COMP binds collagen, fibronectin, aggrecan and matrilins

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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

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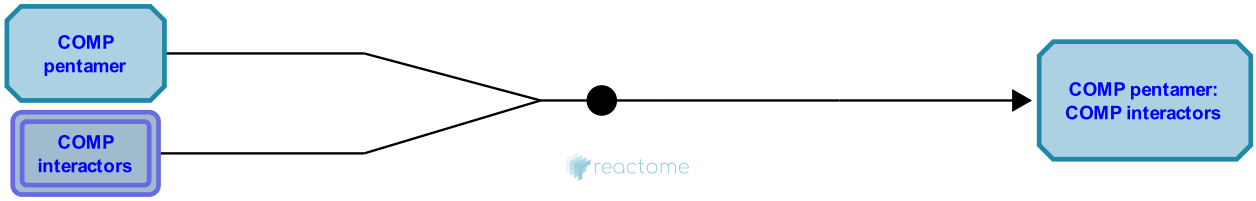
Stable identifier: R-HSA-2424252

Type: binding

Compartments: extracellular region



Cartilage oligomeric matrix protein (COMP, thrombospondin-5) is a 524-kDa pentameric glycoprotein expressed primarily in cartilage, tendon, ligament and synovium. In adult cartilage, COMP is located primarily in the inter-territorial matrix between chondrocytes (Murphy et al. 1999). The mature protein is pentameric with each monomer linked to its neighbour by a disulphide bond, located at the amino terminus of the protein (Hedbom et al. 1992, Morgelin et al. 1992). COMP binds directly to collagen types I, II and IX (Rosenberg et al. 1998, Thur et al. 2001) at the fibril periphery. In addition it binds fibronectin (FN1) (Di Cesare et al. 2002), matrilins 1, 3 and 4 (Mann et al. 2004), and through the glycosaminoglycans heparan sulphate and chondroitin sulphate to aggrecan (Hauser et al. 1996, Chen et al. 2007).
Mutations in COMP lead to pseudoachondroplasia and multiple epiphyseal dysplasia (Jackson et al. 2012). COMP binding to FN1 and probably to other partners requires the presence of the divalent cations Ca2+, Mg2+ or Mn2+. Each COMP subunit binds approximately 10 calcium ions (Chen et al. 2000).

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Editions

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