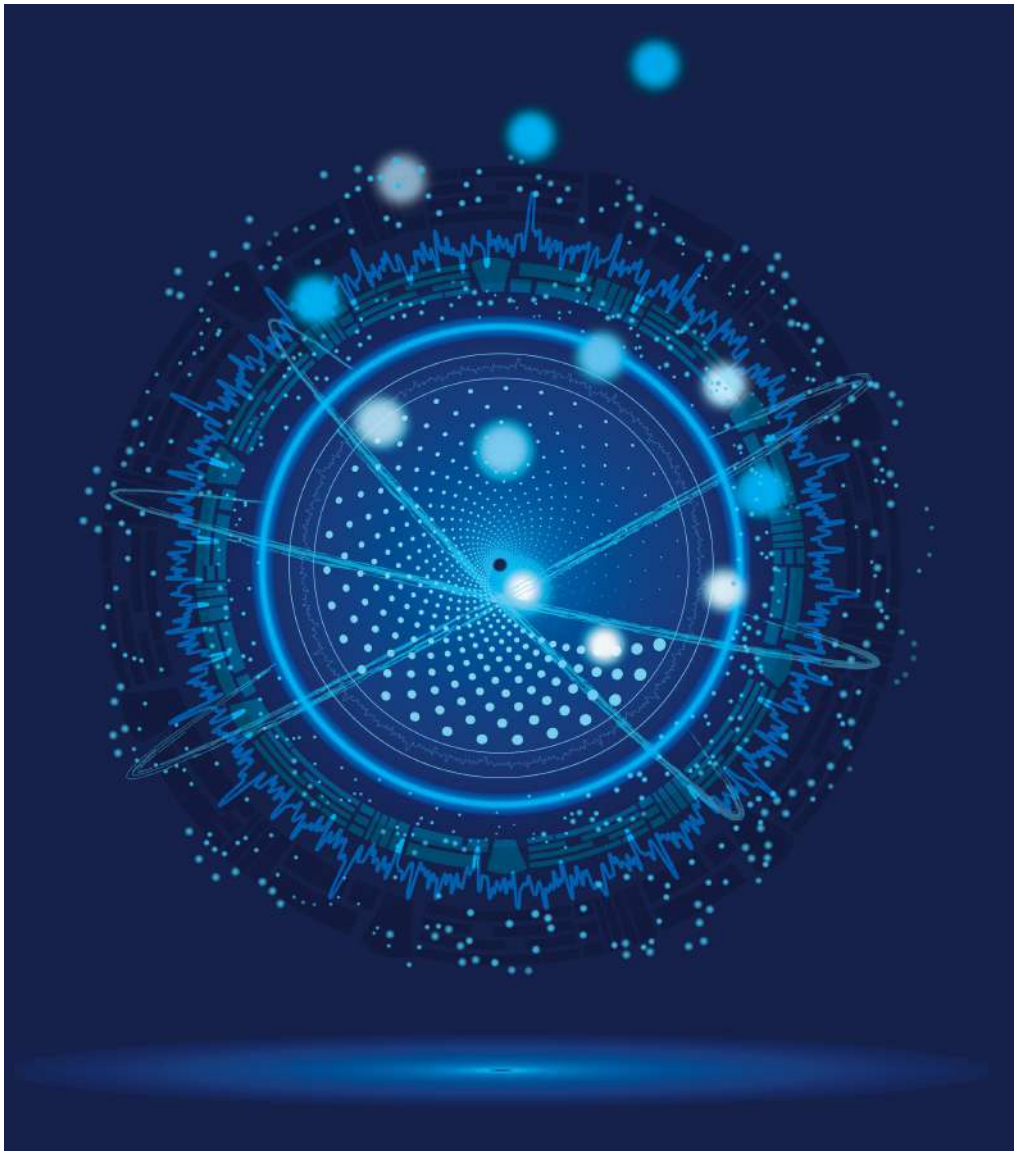
Small New World 2.0

4-5 September 2023

Abstract Book



Medical University Graz, Austria

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4-5 September 2023., Graz, Austria

Joint Meeting of

Austrian Society for Extracellular Vesicles - ASEV
Hungarian Section for Extracellular Vesicles - HSEV
Slovenian Network for Extracellular Vesicles - SiN-EV
Serbian Society Extracellular Vesicles - SrbEVs

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Poster presentation P73

The crosstalk between circulating exosome carried miRNAs and ferroptosis related genes in multiple sclerosis

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Background: Ferroptosis is one of the processes that could drive immune-mediated neurodegeneration in multiple sclerosis (MS). Exosomes as biologically active extracellular nanovesicles can carry miRNAs and are easily delivered across blood - brain barrier. Our aim is to provide data about the difference in network interplay of exosome carried miRNAs and PBMC mRNA between mild and severe MS phenotypes, in context of ferroptosis process regulation.

Methods: Targeted mRNA sequencing of selected ferroptosis related genes was performed in PBMC of two MS phenotypes on Illumina iSeq100 NGS instrument. DESeq2 algorithm was used for obtaining DE genes and miRNA/mRNA interplay was woven using miRNET platform. Purification of exosomes from plasma and extraction of total RNA was performed using Plasma/Serum Exosome RNA Isolation Kit (Norgen Biotek). Exosomes were evaluated on the ZetaView instrument and the presence of brain derived fraction was evaluated with L1CAM and MOG antibodies. Expression profiles of the bioinformatically defined miRNA hubs was evaluated in circulating exosomes containing fraction of the brain-originating ones, using TaqMan technology.

Results will provide insight if the expression of ferroptosis related genes observed in PBMCs reflect miRNA levels in exosomes, with regard to MS severity.

Discussion: Exosome cargo could serve as easily accessible biomarker for monitoring MS course/severity. Detection of brain fraction exosomes in circulation will provide new data on exosome signature and miRNA content in MS patients. Validation of miRNAs in exosomes and their regulatory background of ferroptosis in MS will have impact on research toward diagnostic/therapeutic application of both, miRNAs and exosomes.

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