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MSC EXOSOME: TRANSFORMING MSC THERAPY INTO A CELL-FREE THERAPY

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SUMMARY

Extracellular vesicles (EVs) is a new and exponentially expanding research area in medical biology. EVs are lipid membrane vesicles that carry proteins and nucleic acids from one cell to another. As such, EVs have the capacity to deliver proteins and nucleic acids to another cell and inducing a biological response in the recipient cell makes EVs potential therapeutic agents. To date, many EV types have been described. The best characterized EV type is the exosome. Exosomes are 100-200 nm vesicles that are synthesized via the endosomal pathway and secreted through the fusion of the multivesicular body with the plasma membrane. My lab was the first to report that the therapeutic efficacy of mesenchymal stem cell (MSC was mediated by exosomes. In 2010, we reported the isolation of exosomes and the efficacy of these isolated exosomes to reduce infarct size in a mouse model of reperfusion injury after acute myocardial ischemia. Since then, other stem cells such as neural stem cells, cardiac stem cells etc were reported to exert their therapeutic potency through exosomes. This presentation will focus primarily on my lab's work on MSC exosome, its isolation and characterization, and its therapeutic activity.