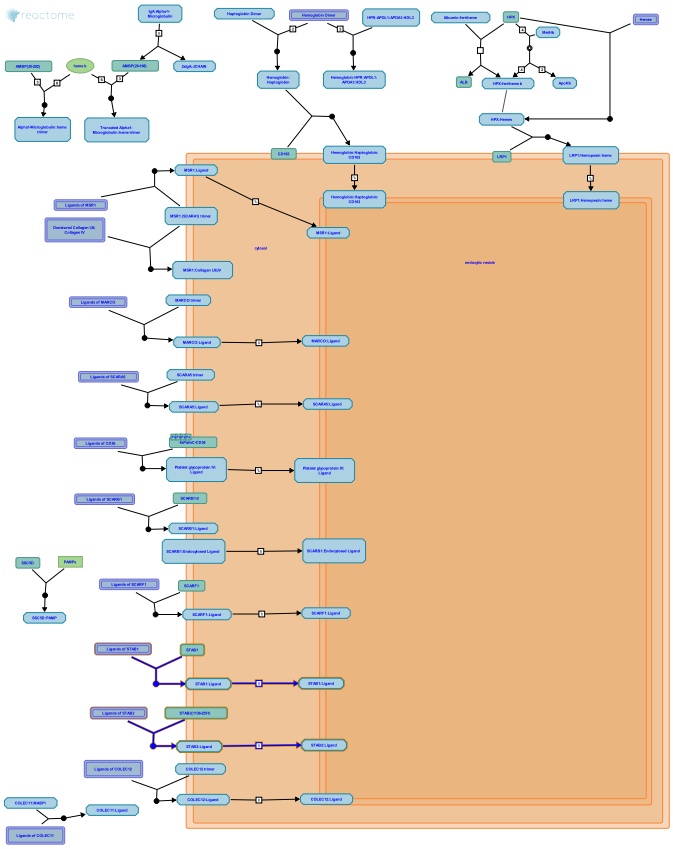
Scavenging by Class H Receptors



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Introduction

Reactome is open-source, open access, manually curated and peer-reviewed pathway database. Pathway annotations are authored by expert biologists, in collaboration with Reactome editorial staff and cross-referenced to many bioinformatics databases. A system of evidence tracking ensures that all assertions are backed up by the primary literature. Reactome is used by clinicians, geneticists, genomics researchers, and molecular biologists to interpret the results of high-throughput experimental studies, by bioinformaticians seeking to develop novel algorithms for mining knowledge from genomic studies, and by systems biologists building predictive models of normal and disease variant pathways.
The development of Reactome is supported by grants from the US National Institutes of Health (P41 HG003751), University of Toronto (CFREF Medicine by Design), European Union (EU STRP, EMI-CD), and the European Molecular Biology Laboratory (EBI Industry program).

Literature references

Fabregat, A., Sidiropoulos, K., Viteri, G., Forner, O., Marin-Garcia, P., Arnau, V. et al. (2017). Reactome pathway analysis: a high-performance in-memory approach. *BMC bioinformatics, 18*, 142. ↗

Sidiropoulos, K., Viteri, G., Sevilla, C., Jupe, S., Webber, M., Orlic-Milacic, M. et al. (2017). Reactome enhanced pathway visualization. *Bioinformatics, 33*, 3461-3467. ↗

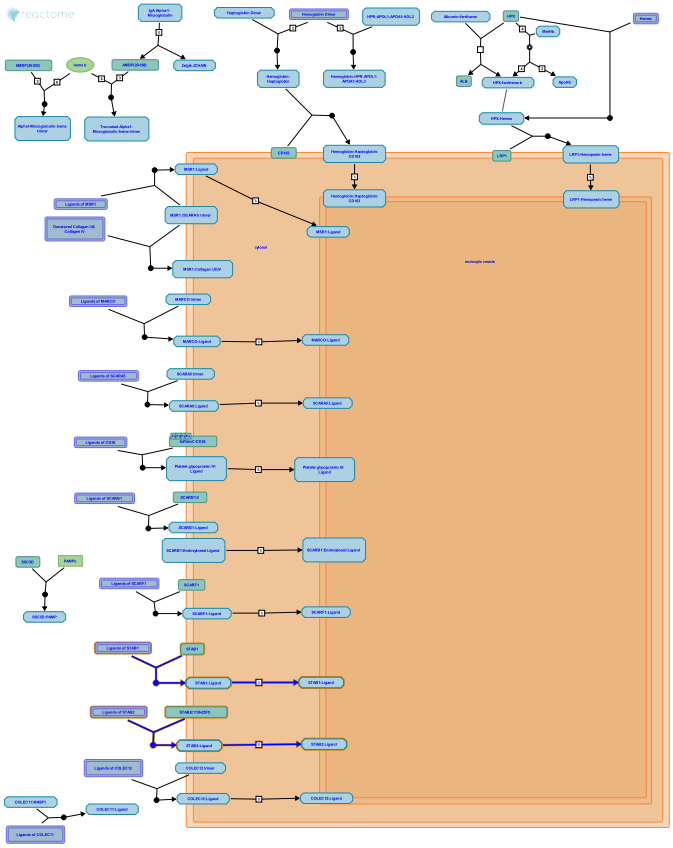
Fabregat, A., Jupe, S., Matthews, L., Sidiropoulos, K., Gillespie, M., Garapati, P. et al. (2018). The Reactome Pathway Knowledgebase. *Nucleic Acids Res, 46*, D649-D655. ↗

Fabregat, A., Korninger, F., Viteri, G., Sidiropoulos, K., Marin-Garcia, P., Ping, P. et al. (2018). Reactome graph database: Efficient access to complex pathway data. *PLoS computational biology, 14*, e1005968. ↗

Scavenging by Class H Receptors ↗

Stable identifier: R-HSA-3000497

Compartments: endocytic vesicle membrane, extracellular region, plasma membrane



STAB1 (FEEL-1) and STAB2 (FEEL-2) are very large transmambrane proteins containing fasciclin domains, EGF-like domains, and hyaluronan-like domains (Politz et al. 2002, reviewed in Areschoug and Gordon 2009).

Literature references

Longati, P., Kannicht, C., Johansson, S., Guillot, P., Politz, O., Svineng, G. et al. (2002). Stabilin-1 and -2 constitute a novel family of fasciclin-like hyaluronan receptor homologues. *Biochem. J., 362*, 155-64. ↗

Gordon, S., Areschoug, T. (2009). Scavenger receptors: role in innate immunity and microbial pathogenesis. *Cell. Microbiol., 11*, 1160-9. ↗

Editions

2013-01-27	Authored, Edited	May, B.
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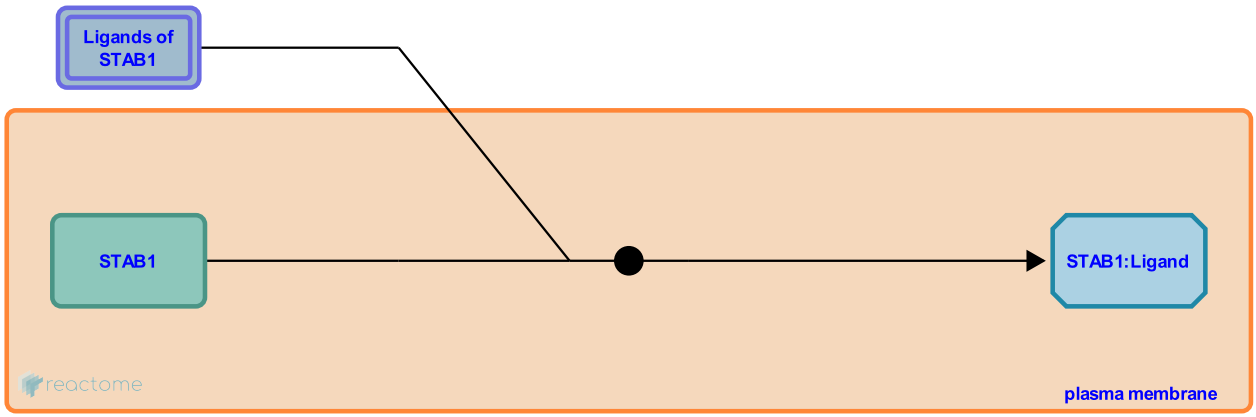
STAB1 (FEEL-1) binds ligands ↗

Location: Scavenging by Class H Receptors

Stable identifier: R-HSA-2197770

Type: binding

Compartments: plasma membrane, extracellular region



STAB1 (FEEL-1) binds acetylated low density lipoprotein (LDL) (Adachi & Tsujimoto 2002, Palani et al. 2011), phosphatidylserine (exposed when cells are lysed) (Park et al. 2009), advanced glycation end products (AGE) (Tamura et al. 2003, Hansen et al. 2005), and Osteonectin (SPARC) (Kzhyshkowska et al. 2006).

Followed by: STAB1:ligand is endocytosed

Literature references

Goerdt, S., Arap, W., Gratchev, A., Krusell, L., Sage, EH., Cardó-Vila, M. et al. (2006). Novel function of alternatively activated macrophages: stabilin-1-mediated clearance of SPARC. *J Immunol, 176*, 5825-32. ↗

Goerdt, S., Smedsrød, B., Nedredal, GI., Kzhyshkowska, J., Falkowski, M., Elvevold, K. et al. (2005). Stabilin-1 and stabilin-2 are both directed into the early endocytic pathway in hepatic sinusoidal endothelium via interactions with clathrin/AP-2, independent of ligand binding. *Exp Cell Res, 303*, 160-73. ↗

Kang, KB., Gratchev, A., Kim, IS., Kzhyshkowska, J., Lee, SJ., Jung, MY. et al. (2009). Stabilin-1 mediates phosphatidylserine-dependent clearance of cell corpses in alternatively activated macrophages. *J Cell Sci, 122*, 3365-73 . ↗

Tsujimoto, M., Sekiya, M., Ohashi, K., Nagai, R., Kimura, S., Tamura, Y. et al. (2003). FEEL-1 and FEEL-2 are endocytic receptors for advanced glycation end products. *J Biol Chem, 278*, 12613-7. ↗

Tsujimoto, M., Adachi, H. (2002). FEEL-1, a novel scavenger receptor with in vitro bacteria-binding and angiogenesis-modulating activities. *J Biol Chem, 277*, 34264-70. ↗

Editions

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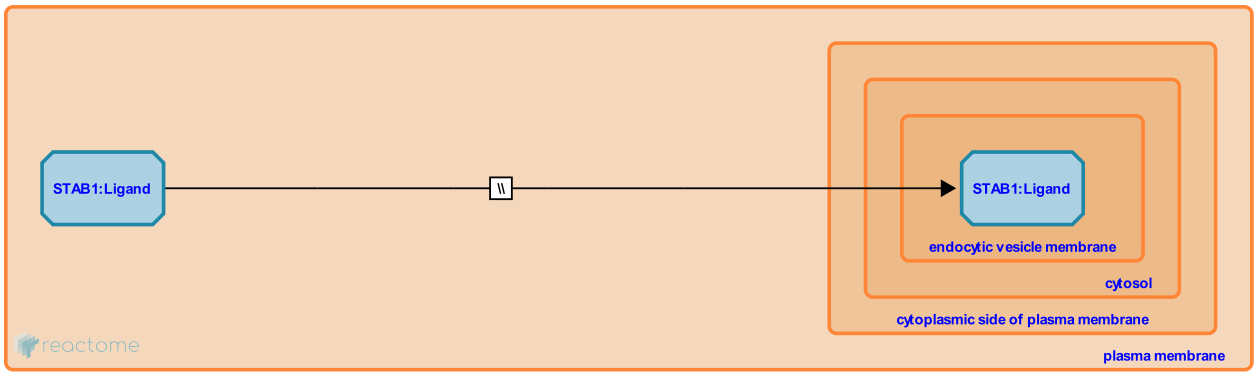
STAB1:ligand is endocytosed ↗

Location: Scavenging by Class H Receptors

Stable identifier: R-HSA-2247513

Type: omitted

Compartments: plasma membrane, endocytic vesicle membrane



The STAB1:ligand complex is endocytosed (Tamura et al. 2003, Kzhyshkowska et al. 2004, Li et al. 2011, Prevo et al. 2004; Kzhyshkowska et al. 2005). Endocytosis of stabilin-1 or stabilin-2 can occur independently of ligand binding, via clathrin (Hansen et al. 2005).

Preceded by: STAB1 (FEEL-1) binds ligands

Literature references

Goerdt, S., Smedsrød, B., Nedredal, GI., Kzhyshkowska, J., Falkowski, M., Elvevold, K. et al. (2005). Stabilin-1 and stabilin-2 are both directed into the early endocytic pathway in hepatic sinusoidal endothelium via interactions with clathrin/AP-2, independent of ligand binding. *Exp Cell Res, 303*, 160-73. ↗

Sørensen, KK., Oteiza, A., Smedsrød, B., Svistounov, D., Li, R., McCourt, P. et al. (2011). Role of liver sinusoidal endothelial cells and stabilins in elimination of oxidized low-density lipoproteins. *Am J Physiol Gastrointest Liver Physiol, 300*, G71-81. ↗

Ni, J., Prevo, R., Banerji, S., Jackson, DG. (2004). Rapid plasma membrane-endosomal trafficking of the lymph node sinus and high endothelial venule scavenger receptor/homing receptor stabilin-1 (FEEL-1/CLEVER-1). *J Biol Chem , 279*, 52580-92. ↗

Tsujimoto, M., Sekiya, M., Ohashi, K., Nagai, R., Kimura, S., Tamura, Y. et al. (2003). FEEL-1 and FEEL-2 are endocytic receptors for advanced glycation end products. *J Biol Chem, 278*, 12613-7. ↗

Gratchev, A., Mamidi, S., Krusell, L., Goerdt, S., Kzhyshkowska, J., Brundiers, H. (2005). Phosphatidylinositide 3-kinase activity is required for stabilin-1-mediated endosomal transport of acLDL. *Immunobiology, 210*, 161-73. ↗

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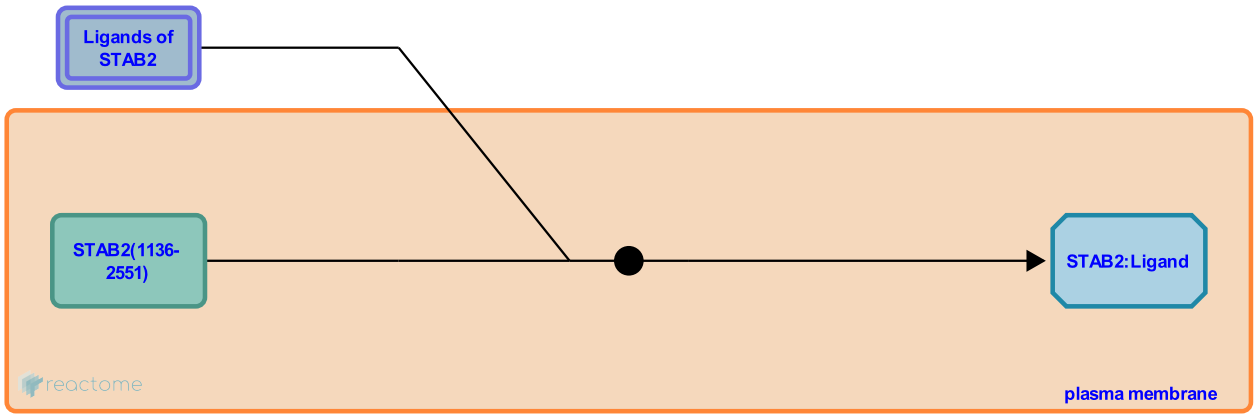
STAB2 (FEEL-2) binds ligands ↗

Location: Scavenging by Class H Receptors

Stable identifier: R-HSA-2203479

Type: binding

Compartments: plasma membrane, extracellular region



STAB2 (FEEL-2) binds acetylated low density lipoprotein (LDL) (Adachi & Tsujimoto 2002, Harris & Weigel 2008), advanced glycation end products (AGE) (Tamura et al. 2003), chondroitin sulfate (Harris & Weigel 2008), hyaluronic acid (Zhou et al. 2003, Harris et al. 2004, Harris et al. 2007, Harris & Weigel 2008), heparin (Harris et al. 2008, Harris & Weigel 2008, Harris et al. 2009), and phosphatidylserne (Park et al. 2008).

Followed by: STAB2:ligand is endocytosed

Literature references

Weigel, PH., Harris, EN. (2008). The ligand-binding profile of HARE: hyaluronan and chondroitin sulfates A, C, and D bind to overlapping sites distinct from the sites for heparin, acetylated low-density lipoprotein, dermatan sulfate, and CS-E. *Glycobiology, 18*, 638-48. ↗

Weigel, PH., Weigel, JA., Harris, EN. (2008). The human hyaluronan receptor for endocytosis (HARE/Stabilin-2) is a systemic clearance receptor for heparin. *J Biol Chem, 283*, 17341-50. ↗

Park, RW., Kim, IS., Lee, BH., Kim, SY., Kwon, TH., Kim, HJ. et al. (2008). Rapid cell corpse clearance by stabilin-2, a membrane phosphatidylserine receptor. *Cell Death Differ, 15*, 192-201. ↗

Tsujimoto, M., Sekiya, M., Ohashi, K., Nagai, R., Kimura, S., Tamura, Y. et al. (2003). FEEL-1 and FEEL-2 are endocytic receptors for advanced glycation end products. *J Biol Chem, 278*, 12613-7. ↗

Tsujimoto, M., Adachi, H. (2002). FEEL-1, a novel scavenger receptor with in vitro bacteria-binding and angiogenesis-modulating activities. *J Biol Chem, 277*, 34264-70. ↗

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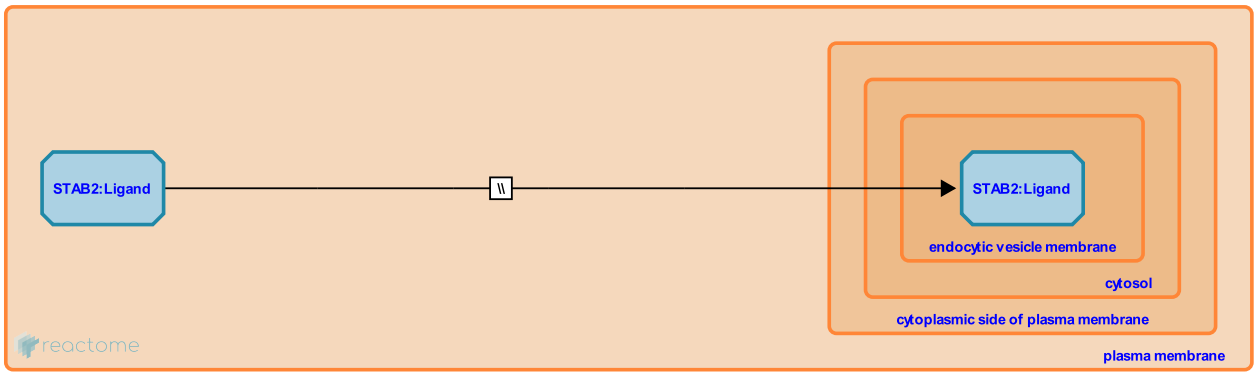
STAB2:ligand is endocytosed ↗

Location: Scavenging by Class H Receptors

Stable identifier: R-HSA-2247511

Type: omitted

Compartments: plasma membrane, endocytic vesicle membrane



The STAB2:ligand complex is endocytosed (Tamura et al. 2003, Li et al. 2011). Endocytosis of stabilin-1 or stabilin-2 can occur independently of ligand binding, via clathrin (Hansen et al. 2005).

Preceded by: STAB2 (FEEL-2) binds ligands

Literature references

Goerdt, S., Smedsrød, B., Nedredal, GI., Kzhyshkowska, J., Falkowski, M., Elvevold, K. et al. (2005). Stabilin-1 and stabilin-2 are both directed into the early endocytic pathway in hepatic sinusoidal endothelium via interactions with clathrin/AP-2, independent of ligand binding. *Exp Cell Res, 303*, 160-73. ↗

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