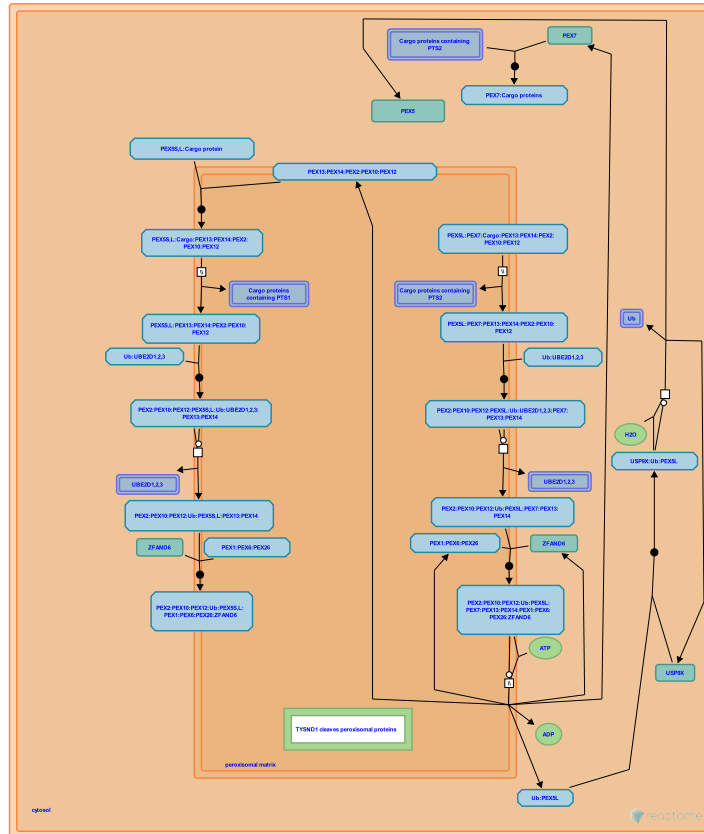


# Peroxisomal protein import



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This is just an excerpt of a full-length report for this pathway. To access the complete report, please download it at the [Reactome Textbook](https://reactome.org/textbook/).

07/05/2024

## 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

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Reactome database release: 88

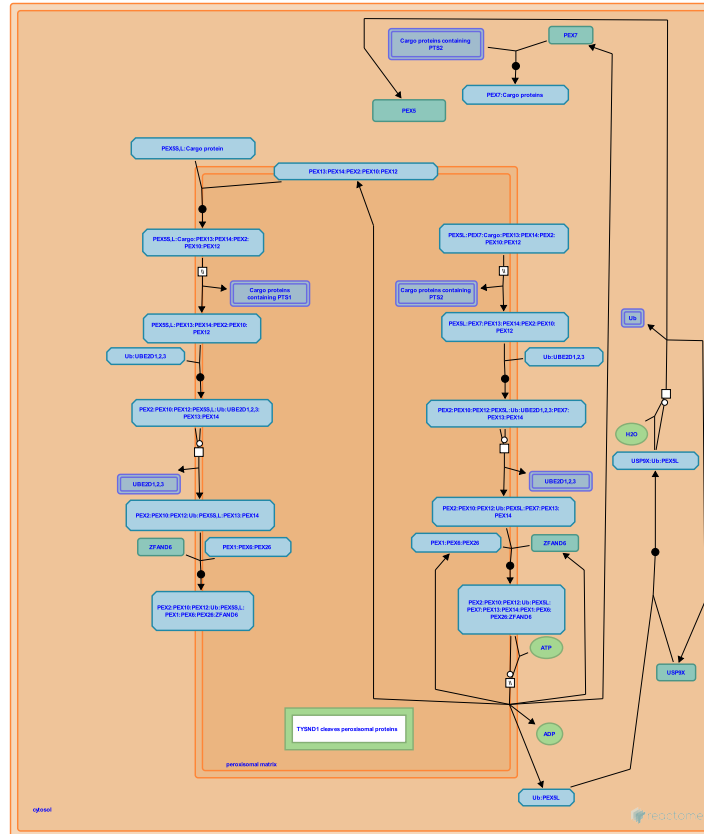
This document contains 2 pathways and 13 reactions ([see Table of Contents](#))

## Peroxisomal protein import ↗

Stable identifier: R-SSC-9033241

Compartments: cytosol, peroxisomal matrix, peroxisomal membrane

Inferred from: Peroxisomal protein import (Homo sapiens)



This event has been computationally inferred from an event that has been demonstrated in another species.

The inference is based on the homology mapping from PANTHER. Briefly, reactions for which all involved PhysicalEntities (in input, output and catalyst) have a mapped orthologue/paralogue (for complexes at least 75% of components must have a mapping) are inferred to the other species. High level events are also inferred for these events to allow for easier navigation.

[More details and caveats of the event inference in Reactome.](http://www.pantherdb.org/about.jsp) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

## PEX5S,L:Cargo binds PEX13:PEX14:PEX2:PEX10:PEX12 (Docking and Translocation Module) ↗

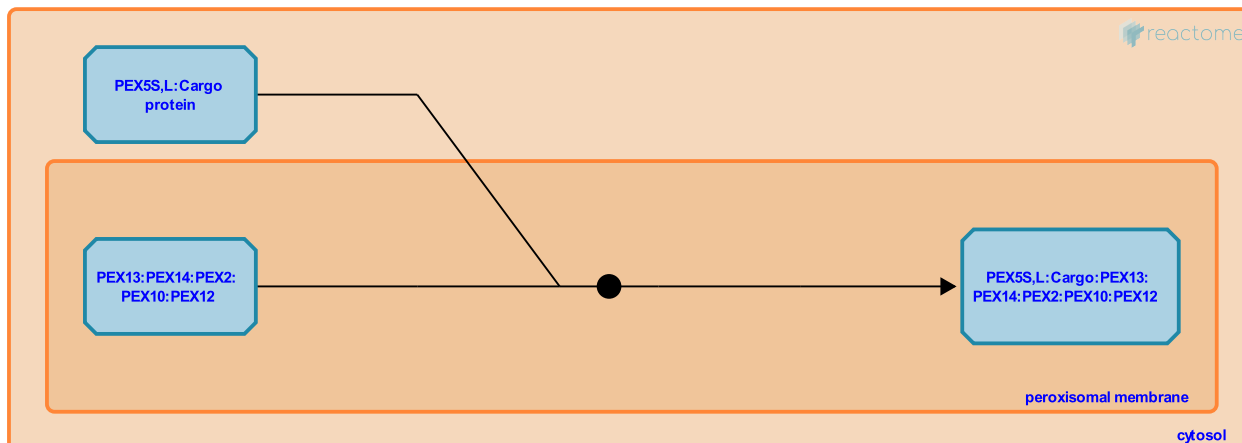
**Location:** Peroxisomal protein import

**Stable identifier:** R-SSC-9033236

**Type:** binding

**Compartments:** peroxisomal membrane

**Inferred from:** PEX5S,L:Cargo binds PEX13:PEX14:PEX2:PEX10:PEX12 (Docking and Translocation Module) (Homo sapiens)



This event has been computationally inferred from an event that has been demonstrated in another species.

The inference is based on the homology mapping from PANTHER. Briefly, reactions for which all involved PhysicalEntities (in input, output and catalyst) have a mapped orthologue/paralogue (for complexes at least 75% of components must have a mapping) are inferred to the other species. High level events are also inferred for these events to allow for easier navigation.

[More details and caveats of the event inference in Reactome.](http://www.pantherdb.org/about.jsp) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

**Followed by:** Cargo of PEX5S,L translocates from the cytosol to the peroxisomal matrix

## Cargo of PEX5S,L translocates from the cytosol to the peroxisomal matrix ↗

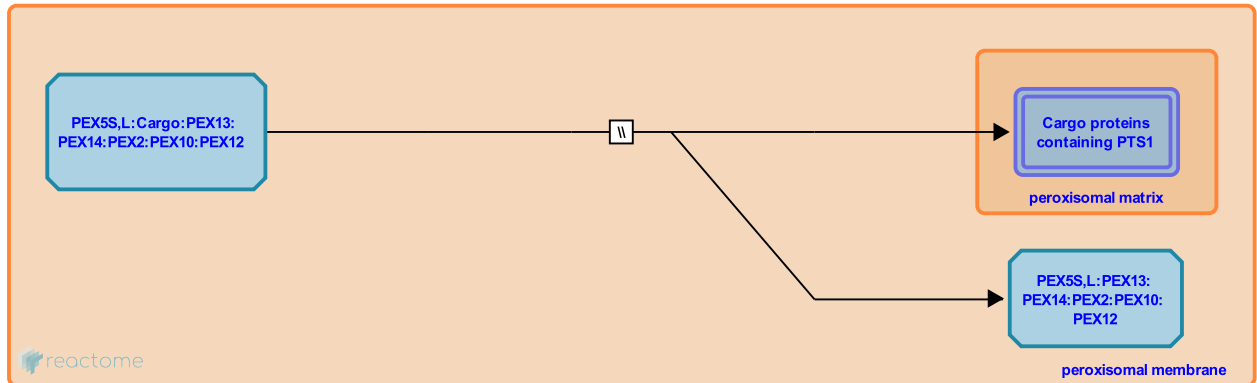
**Location:** Peroxisomal protein import

**Stable identifier:** R-SSC-9033235

**Type:** omitted

**Compartments:** peroxisomal membrane

**Inferred from:** Cargo of PEX5S,L translocates from the cytosol to the peroxisomal matrix (Homo sapiens)



This event has been computationally inferred from an event that has been demonstrated in another species.

The inference is based on the homology mapping from PANTHER. Briefly, reactions for which all involved PhysicalEntities (in input, output and catalyst) have a mapped orthologue/paralogue (for complexes at least 75% of components must have a mapping) are inferred to the other species. High level events are also inferred for these events to allow for easier navigation.

[More details and caveats of the event inference in Reactome.](#) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

**Preceded by:** PEX5S,L:Cargo binds PEX13:PEX14:PEX2:PEX10:PEX12 (Docking and Translocation Module)

**Followed by:** PEX2:PEX10:PEX12 binds PEX5S,L (in PEX5S:PEX13:PEX14) and Ub:UBE2D1,2,3

## PEX2:PEX10:PEX12 binds PEX5S,L (in PEX5S:PEX13:PEX14) and Ub:UBE2D1,2,3 ↗

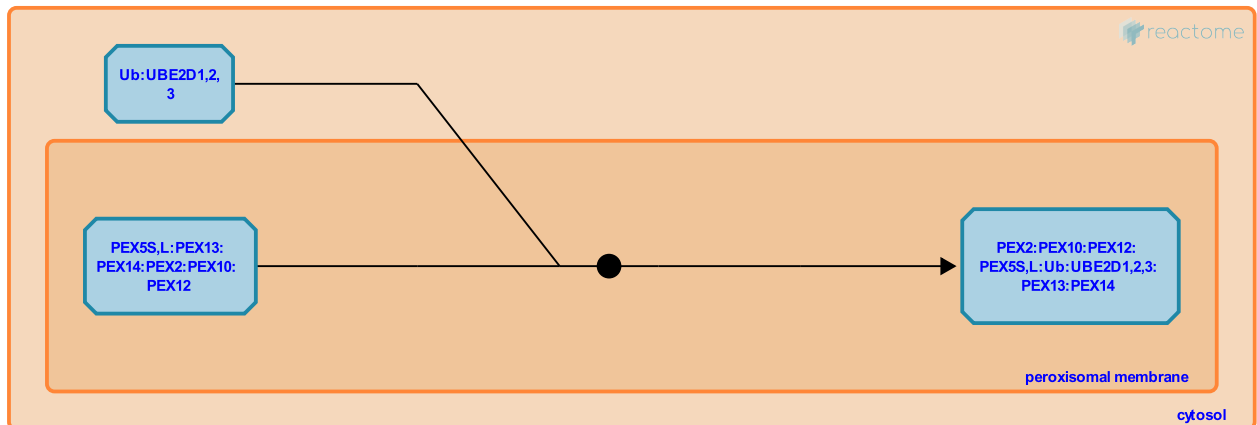
**Location:** Peroxisomal protein import

**Stable identifier:** R-SSC-8953917

**Type:** binding

**Compartments:** peroxisomal membrane

**Inferred from:** PEX2:PEX10:PEX12 binds PEX5S,L (in PEX5S:PEX13:PEX14) and Ub:UBE2D1,2,3 (Homo sapiens)



This event has been computationally inferred from an event that has been demonstrated in another species.

The inference is based on the homology mapping from PANTHER. Briefly, reactions for which all involved PhysicalEntities (in input, output and catalyst) have a mapped orthologue/paralogue (for complexes at least 75% of components must have a mapping) are inferred to the other species. High level events are also inferred for these events to allow for easier navigation.

[More details and caveats of the event inference in Reactome.](http://www.pantherdb.org/about.jsp) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

**Preceded by:** Cargo of PEX5S,L translocates from the cytosol to the peroxisomal matrix

**Followed by:** PEX2:PEX10:PEX12 monoubiquitinates PEX5S,L at cysteine-11

## PEX2:PEX10:PEX12 monoubiquitinates PEX5S,L at cysteine-11 [↗](#)

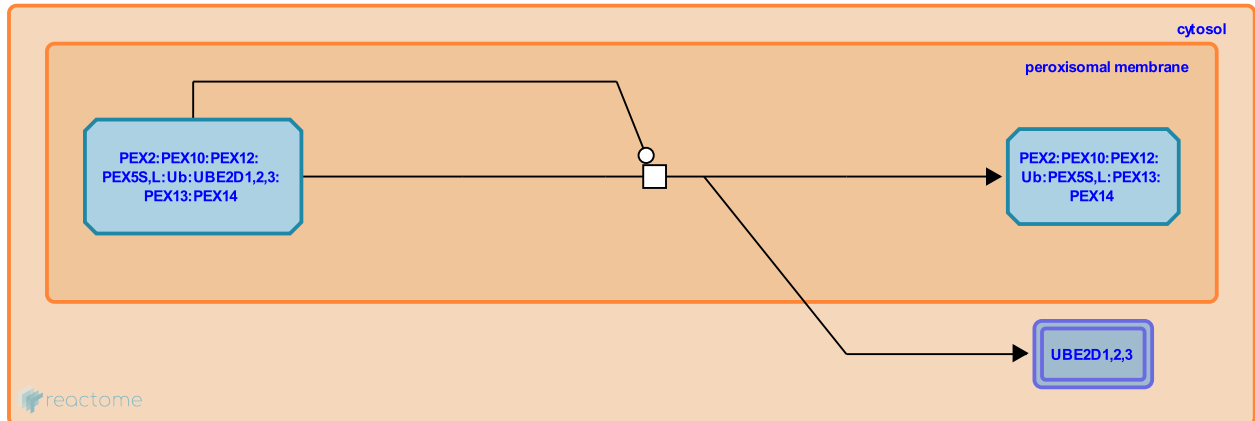
**Location:** [Peroxisomal protein import](#)

**Stable identifier:** R-SSC-8953946

**Type:** transition

**Compartments:** peroxisomal membrane

**Inferred from:** [PEX2:PEX10:PEX12 monoubiquitinates PEX5S,L at cysteine-11 \(Homo sapiens\)](#)



This event has been computationally inferred from an event that has been demonstrated in another species.

The inference is based on the homology mapping from PANTHER. Briefly, reactions for which all involved PhysicalEntities (in input, output and catalyst) have a mapped orthologue/paralogue (for complexes at least 75% of components must have a mapping) are inferred to the other species. High level events are also inferred for these events to allow for easier navigation.

[More details and caveats of the event inference in Reactome.](#) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

**Preceded by:** [PEX2:PEX10:PEX12 binds PEX5S,L \(in PEX5S:PEX13:PEX14\)](#) and [Ub:UBE2D1,2,3](#)

**Followed by:** [PEX2:PEX10:PEX12:Ub:PEX5S,L:PEX13:PEX14 binds PEX1:PEX6:PEX26](#) and [ZFAND6](#)

## PEX2:PEX10:PEX12:Ub:PEX5S,L:PEX13:PEX14 binds PEX1:PEX6:PEX26 and ZFAND6



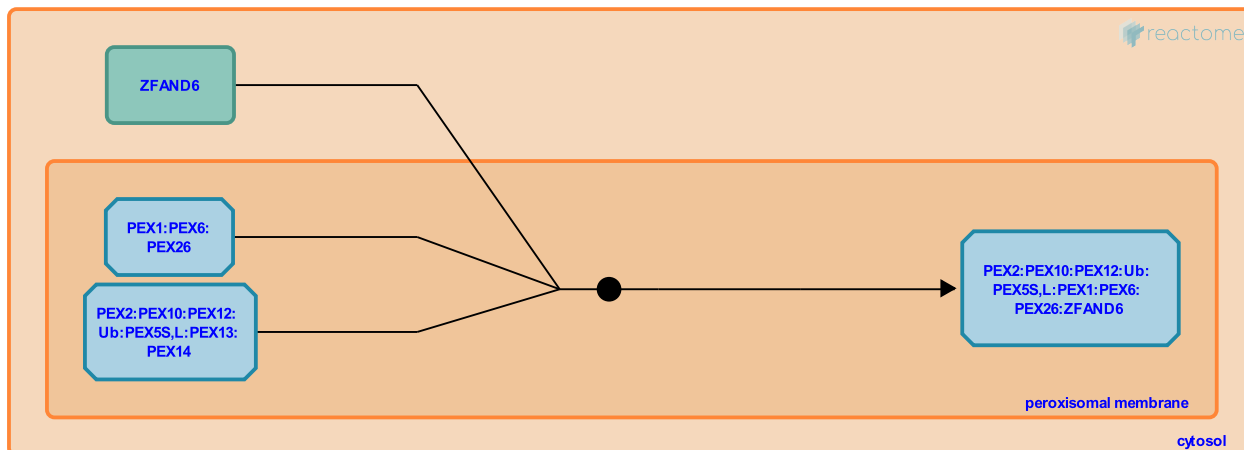
**Location:** Peroxisomal protein import

**Stable identifier:** R-SSC-9033533

**Type:** binding

**Compartments:** peroxisomal membrane

**Inferred from:** PEX2:PEX10:PEX12:Ub:PEX5S,L:PEX13:PEX14 binds PEX1:PEX6:PEX26 and ZFAND6 (Homo sapiens)



This event has been computationally inferred from an event that has been demonstrated in another species.

The inference is based on the homology mapping from PANTHER. Briefly, reactions for which all involved PhysicalEntities (in input, output and catalyst) have a mapped orthologue/paralogue (for complexes at least 75% of components must have a mapping) are inferred to the other species. High level events are also inferred for these events to allow for easier navigation.

[More details and caveats of the event inference in Reactome.](http://www.pantherdb.org/about.jsp) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

**Preceded by:** PEX2:PEX10:PEX12 monoubiquitinates PEX5S,L at cysteine-11



## PEX7 binds cargo proteins containing PTS2 ↗

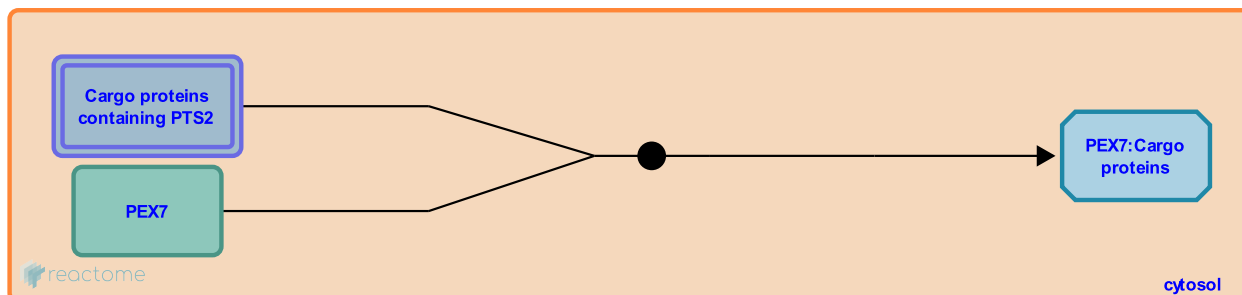
**Location:** [Peroxisomal protein import](#)

**Stable identifier:** R-SSC-9033232

**Type:** binding

**Compartments:** cytosol

**Inferred from:** [PEX7 binds cargo proteins containing PTS2 \(Homo sapiens\)](#)



This event has been computationally inferred from an event that has been demonstrated in another species.

The inference is based on the homology mapping from PANTHER. Briefly, reactions for which all involved PhysicalEntities (in input, output and catalyst) have a mapped orthologue/paralogue (for complexes at least 75% of components must have a mapping) are inferred to the other species. High level events are also inferred for these events to allow for easier navigation.

[More details and caveats of the event inference in Reactome.](#) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

## Cargo of PEX5L:PEX7 translocates from the cytosol to the peroxisomal matrix ↗

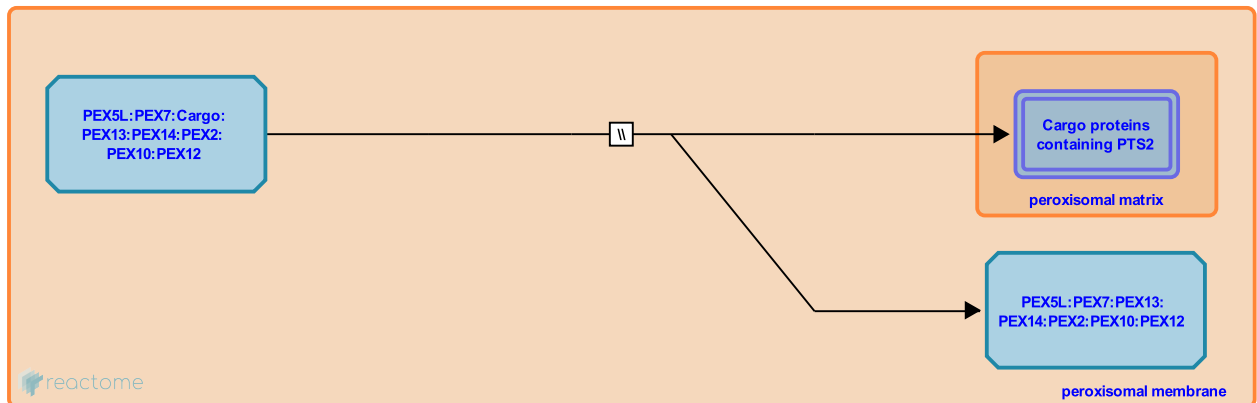
**Location:** Peroxisomal protein import

**Stable identifier:** R-SSC-9033514

**Type:** omitted

**Compartments:** peroxisomal membrane

**Inferred from:** Cargo of PEX5L:PEX7 translocates from the cytosol to the peroxisomal matrix (Homo sapiens)



This event has been computationally inferred from an event that has been demonstrated in another species.

The inference is based on the homology mapping from PANTHER. Briefly, reactions for which all involved PhysicalEntities (in input, output and catalyst) have a mapped orthologue/paralogue (for complexes at least 75% of components must have a mapping) are inferred to the other species. High level events are also inferred for these events to allow for easier navigation.

[More details and caveats of the event inference in Reactome.](https://www.reactome.org/docs/inferring_events.html) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

**Followed by:** PEX2:PEX10:PEX12 binds PEX5L (in PEX5L:PEX7:PEX13:PEX14:PEX2:PEX10:PEX12) and Ub:UBE2D1,2,3

**PEX2:PEX10:PEX12 binds PEX5L (in PEX5L:PEX7:PEX13:PEX14:PEX2:PEX10:PEX12) and Ub:UBE2D1,2,3 ↗**

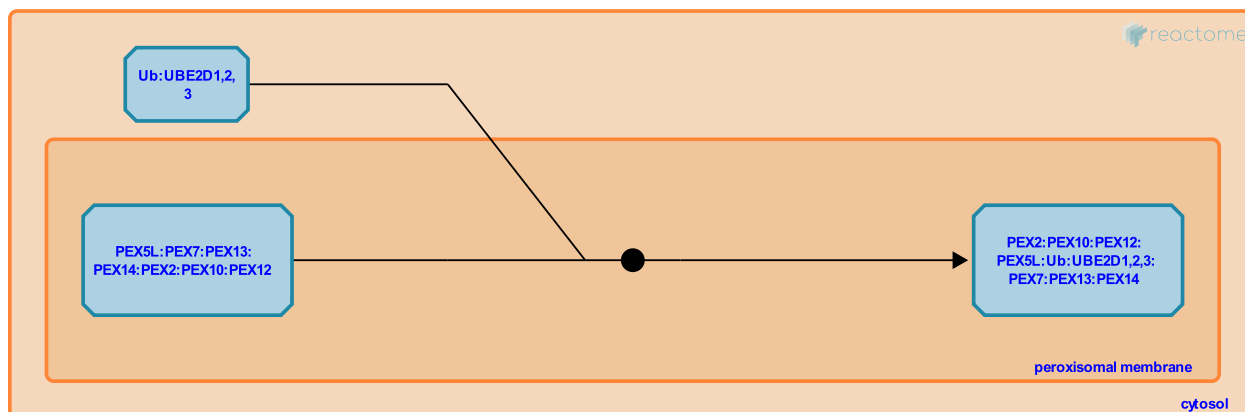
**Location:** Peroxisomal protein import

**Stable identifier:** R-SSC-9033527

**Type:** binding

**Compartments:** peroxisomal membrane

**Inferred from:** PEX2:PEX10:PEX12 binds PEX5L (in PEX5L:PEX7:PEX13:PEX14:PEX2:PEX10:PEX12) and Ub:UBE2D1,2,3 (Homo sapiens)



This event has been computationally inferred from an event that has been demonstrated in another species.

The inference is based on the homology mapping from PANTHER. Briefly, reactions for which all involved PhysicalEntities (in input, output and catalyst) have a mapped orthologue/paralogue (for complexes at least 75% of components must have a mapping) are inferred to the other species. High level events are also inferred for these events to allow for easier navigation.

[More details and caveats of the event inference in Reactome.](http://www.pantherdb.org/about.jsp) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

**Preceded by:** Cargo of PEX5L:PEX7 translocates from the cytosol to the peroxisomal matrix

**Followed by:** PEX2:PEX10:PEX12 monoubiquitinates PEX5L at cysteine-11

## PEX2:PEX10:PEX12 monoubiquitinates PEX5L at cysteine-11 [↗](#)

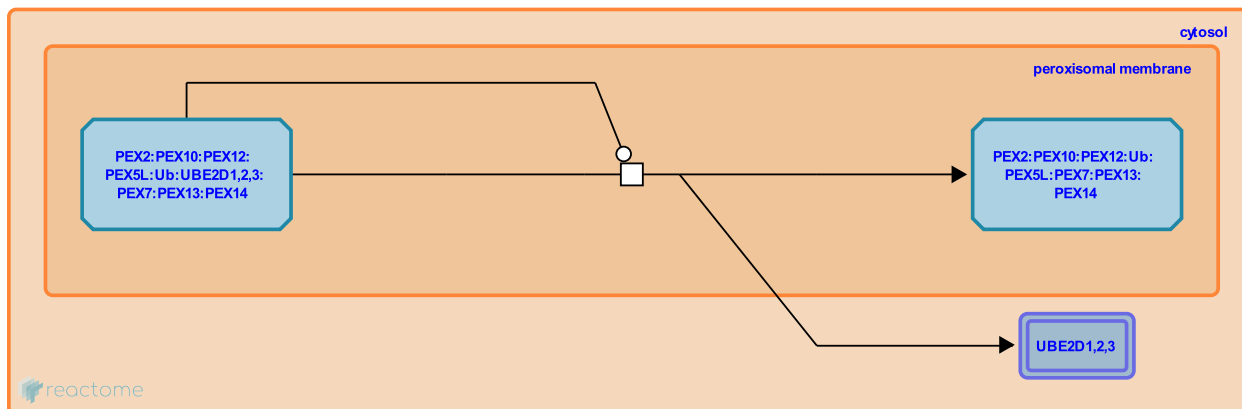
**Location:** [Peroxisomal protein import](#)

**Stable identifier:** R-SSC-9033485

**Type:** transition

**Compartments:** peroxisomal membrane

**Inferred from:** [PEX2:PEX10:PEX12 monoubiquitinates PEX5L at cysteine-11 \(Homo sapiens\)](#)



This event has been computationally inferred from an event that has been demonstrated in another species.

The inference is based on the homology mapping from PANTHER. Briefly, reactions for which all involved PhysicalEntities (in input, output and catalyst) have a mapped orthologue/paralogue (for complexes at least 75% of components must have a mapping) are inferred to the other species. High level events are also inferred for these events to allow for easier navigation.

[More details and caveats of the event inference in Reactome.](#) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

**Preceded by:** [PEX2:PEX10:PEX12 binds PEX5L \(in PEX5L:PEX7:PEX13:PEX14:PEX2:PEX10:PEX12\)](#) and [Ub:UBE2D1,2,3](#)

**Followed by:** [PEX2:PEX10:PEX12:Ub:PEX5L:PEX7:PEX13:PEX14 binds PEX1:PEX6:PEX26](#) and [ZFAND6](#)

## PEX2:PEX10:PEX12:Ub:PEX5L:PEX7:PEX13:PEX14 binds PEX1:PEX6:PEX26 and ZFAND6 ↗

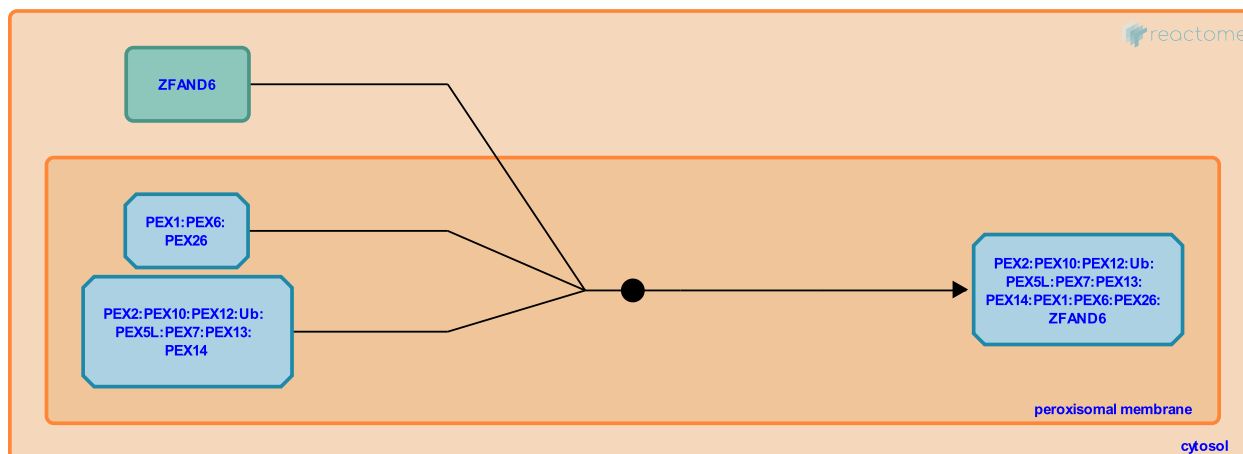
**Location:** Peroxisomal protein import

**Stable identifier:** R-SSC-9033516

**Type:** binding

**Compartments:** peroxisomal membrane

**Inferred from:** PEX2:PEX10:PEX12:Ub:PEX5L:PEX7:PEX13:PEX14 binds PEX1:PEX6:PEX26 and ZFAND6 (Homo sapiens)



This event has been computationally inferred from an event that has been demonstrated in another species.

The inference is based on the homology mapping from PANTHER. Briefly, reactions for which all involved PhysicalEntities (in input, output and catalyst) have a mapped orthologue/paralogue (for complexes at least 75% of components must have a mapping) are inferred to the other species. High level events are also inferred for these events to allow for easier navigation.

[More details and caveats of the event inference in Reactome.](http://www.pantherdb.org/about.jsp) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

**Preceded by:** PEX2:PEX10:PEX12 monoubiquitinates PEX5L at cysteine-11

**Followed by:** PEX1:PEX6:PEX26:ZFAND6 dissociates Ub:PEX5L and PEX7 from PEX14:PEX13:PEX2:PEX10:PEX12 and translocates PEX5L and PEX7 from the peroxisomal membrane to the cytosol

**PEX1:PEX6:PEX26:ZFAND6 dissociates Ub:PEX5L and PEX7 from PEX14:PEX13:PEX2:PEX10:PEX12 and translocates PEX5L and PEX7 from the peroxisomal membrane to the cytosol** ↗

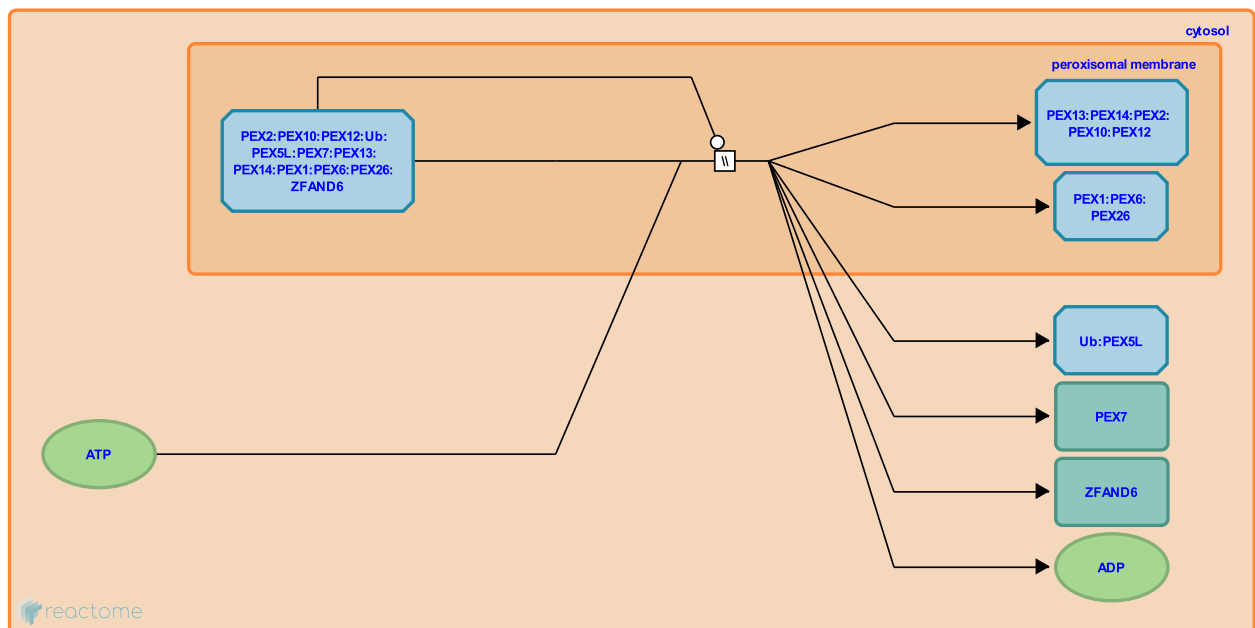
**Location:** Peroxisomal protein import

**Stable identifier:** R-SSC-9033499

**Type:** omitted

**Compartments:** peroxisomal membrane

**Inferred from:** PEX1:PEX6:PEX26:ZFAND6 dissociates Ub:PEX5L and PEX7 from PEX14:PEX13:PEX2:PEX10:PEX12 and translocates PEX5L and PEX7 from the peroxisomal membrane to the cytosol (Homo sapiens)



This event has been computationally inferred from an event that has been demonstrated in another species.

The inference is based on the homology mapping from PANTHER. Briefly, reactions for which all involved PhysicalEntities (in input, output and catalyst) have a mapped orthologue/paralogue (for complexes at least 75% of components must have a mapping) are inferred to the other species. High level events are also inferred for these events to allow for easier navigation.

[More details and caveats of the event inference in Reactome.](http://www.pantherdb.org/about.jsp) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

**Preceded by:** PEX2:PEX10:PEX12:Ub:PEX5L:PEX7:PEX13:PEX14 binds PEX1:PEX6:PEX26 and ZFAND6

**Followed by:** USP9X binds Ub:PEX5L

## USP9X binds Ub:PEX5L ↗

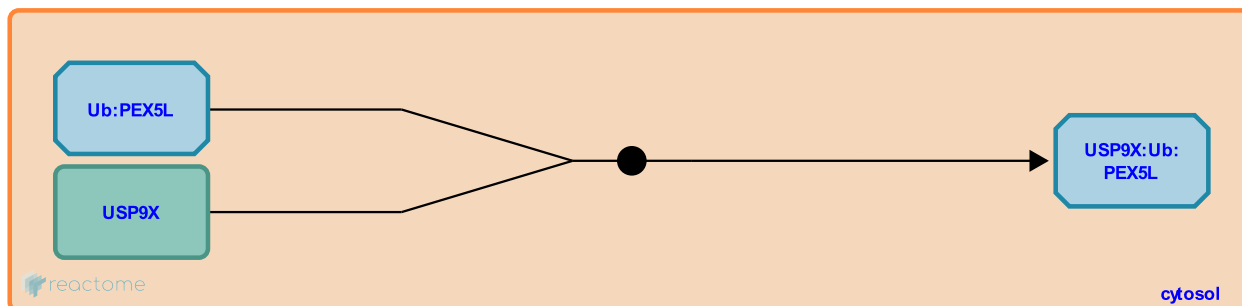
**Location:** Peroxisomal protein import

**Stable identifier:** R-SSC-9033509

**Type:** binding

**Compartments:** cytosol

**Inferred from:** USP9X binds Ub:PEX5L (Homo sapiens)



This event has been computationally inferred from an event that has been demonstrated in another species.

The inference is based on the homology mapping from PANTHER. Briefly, reactions for which all involved PhysicalEntities (in input, output and catalyst) have a mapped orthologue/paralogue (for complexes at least 75% of components must have a mapping) are inferred to the other species. High level events are also inferred for these events to allow for easier navigation.

[More details and caveats of the event inference in Reactome.](http://www.pantherdb.org/about.jsp) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

**Preceded by:** PEX1:PEX6:PEX26:ZFAND6 dissociates Ub:PEX5L and PEX7 from PEX14:PEX13:PEX2:PEX10:PEX12 and translocates PEX5L and PEX7 from the peroxisomal membrane to the cytosol

**Followed by:** USP9X hydrolyzes Ub:PEX5L yielding PEX5L and Ubiquitin

## USP9X hydrolyzes Ub:PEX5L yielding PEX5L and Ubiquitin ↗

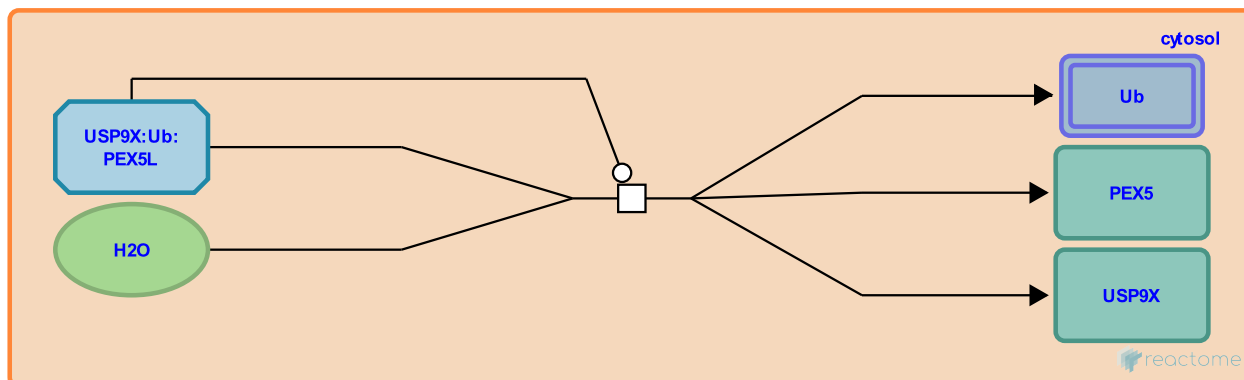
**Location:** [Peroxisomal protein import](#)

**Stable identifier:** R-SSC-9033491

**Type:** transition

**Compartments:** cytosol

**Inferred from:** [USP9X hydrolyzes Ub:PEX5L yielding PEX5L and Ubiquitin \(Homo sapiens\)](#)



This event has been computationally inferred from an event that has been demonstrated in another species.

The inference is based on the homology mapping from PANTHER. Briefly, reactions for which all involved PhysicalEntities (in input, output and catalyst) have a mapped orthologue/paralogue (for complexes at least 75% of components must have a mapping) are inferred to the other species. High level events are also inferred for these events to allow for easier navigation.

[More details and caveats of the event inference in Reactome.](#) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

**Preceded by:** [USP9X binds Ub:PEX5L](#)



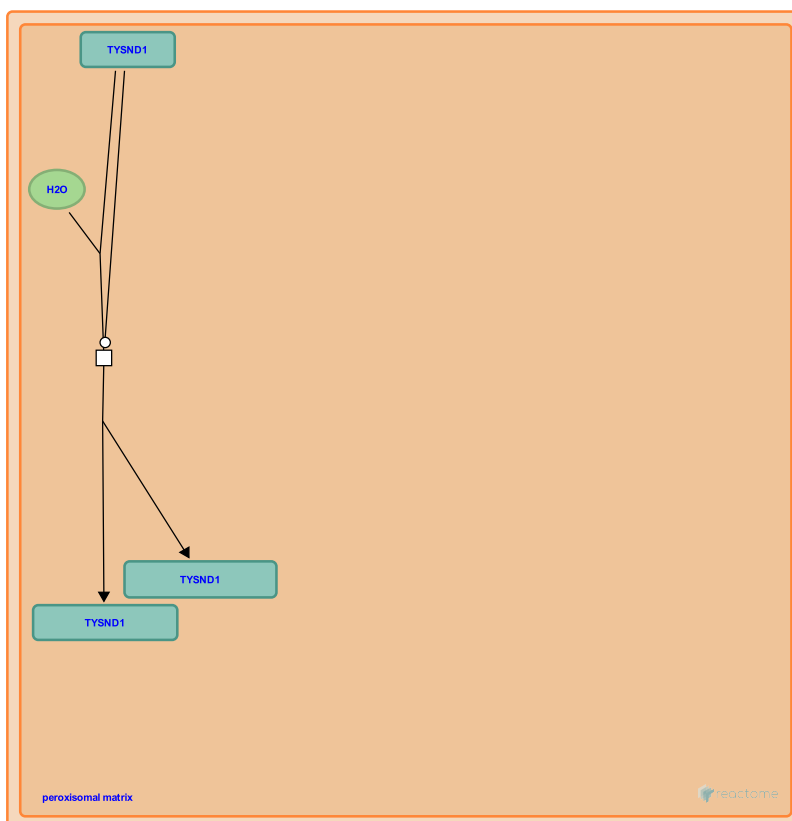
## TYSND1 cleaves peroxisomal proteins ↗

**Location:** Peroxisomal protein import

**Stable identifier:** R-SSC-9033500

**Compartments:** peroxisomal matrix

**Inferred from:** [TYSND1 cleaves peroxisomal proteins \(Homo sapiens\)](#)



This event has been computationally inferred from an event that has been demonstrated in another species.

The inference is based on the homology mapping from PANTHER. Briefly, reactions for which all involved PhysicalEntities (in input, output and catalyst) have a mapped orthologue/paralogue (for complexes at least 75% of components must have a mapping) are inferred to the other species. High level events are also inferred for these events to allow for easier navigation.

[More details and caveats of the event inference in Reactome.](#) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

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