Dystroglycan binds Laminins and Dystrophin

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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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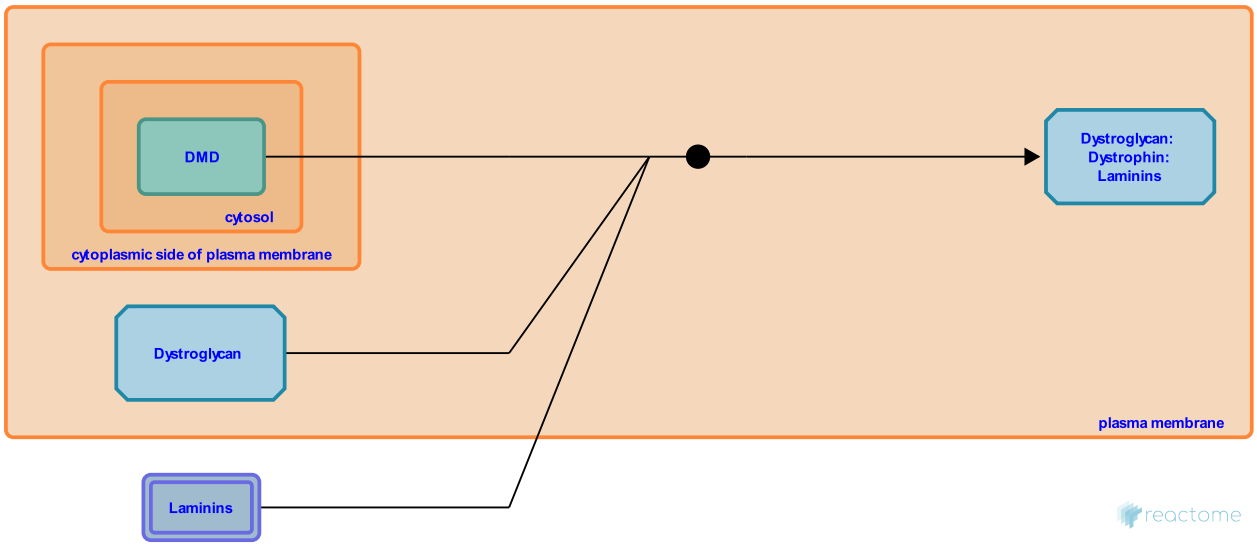
Stable identifier: R-HSA-2328129

Type: binding

Compartments: plasma membrane, cytosol, extracellular region

Inferred from: Dystroglycan bind Laminins and Dystrophin (Mus musculus)



Dystroglycan (DG) is a cell-surface laminin receptor. In skeletal muscle it is a central component of the dystrophin-glycoprotein (DGC) complex (Ervasti & Campbell 1991). Mutations in components of the DGC render muscle fibres more susceptible to damage and lead to various types of muscle disorder such as Duchenne muscular dystrophy and limb-girdle muscular dystrophies (Straub & Campbell, 1997, Cohn & Campbell 2000). DG is present as non-covalently associated alpha and beta subunits following cleavage at Ser654. The extracellular alpha subunit binds to laminin-2 (merosin) in the muscle basement membrane while the membrane-associated beta subunit binds dystrophin, which associates with the actin cytoskeleton (Ervasti & Campbell 1993, Yamada et al. 1994, Talts et al. 1999). Alpha-DG also binds the carboxy-terminal G domains of laminin alpha-1 (Gee et al. 1993, Zhou et al. 2012) and alpha-5 (Yu & Talts 2003). G domains are relatively well conserved in all five alpha-laminin chains, so DG is likely to bind all laminin heterotrimers.

Editions

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