Reference Library
Exosomes in ALS

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1. ***Sarko DK, McKinney CE. Exosomes: Origins and Therapeutic Potential for Neurodegenerative Disease. Front Neurosci. 2017;11:82. Published 2017 Feb 27. doi:10.3389/fnins.2017.00082***

"Recent studies have demonstrated impaired pro-inflammatory cytokine secretion following exosomal stimulation in peripheral monocytes from ALS donors (Zondler et al., 2016a). In addition, exosomal TDP-43 (transactive response DNA-binding protein 43 kD; an aggregation-prone protein characteristic in the histopathology of ALS) was shown to increase monocyte activation (Zondler et al., 2016a). Peripheral monocytes are capable of entering the central nervous system in the ALS disease state (Zondler et al., 2016b). Because monocytes demonstrated preferential uptake of exosomal (compared to free) TDP-43 (Zondler et al., 2016a), the collective evidence indicates that exosomes may serve as immune messengers mediating TDP-43 infiltration of the central nervous system. This in turn may contribute toward (and indicate a target for addressing) the pathogenesis of ALS, including increased neuroinflammation and neurodegeneration."

2. ***Ferrara D, Pasetto L, Bonetto V, Basso M. Role of Extracellular Vesicles in Amyotrophic Lateral Sclerosis. Front Neurosci. 2018;12:574. Published 2018 Aug 17. doi:10.3389/fnins.2018.00574***

"EVs derived from murine adipose- derived stromal cells protected NSC-34 cells expressing ALS mutations against oxidative stress-dependent damage (Bonafede et al., 2016). Murine adipose-derived stromal cells EVs reduced cytosolic SOD1 and ameliorated mitochondrial abnormalities (Lee et al., 2016), and were proposed to attenuate the disease. These promising preliminary data hold hope for the future but highlight the need for more and deeper investigations in the field."

"EV-associated cargos hold promise as biomarkers for neurodegenerative diseases, however, a deep information gap still need to be filled in ALS, where no study on EV RNA cargos has been published yet."