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Mechanotransduction at the Cell-Matrix Interface

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Abstract

The ability of cells to sense and respond to mechanical signals is vital in development and healthy tissue functioning. Many diseases are related to either changing mechanical properties of the tissue, or changes in the ability of cells to sense mechanical signals. This sensing occurs, in part, at integrin-associated complexes (IACs) that form sites of attachment between the cell and the extracellular matrix (ECM). In this review, we discuss the complex mechanical signals of the ECM. We will also outline how IACs are involved in cellular sensing of these mechanical properties, focussing on the molecular mechanisms of key adhesion molecules. Finally, the cellular mechanisms of mechanotransduction considering mechanosensing and signalling aspects of the core proteins in FAs are discussed and open questions outlined.

keywords: integrin, mechanosensing, mechanosignalling, focal adhesions, molecular clutch, extracellular matrix

1. Introduction

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