Tropoelastin forms aggregate globules

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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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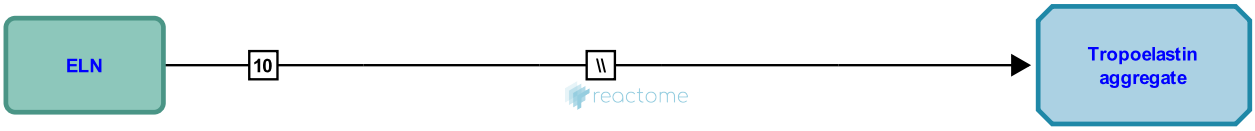
Stable identifier: R-HSA-2161293

Type: omitted

Compartments: extracellular region



The core protein representing ~90% of the mass of elastic fibres is elastin, a highly insoluble protein. It is secreted as soluble protein monomers referred to as tropoelastin, which have alternating hydrophobic and cross linking domains. The self-assembly of tropoelastin into a fibrillar elastin matrix is a multi step process. The first step is the self-association of secreted monomers via hydrophobic domains, in a process known as coacervation. This process concentrates monomers and may align residues in the correct register for subsequent cross linking (Yeo et al. 2011). Under physiological conditions the ~15 nm monomers phase-separate and coalesce into spherical packages 2-6 micrometers in diameter (Clarke et al. 2006, Kozel et al. 2004). This process is represented here by the association of an arbitrary 10 tropoelastin monomers. While they grow, coacervate packages are tethered to the cell surface (Wise & Weiss 2009). The binding interactions between tropoelastin and the cell surface are not fully understood but possible partners include integrins and glycosaminoglycans (Broekelmann et al. 2005). Extracellular fibrillin microfibrils act as a scaffold for the deposition of tropoelastin globules as part of elastic fibre formation (Kozel et al. 2004).

Literature references

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Editions

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