

# Scavenger receptors

Scavenger receptors were discovered by Drs Goldstein and Brown in their studies of lipoproteins , atherosclerosis and familial hypercholesterolemia . They are present on various cell types such as macrophages , monocytes , platelets , endothelial cells, smooth muscle cells and epithelial cells.

These receptors bind LDL (low-density lipoproteins), which can lead to cholesterol accumulation . It can recognize a diverse group of ligands that include chemically modified plasma lipoproteins, oxidized lipoproteins, dextran sulfate, fucoidan, and others. They participate in processes such as phagocytosis or defense mechanisms.

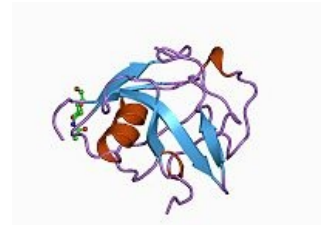
## Nomenclature

In 1997, a nomenclature was proposed for these receptors, which is based on their characteristics, and they were divided into eight classes, named according to the letters of the alphabet. (A, B, C, D, E, etc.)

### Class A

Today, 5 receptors are classified under class A, each of which is encoded by a different gene . It belongs to transmembrane proteins that, apart from their function of **binding LDL** , also figure in homeostasis , **antigen presentation** , and in the **pathogenesis of neurodegenerative diseases** . Due to the fact that they bind a wide range of ligands and that they are **present in macrophages** , they could also serve as recognition receptors in acquired immunity.

Type one and type two are trimers and mainly bind acylated or oxidized LDL. They are mainly present in macrophages (e.g. in the thymic medulla) and in Kupffer cells. Specific type 1 can be found in macrophages, monocytes and dendritic cells in both mice and humans. Receptors belonging to this group recognize a wide variety of ligands, such as heat-shock proteins , hepatitis C virus , surface molecules of Gram-positive and Gram-negative bacteria , acetylated and oxidized LDL. However, they do not recognize natural LDL.



Scavenger receptor molecule

### Class B

Class B has 4 known subtypes. These receptors are characterized by having **two transmembrane domains** . A typical class B receptor is the **CD36** receptor , which is the receptor for thrombospondin. Thanks to this, it **regulates angiogenesis and cell interaction** .

It is one of the most studied receptors and plays a significant role in the immune response to fungi and bacteria. It binds red blood cells that have been infected with the malaria parasite *Plasmodium falciparum* . It is found in many cells such as **platelets, monocytes and macrophages** , as well as specialized **epithelial cells** in the breast and eye.

### Class C

Class C has so far only been discovered in *Drosophila*. This type has not been found in humans, nor in other mammals.

## Links

### Related articles

- Lipoproteins
- Macrophages
- Transmembrane protein

### External links

- Scavenger receptory (Pubmed) (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4493455/%7C>)