

## **The Potential of Exosome Based Therapeutics and the Challenges of Making Them a Reality**

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Exosomes are small vesicular bodies of roughly 50-150nm that arise from the endosomal compartment. They are released from virtually all cells and are thought to have evolved early in the tree of life. Although initially discovered in the early 80s, exosomes remained relatively obscure for many years. This began to change with the seminal discoveries that exosomes played a role in antigen presentation and contained functional nucleic acid that could alter gene expression in recipient cells. With this realization came a significant upsurge in exosome research and within the last few years, burgeoning translational efforts to harness their capabilities for diagnostic and therapeutic applications. Regarding the latter, these efforts have typically taken two paths; leveraging the potential disease modifying properties of the endogenous cargo or alternatively harnessing the cellular delivery capabilities of exosomes to deliver an exogenous therapeutic payload. This talk is intended to explore the potential applications of exosomes in medicine and the steps underway to build the robust bioprocessing platforms and analytical capabilities necessary to produce safe, efficacious and scalable exosome based products capable of meeting unmet medical needs.