional to the concentration of LR11 in the sample.

## References

- Enhanced circulating soluble LR11 in patients with coronary organic stenosis. Takahashi M et al. Atherosclerosis. 2009 Dec 16. [Epub ahead of print]
- Development of an immunoassay for the quantification of soluble LR11, a circulating marker of atherosclerosis. Matsuo M et al. Clin Chem. 2009 Oct;55(10):1801-1808.

## Key Features

- **Format:** 96-well plate, 2- step sandwich ELISA
- **Sample type:** human serum  
cerebrospinal fluid
- **Linearity:** 0.25–4.0 ng/ml
- **Lower detection limit:** 0.1 ng/ml
- **Normal serum conc.:** 8.7 ng/ml (4.5–14.2 ng/ml)
- **Reproducibility:** CV value less than 10%



Scientific information on LR11....over