Reference Library
Exosomes for Degenerative Disc Disease

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1. Piazza Nathan, Dehghani Mehdi, Gaborski Thomas R., Wuertz-Kozak Karin. Therapeutic Potential of Extracellular Vesicles in Degenerative Diseases of the Intervertebral Disc. Frontiers in Bioengineering and Biotechnology. Volume: 8 , Year: 2020, Pages: 311
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"Extracellular vesicles (EVs) are lipid membrane particles carrying proteins, lipids, DNA, and various types of RNA that are involved in intercellular communication. EVs derived from mesenchymal stem cells (MSCs) have been investigated extensively in many different fields due to their crucial role as regeneration drivers, but research for their use in degenerative diseases of the intervertebral disc (IVD) has only started recently. MSC-derived EVs not only promote extracellular matrix synthesis and proliferation in IVD cells, but also reduce apoptosis and inflammation, hence having multifunctional beneficial effects that seem to be mediated by specific miRNAs (such as miR-233 and miR-21) within the EVs. Aside from MSC-derived EVs, IVD-derived EVs (e.g., stemming from notochordal cells) also have important functions in IVD health and disease. This article will summarize the current knowledge on MSC-derived and IVD- derived EVs and will highlight areas of future research, including the isolation and analysis of EV subpopulations or exposure of MSCs to cues that may enhance the therapeutic potential of released EVs."