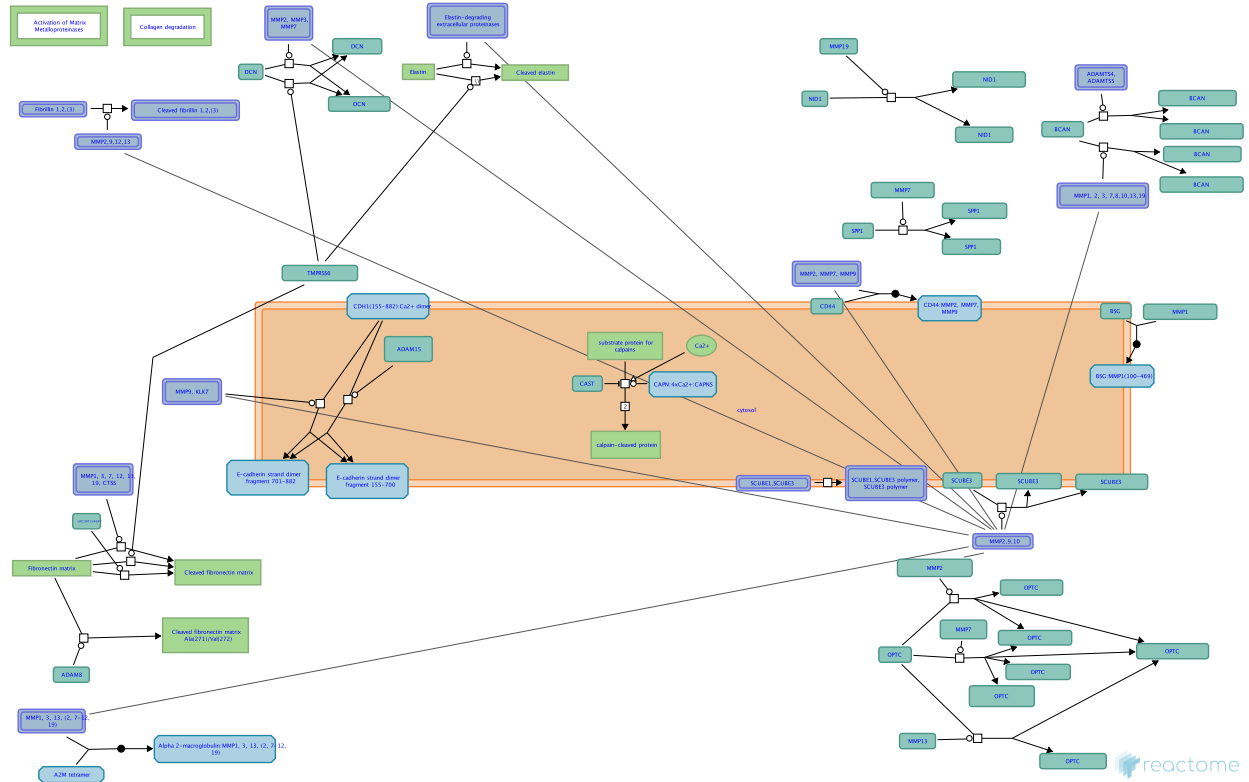


# Degradation of the extracellular matrix



European Bioinformatics Institute, New York University Langone Medical Center, Ontario Institute for Cancer Research, Oregon Health and Science University.

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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. [↗](#)
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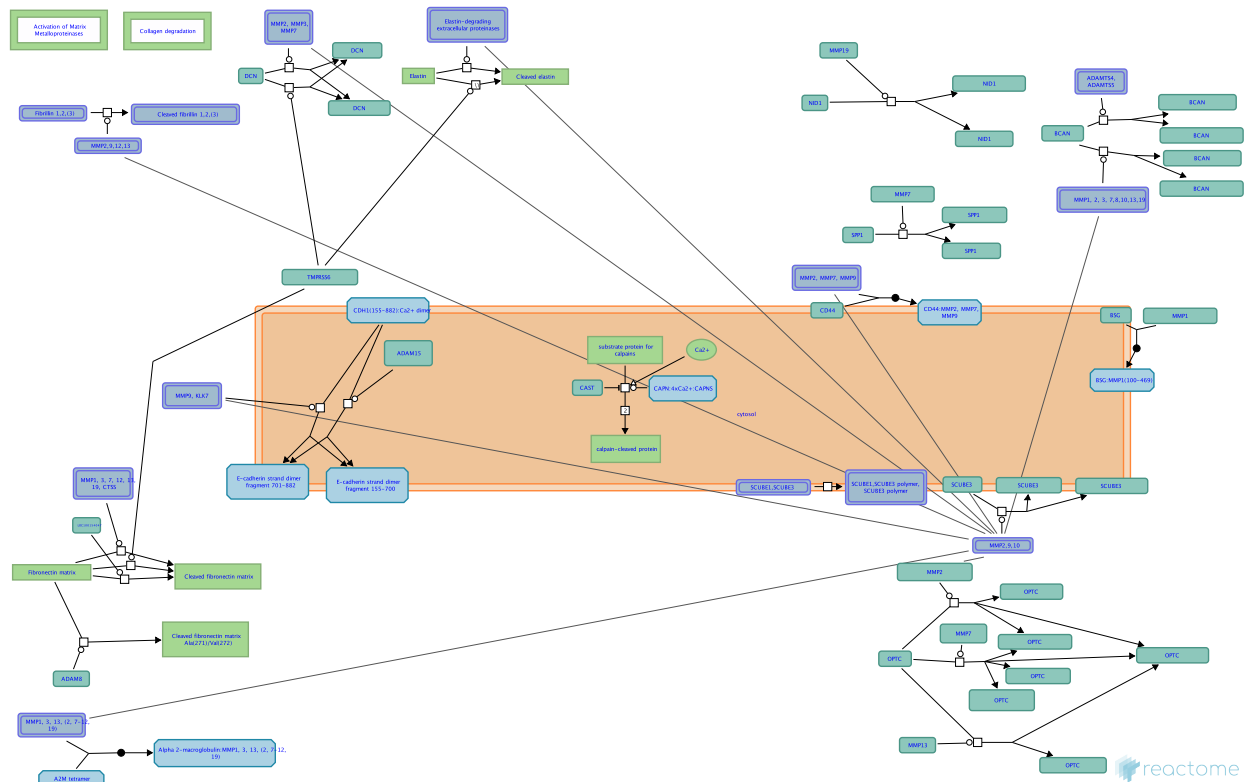
Reactome database release: 77

This document contains 3 pathways and 24 reactions ([see Table of Contents](#))

## Degradation of the extracellular matrix ↗

Stable identifier: R-SSC-1474228

Inferred from: Degradation of the extracellular 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.](/electronic_inference_compara.html) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

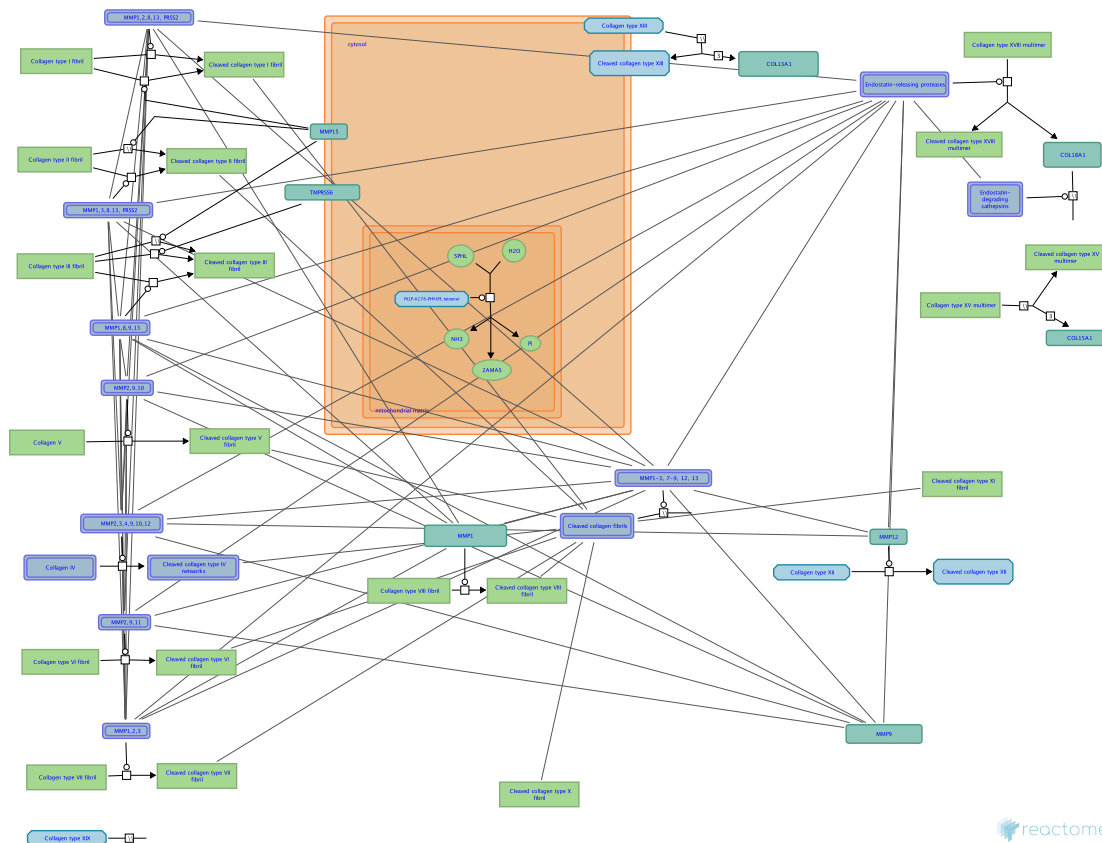


## Collagen degradation ↗

**Location:** Degradation of the extracellular matrix

**Stable identifier:** R-SSC-1442490

**Inferred from:** Collagen degradation (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.](/electronic_inference_compara.html) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

## Elastin degradation by elastin-degrading extracellular proteinases ↗

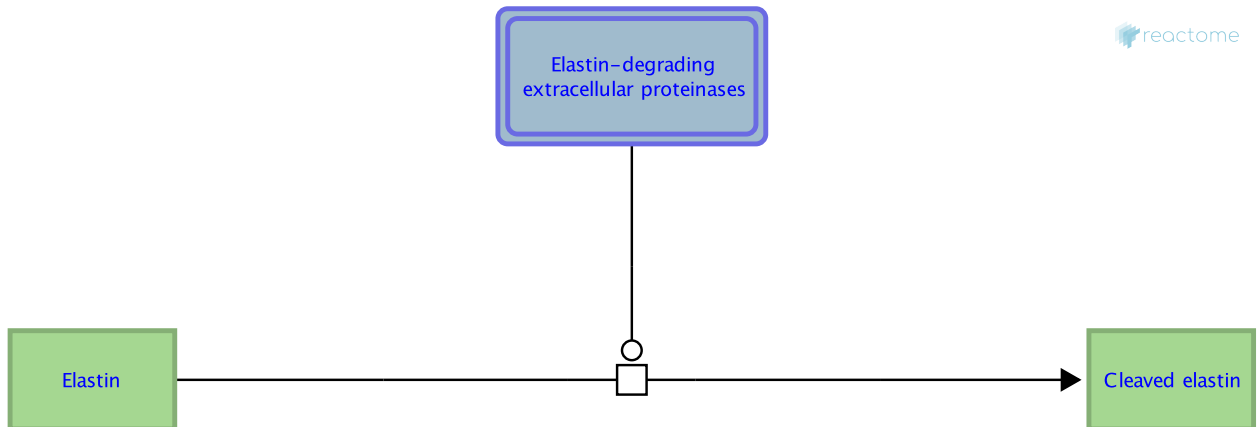
**Location:** [Degradation of the extracellular matrix](#)

**Stable identifier:** R-SSC-1566962

**Type:** transition

**Compartments:** extracellular region

**Inferred from:** [Elastin degradation by elastin-degrading extracellular proteinases \(Homo sapiens\)](#)



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.](/electronic_inference_compara.html) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

## Elastin degradation by MMP14 ↗

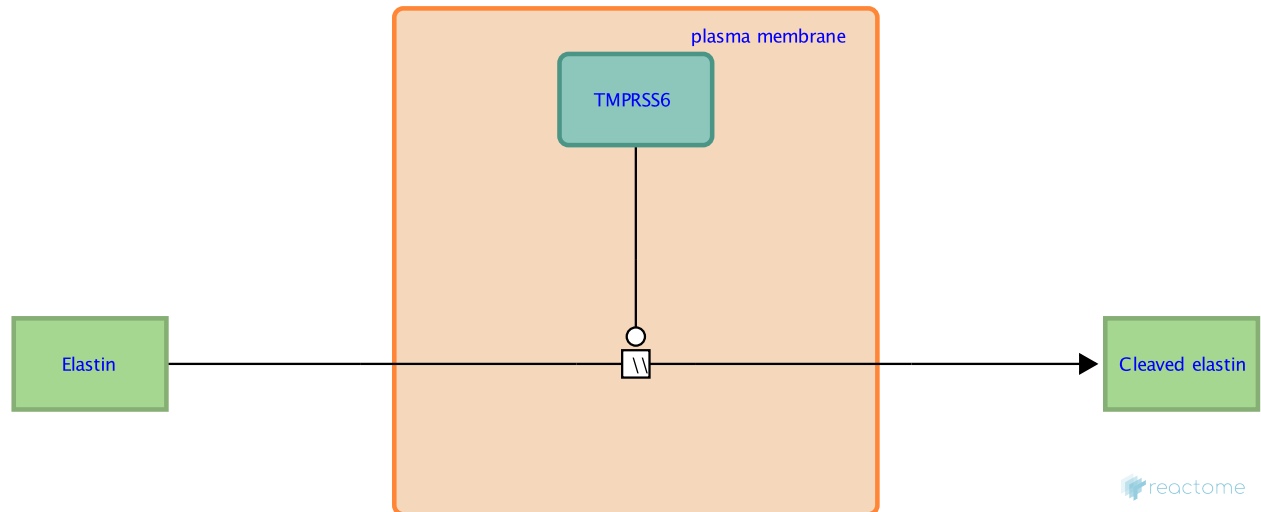
**Location:** [Degradation of the extracellular matrix](#)

**Stable identifier:** R-SSC-2514790

**Type:** omitted

**Compartments:** plasma membrane, extracellular region

**Inferred from:** [Elastin degradation by MMP14 \(Homo sapiens\)](#)



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.](/electronic_inference_compara.html) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

## Fibrillin 1, 2,(3) degradation by MMP2, 9, 12 and 13 ↗

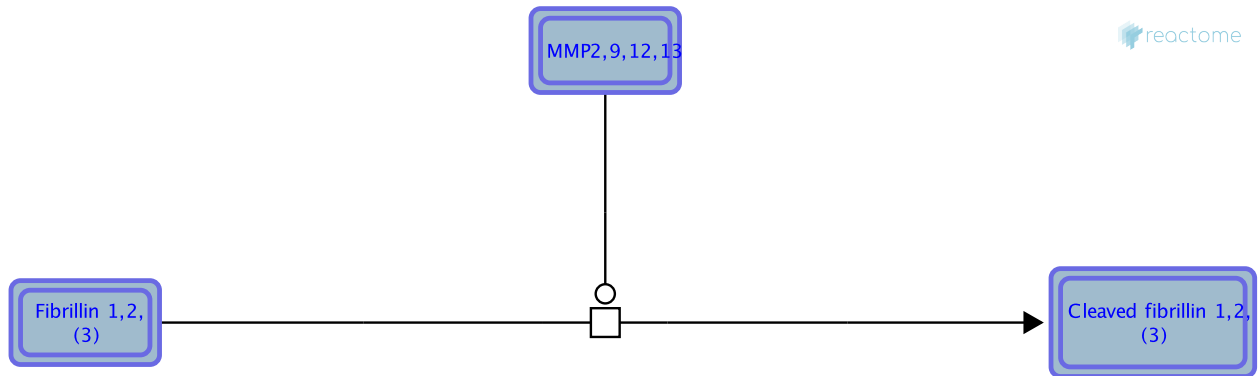
**Location:** [Degradation of the extracellular matrix](#)

**Stable identifier:** R-SSC-2485148

**Type:** transition

**Compartments:** extracellular region

**Inferred from:** [Fibrillin 1, 2,\(3\) degradation by MMP2, 9, 12 and 13 \(Homo sapiens\)](#)



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.](/electronic_inference_compara.html) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>



## Fibronectin degradation by MMP1, 3, 7, 12, 13, 19, CTSS ↗

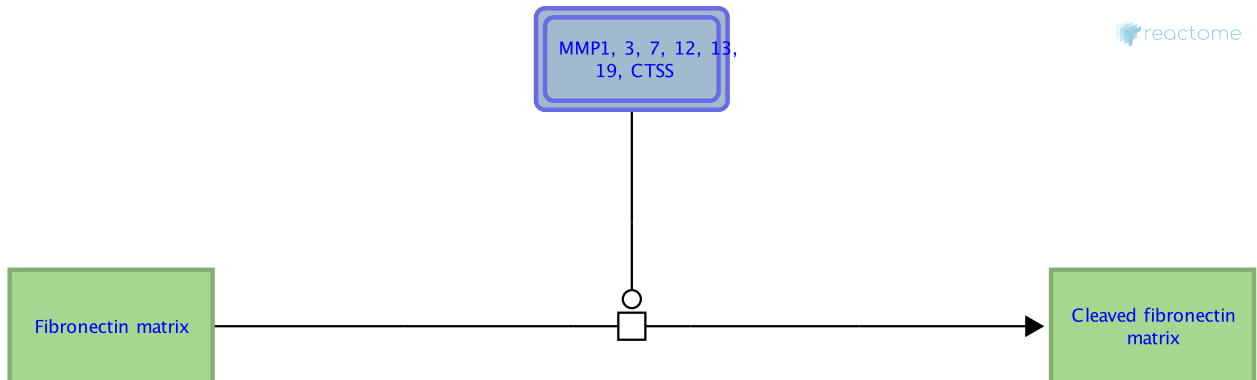
**Location:** [Degradation of the extracellular matrix](#)

**Stable identifier:** R-SSC-1566981

**Type:** transition

**Compartments:** extracellular region

**Inferred from:** [Fibronectin degradation by MMP1, 3, 7, 12, 13, 19, CTSS \(Homo sapiens\)](#)



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.](/electronic_inference_compara.html) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

## Fibronectin degradation by MMP14, TMPRSS6 ↗

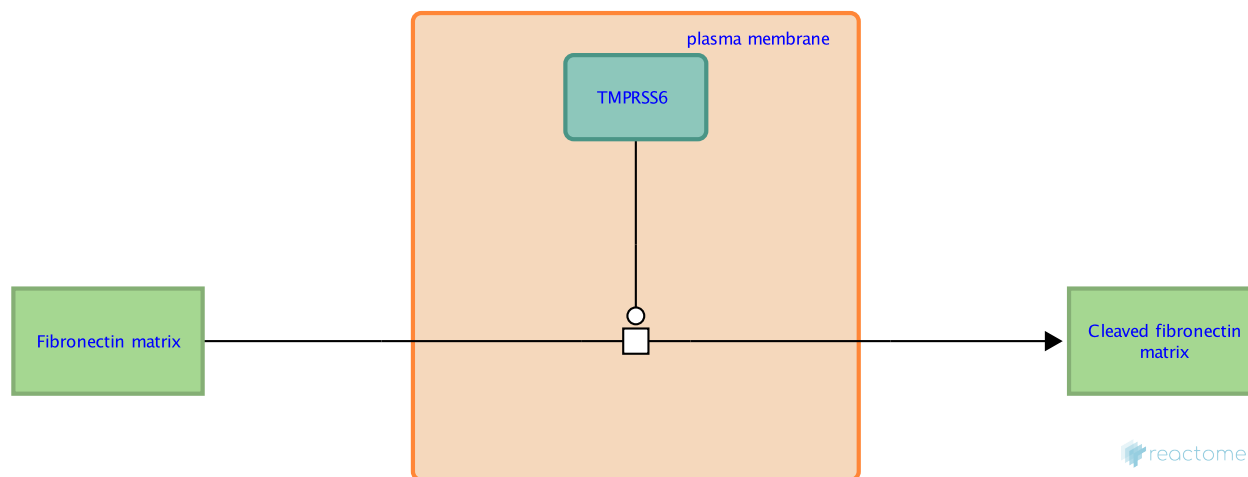
**Location:** [Degradation of the extracellular matrix](#)

**Stable identifier:** R-SSC-2533950

**Type:** transition

**Compartments:** plasma membrane, extracellular region

**Inferred from:** [Fibronectin degradation by MMP14, TMPRSS6 \(Homo sapiens\)](#)



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.](/electronic_inference_compara.html) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

## Fibronectin degradation by CTSG ↗

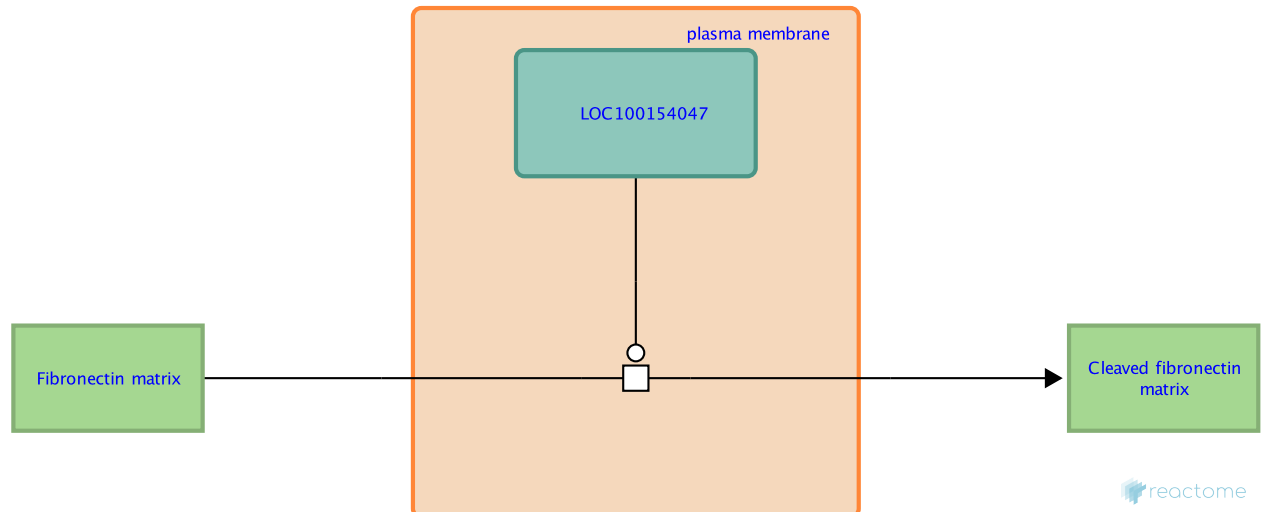
**Location:** [Degradation of the extracellular matrix](#)

**Stable identifier:** R-SSC-3785684

**Type:** transition

**Compartments:** plasma membrane

**Inferred from:** [Fibronectin degradation by CTSG \(Homo sapiens\)](#)



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.](/electronic_inference_compara.html) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

## Fibronectin degradation by ADAM8 ↗

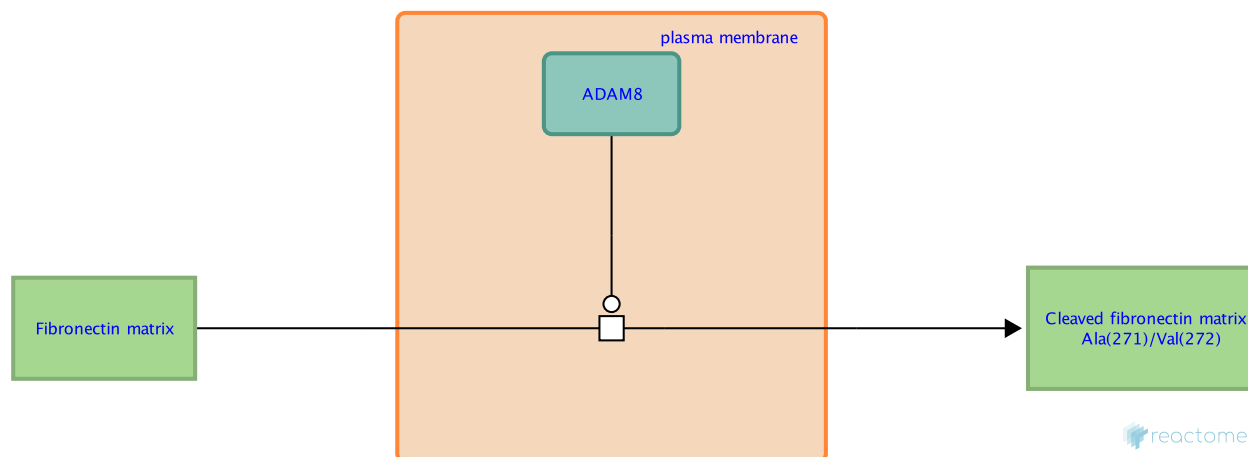
**Location:** [Degradation of the extracellular matrix](#)

**Stable identifier:** R-SSC-3788061

**Type:** transition

**Compartments:** plasma membrane

**Inferred from:** [Fibronectin degradation by ADAM8 \(Homo sapiens\)](#)



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.](/electronic_inference_compara.html) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

## NID1 degradation by MMP19 ↗

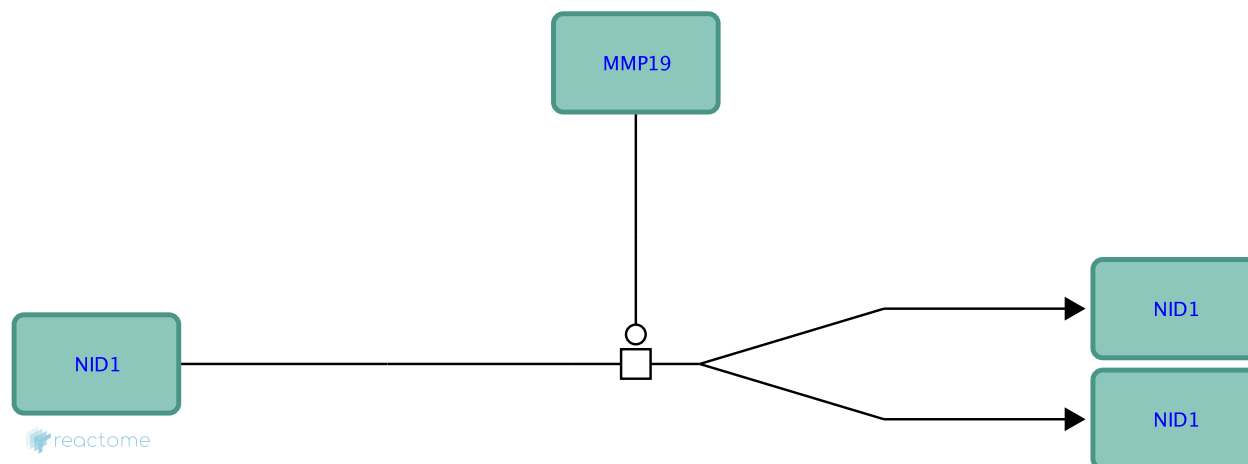
**Location:** [Degradation of the extracellular matrix](#)

**Stable identifier:** R-SSC-3791319

**Type:** transition

**Compartments:** extracellular region

**Inferred from:** [NID1 degradation by MMP19 \(Homo sapiens\)](#)



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.](/electronic_inference_compara.html) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

## Brevican degradation by ADAMTS4, ADAMTS5 ↗

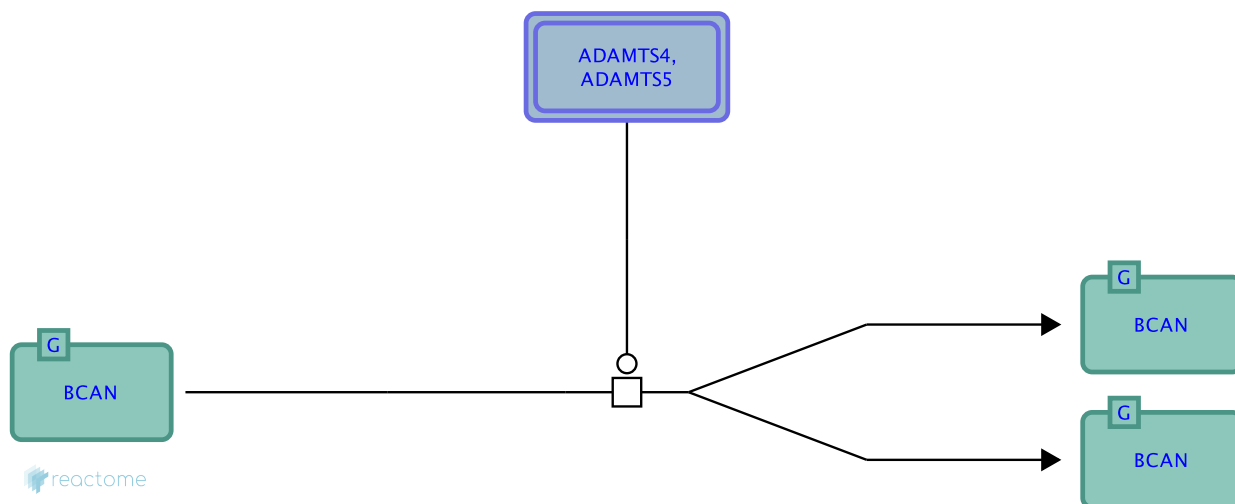
**Location:** [Degradation of the extracellular matrix](#)

**Stable identifier:** R-SSC-3788075

**Type:** transition

**Compartments:** extracellular region

**Inferred from:** [Brevican degradation by ADAMTS4, ADAMTS5 \(Homo sapiens\)](#)



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.](/electronic_inference_compara.html) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

## Brevican degradation by MMP1, 2, 3, 7,8,10,13,19 ↗

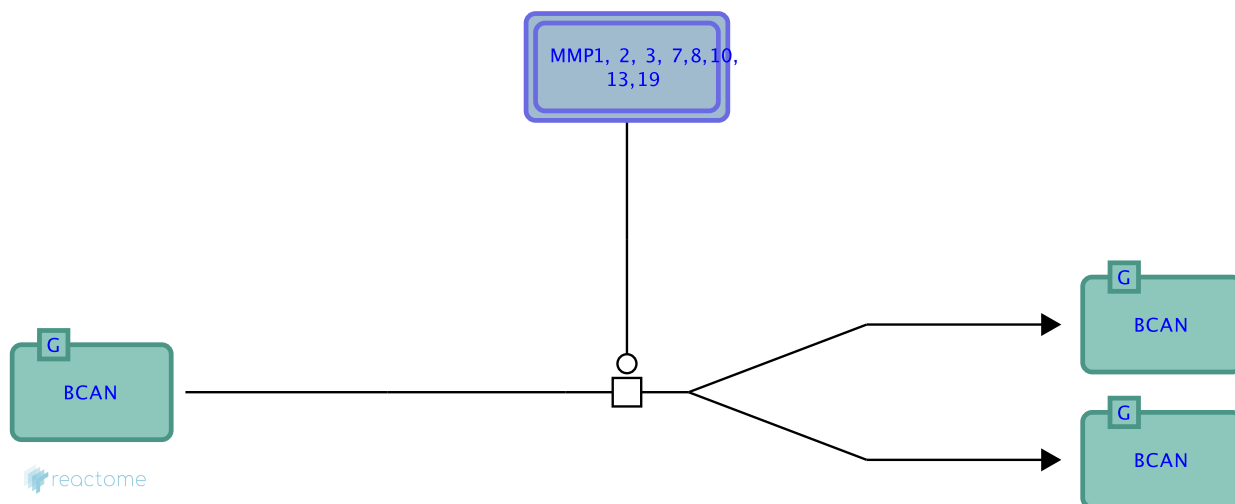
**Location:** [Degradation of the extracellular matrix](#)

**Stable identifier:** R-SSC-3791149

**Type:** transition

**Compartments:** extracellular region

**Inferred from:** [Brevican degradation by MMP1, 2, 3, 7,8,10,13,19 \(Homo sapiens\)](#)



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.](/electronic_inference_compara.html) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

## DCN (decorin) degradation by MMP2, MMP3, MMP7 ↗

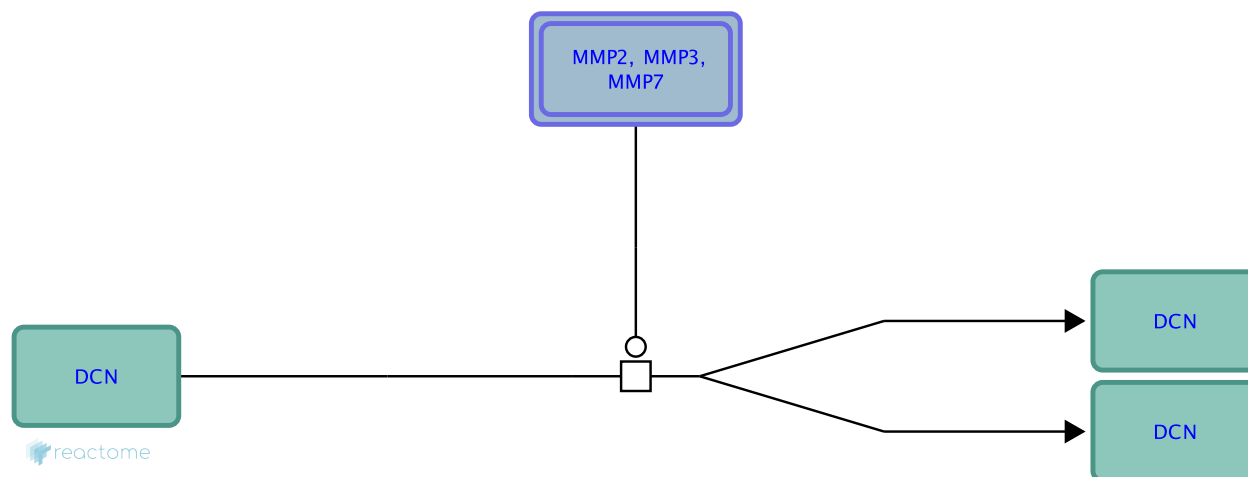
**Location:** [Degradation of the extracellular matrix](#)

**Stable identifier:** R-SSC-2534248

**Type:** transition

**Compartments:** extracellular region

**Inferred from:** [DCN \(decorin\) degradation by MMP2, MMP3, MMP7 \(Homo sapiens\)](#)



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.](/electronic_inference_compara.html) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>



## DCN (decorin) degradation by MMP14 ↗

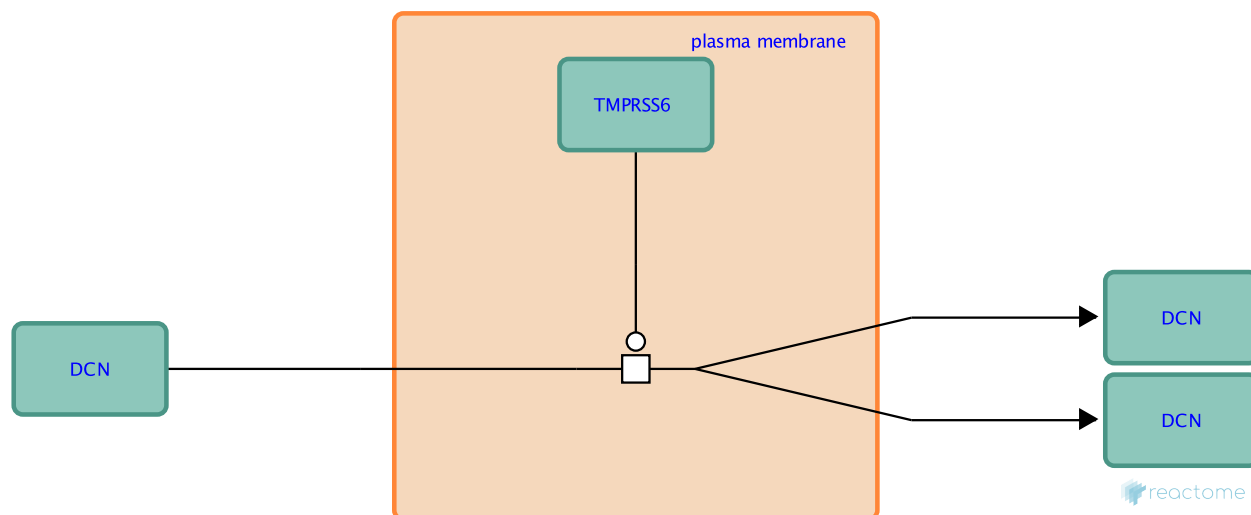
**Location:** [Degradation of the extracellular matrix](#)

**Stable identifier:** R-SSC-3828025

**Type:** transition

**Compartments:** plasma membrane, extracellular region

**Inferred from:** [DCN \(decorin\) degradation by MMP14 \(Homo sapiens\)](#)



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.](/electronic_inference_compara.html) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

## E-cadherin degradation by MMP9, KLK7 ↗

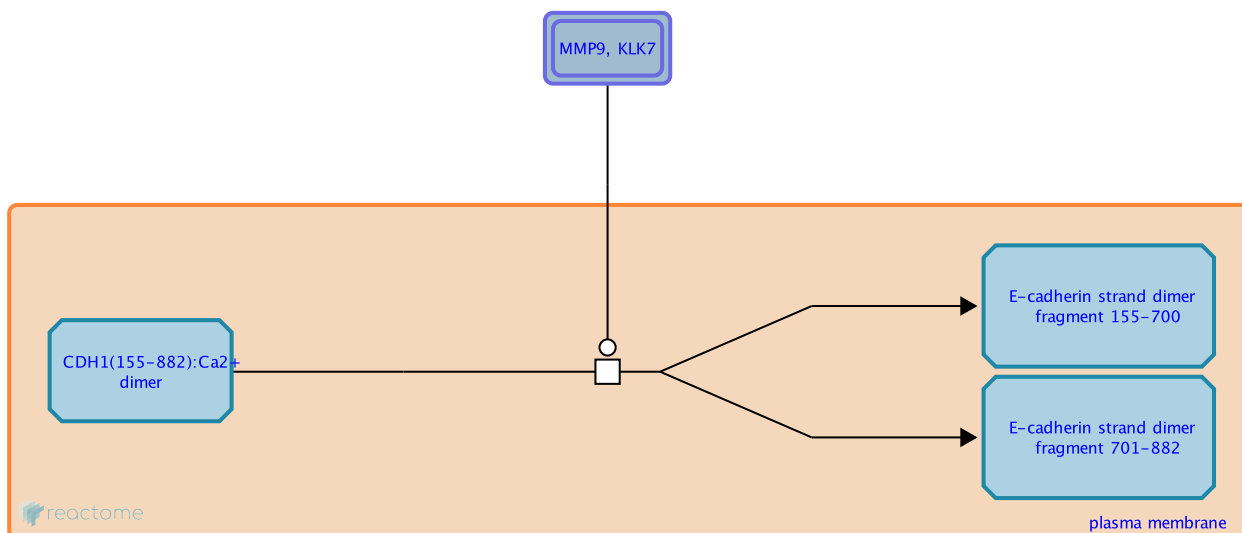
**Location:** [Degradation of the extracellular matrix](#)

**Stable identifier:** R-SSC-3827958

**Type:** transition

**Compartments:** plasma membrane

**Inferred from:** [E-cadherin degradation by MMP9, KLK7 \(Homo sapiens\)](#)



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.](/electronic_inference_compara.html) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

## E-cadherin degradation by ADAM10, ADAM15 ↗

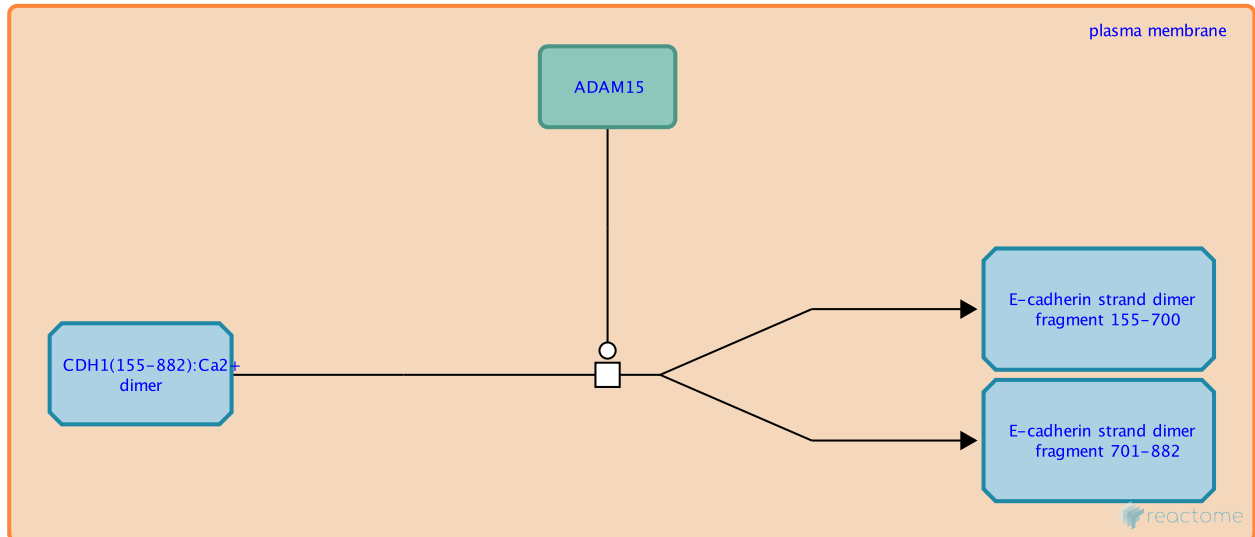
**Location:** [Degradation of the extracellular matrix](#)

**Stable identifier:** R-SSC-4224014

**Type:** transition

**Compartments:** plasma membrane

**Inferred from:** [E-cadherin degradation by ADAM10, ADAM15 \(Homo sapiens\)](#)



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.](/electronic_inference_compara.html) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

## MMP1,3,13 (2, 7-12, 19) binding by Alpha-2 macroglobulin ↗

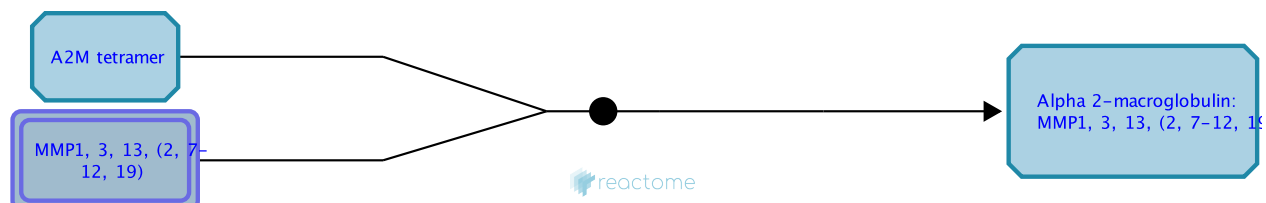
**Location:** [Degradation of the extracellular matrix](#)

**Stable identifier:** R-SSC-1454781

**Type:** binding

**Compartments:** extracellular region

**Inferred from:** [MMP1,3,13 \(2, 7-12, 19\) binding by Alpha-2 macroglobulin \(Homo sapiens\)](#)



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.](/electronic_inference_compara.html) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

## MMP2, MMP7, MMP9 bind CD44 ↗

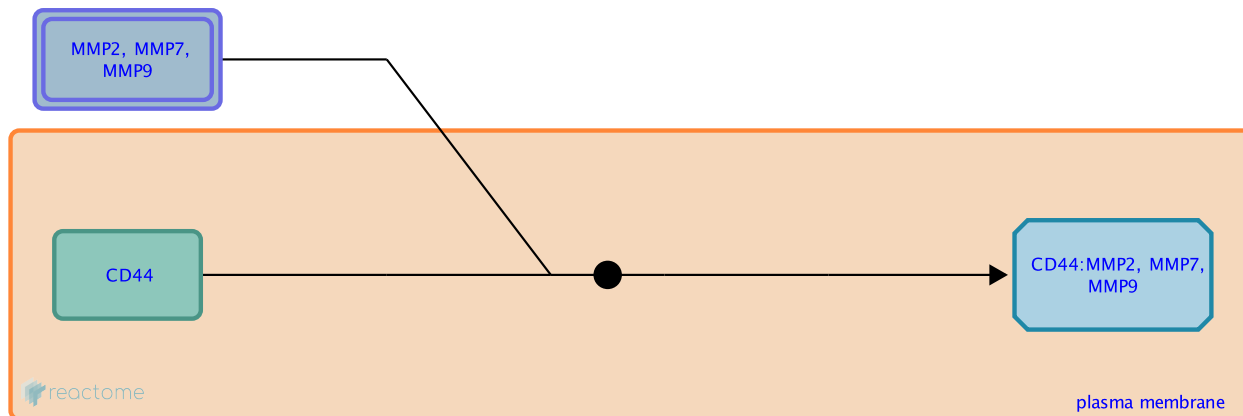
**Location:** [Degradation of the extracellular matrix](#)

**Stable identifier:** R-SSC-1454791

**Type:** binding

**Compartments:** plasma membrane, extracellular region

**Inferred from:** [MMP2, MMP7, MMP9 bind CD44 \(Homo sapiens\)](#)



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.](/electronic_inference_compara.html) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

## Basigin binds Matrix metalloproteinase-1 [↗](#)

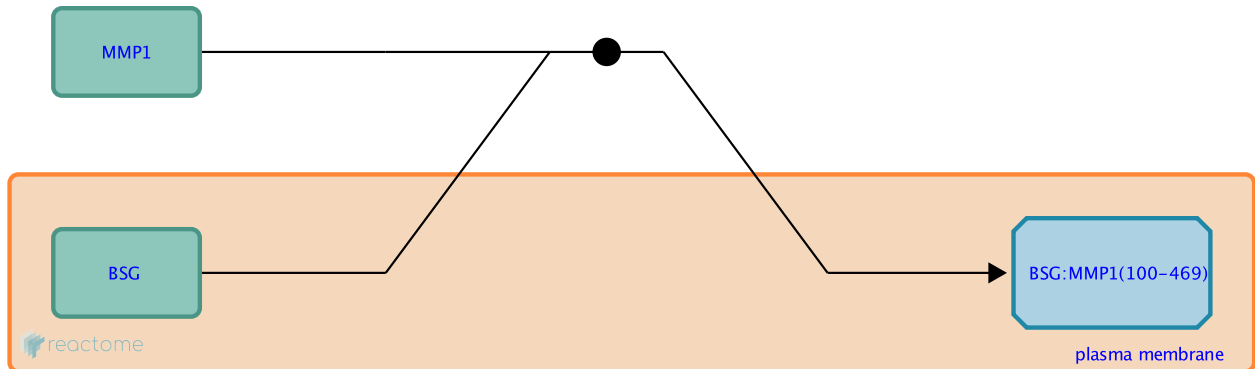
**Location:** [Degradation of the extracellular matrix](#)

**Stable identifier:** R-SSC-375135

**Type:** binding

**Compartments:** extracellular region, plasma membrane

**Inferred from:** [Basigin binds Matrix metalloproteinase-1 \(Homo sapiens\)](#)



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.](/electronic_inference_compara.html) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

## OPN (osteopontin) degradation by MMP3, MMP7 ↗

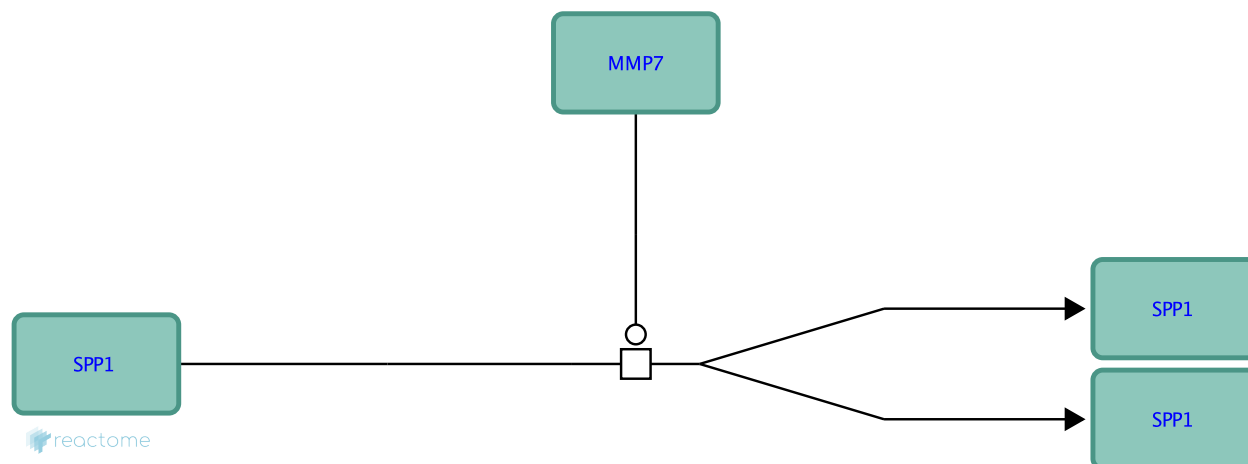
**Location:** [Degradation of the extracellular matrix](#)

**Stable identifier:** R-SSC-4086205

**Type:** transition

**Compartments:** extracellular region

**Inferred from:** [OPN \(osteopontin\) degradation by MMP3, MMP7 \(Homo sapiens\)](#)



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.](/electronic_inference_compara.html) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

## CAPN:4xCa2+:CAPNS cleave cytoskeletal proteins ↗

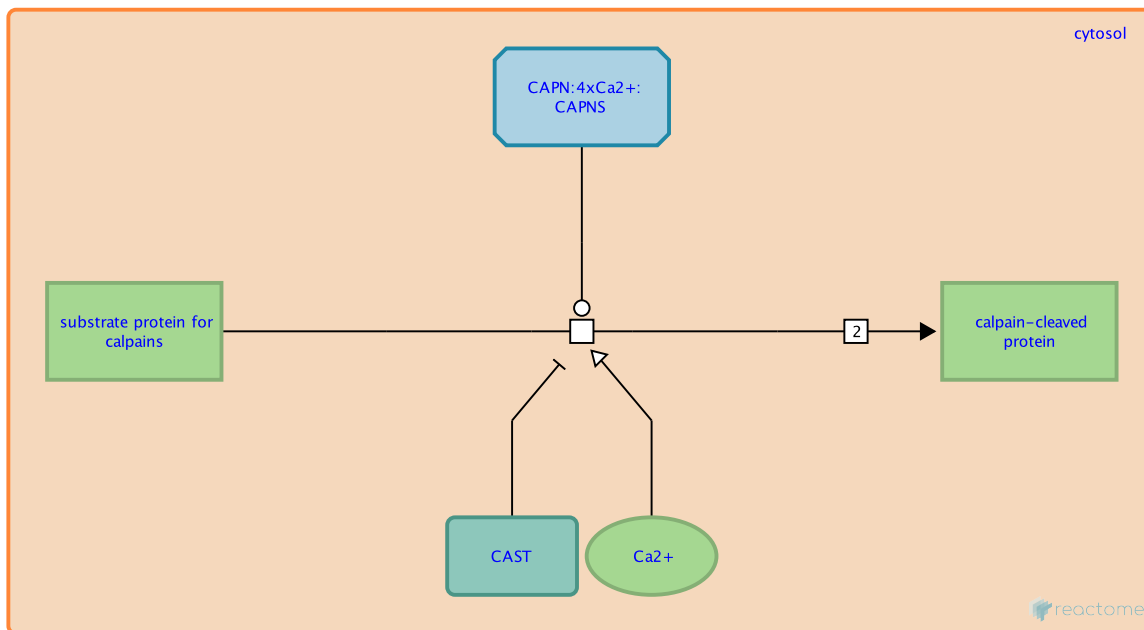
**Location:** Degradation of the extracellular matrix

**Stable identifier:** R-SSC-8848658

**Type:** transition

**Compartments:** cytosol

**Inferred from:** CAPN:4xCa2+:CAPNS cleave cytoskeletal 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.](/electronic_inference_compara.html) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>



## MMP2 cleaves OPTC ↗

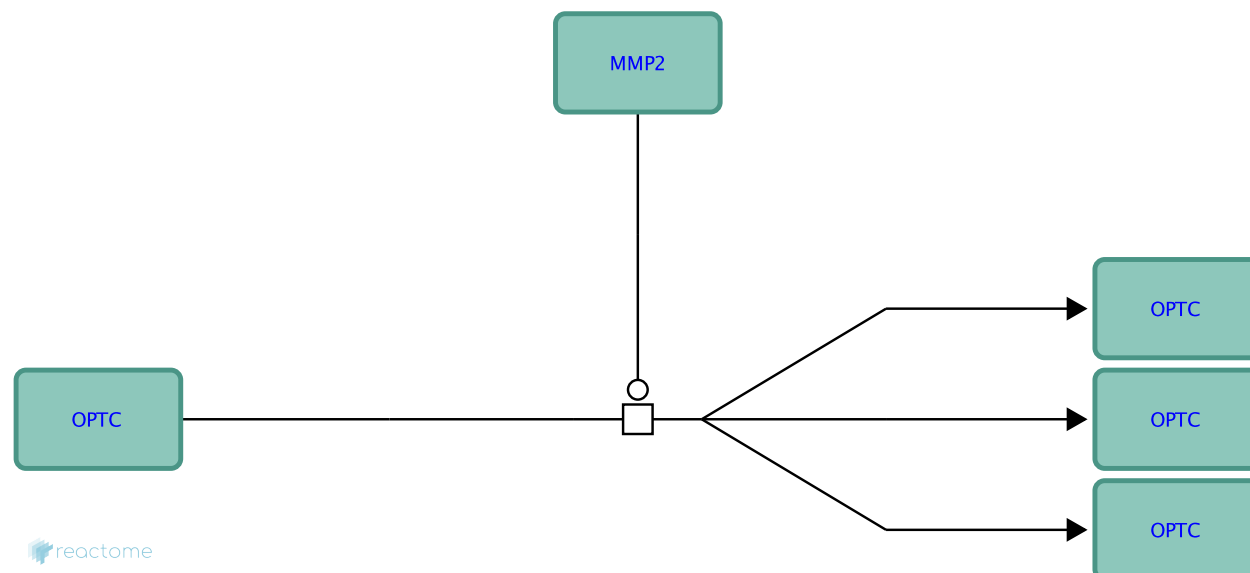
**Location:** [Degradation of the extracellular matrix](#)

**Stable identifier:** R-SSC-8940554

**Type:** transition

**Compartments:** extracellular region

**Inferred from:** [MMP2 cleaves OPTC \(Homo sapiens\)](#)



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.](/electronic_inference_compara.html) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

## MMP7 cleaves OPTC ↗

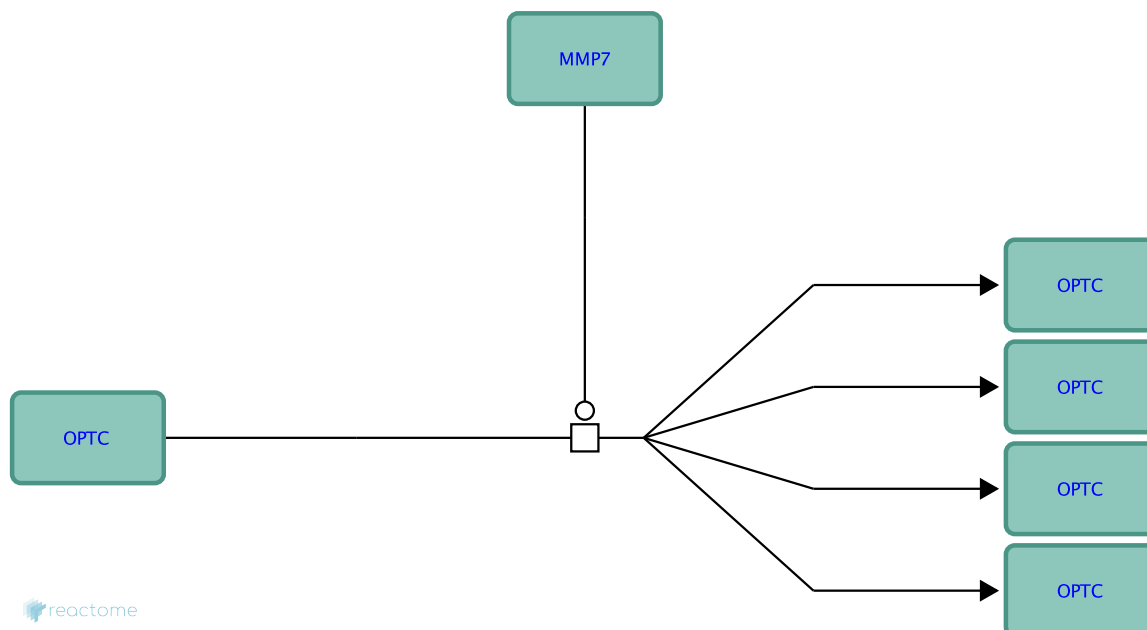
**Location:** [Degradation of the extracellular matrix](#)

**Stable identifier:** R-SSC-8940561

**Type:** transition

**Compartments:** extracellular region

**Inferred from:** [MMP7 cleaves OPTC \(Homo sapiens\)](#)



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.](/electronic_inference_compara.html) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

## MMP13 cleaves OPTC ↗

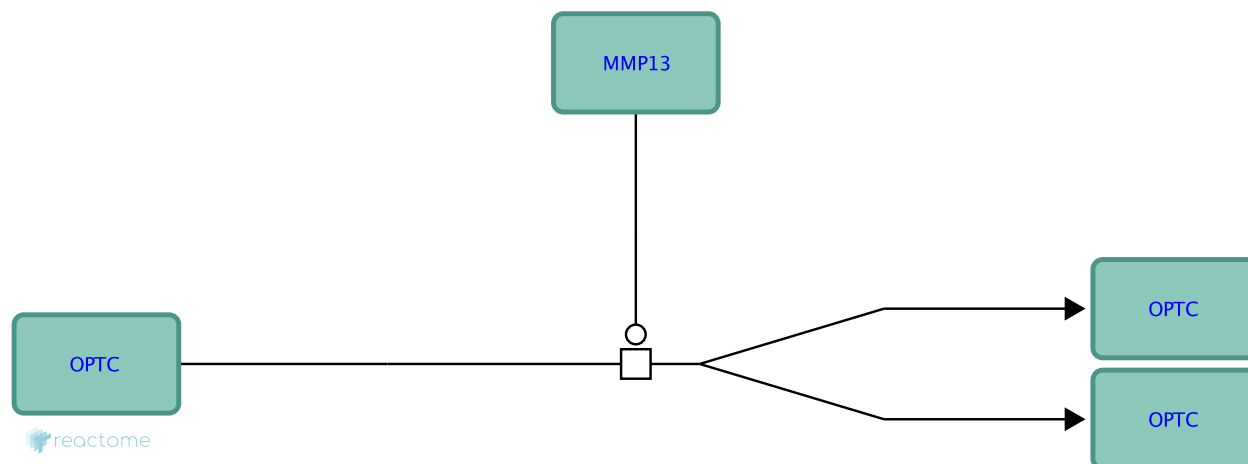
**Location:** [Degradation of the extracellular matrix](#)

**Stable identifier:** R-SSC-8942302

**Type:** transition

**Compartments:** extracellular region

**Inferred from:** [MMP13 cleaves OPTC \(Homo sapiens\)](#)



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.](/electronic_inference_compara.html) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

## MMP2, MMP9 cleave SCUBE3 ↗

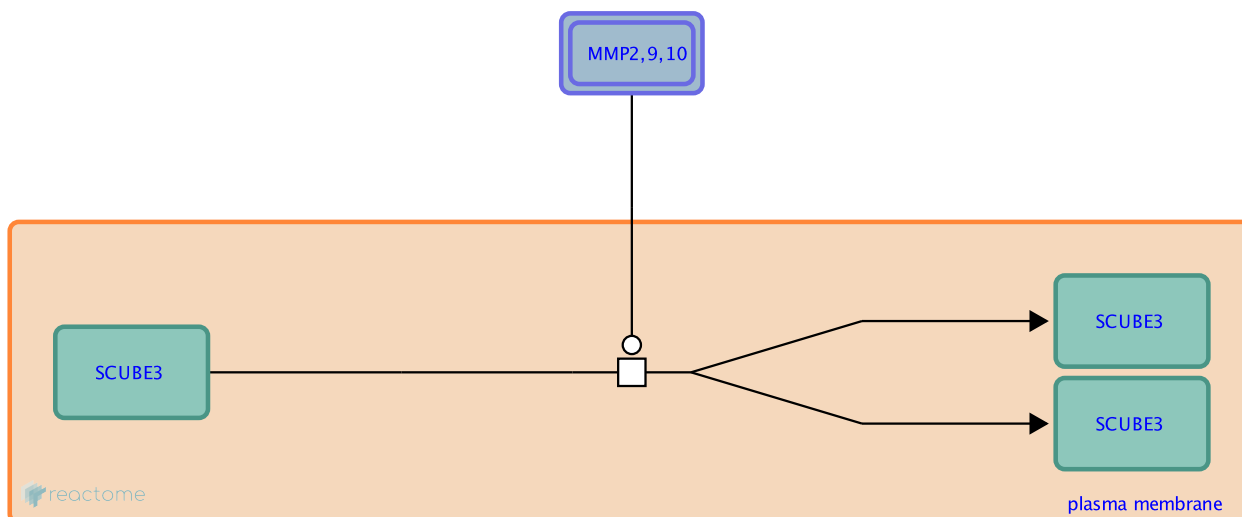
**Location:** [Degradation of the extracellular matrix](#)

**Stable identifier:** R-SSC-8943959

**Type:** transition

**Compartments:** plasma membrane

**Inferred from:** [MMP2, MMP9 cleave SCUBE3 \(Homo sapiens\)](#)



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.](/electronic_inference_compara.html) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

## SCUBE1, SCUBE3 oligomerize ↗

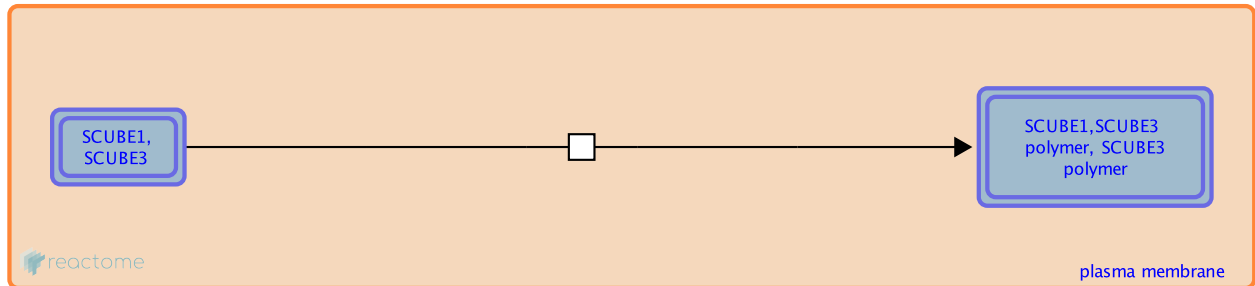
**Location:** [Degradation of the extracellular matrix](#)

**Stable identifier:** R-SSC-8943987

**Type:** transition

**Compartments:** plasma membrane

**Inferred from:** [SCUBE1, SCUBE3 oligomerize \(Homo sapiens\)](#)



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.](/electronic_inference_compara.html) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

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