

PILRA binds PIANP, COLLEC12 trimer, NP-DC1, CLEC4G

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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.

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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. [↗](#)

Reactome database release: 88

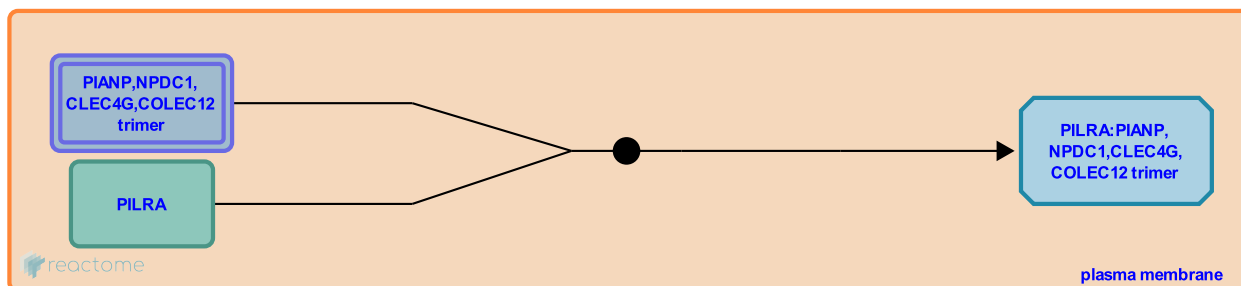
This document contains 1 reaction ([see Table of Contents](#))

PILRA binds PIANP, COLLEC12 trimer, NPDC1, CLEC4G [↗](#)

Stable identifier: R-HSA-8862090

Type: binding

Compartments: plasma membrane



Paired immunoglobulin-like type 2 receptor alpha (PILRA) binds to multiple ligands including CD99 (Shiratori et al. 2004), PILR-associated neural protein (PIANP, PANP) (Kogure et al. 2011), Herpes simplex virus-1 glycoprotein B (Sato et al. 2008), Collectin-12 (COLEC12), Neural proliferation differentiation and control protein 1 (NPDC1) and C-type lectin domain family 4 member G (CLEC4G) (Sun et al. 2012). Binding studies suggest that PILR recognizes a complex ligand domain involving both silica acid and protein motif(s). Thus, PILR is evolved to engage multiple ligands with common molecular determinants to modulate myeloid cell functions in anatomical settings where PILR ligands are expressed. The precise function of PILR-Ligand interaction is not well understood (Sun et al. 2012). PILRa negatively regulates inflammation and keeps myeloid system in check. Pilra KO mice produce more pathogenic cytokines during inflammation and are prone to enhanced autoimmune arthritis. Correspondingly, anti-PILRa mAb ameliorated inflammation in mouse arthritis models and suppressed the production of proinflammatory cytokines (Sun et al. 2014).

Literature references

- Wang, J., Arase, H., Kogure, A., Lanier, LL., Shiratori, I. (2011). PANP is a novel O-glycosylated PILRa ligand expressed in neural tissues. *Biochem. Biophys. Res. Commun.*, 405, 428-33. [↗](#)
- Baginski, TK., Sun, Y., Tom, I., Gonzalez, LC., Zarrin, AA., Mukhyala, K. et al. (2012). Evolutionarily conserved paired immunoglobulin-like receptor α (PILRa) domain mediates its interaction with diverse sialylated ligands. *J. Biol. Chem.*, 287, 15837-50. [↗](#)
- Arase, H., Ogasawara, K., Saito, T., Lanier, LL., Shiratori, I. (2004). Activation of natural killer cells and dendritic cells upon recognition of a novel CD99-like ligand by paired immunoglobulin-like type 2 receptor. *J. Exp. Med.*, 199, 525-33. [↗](#)

Editions

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