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Translational development of enhanced potency cellular therapies

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The ability to specifically enhance biological function and control cell fate decisions without genetic modification represents a desired approach for generation of 'enhanced' potency cell therapies; as well as for 'pharmaceutical grade' primary cell / iPS cells derived tools for drug screening or therapeutics development applications.

We have developed a rapid, automated, cGMP and regulatory compliant, scalable platform to process 200 billion cells in under 30 minutes by loading them with small molecule, protein, siRNA, miRNA, mRNA or plasmid DNA; singly or in combinations that permit targeted modulation of intracellular pathways resulting in augmentation of desired cellular function per defined kinetics that maps to therapeutic window for augmented efficacy. The platform allows cGMP compliant closed system cell processing and is supported by an ISO9001:2008 certified Quality System, US FDA Master File and CE Mark.

Our experiences in enabling development of non-virally engineered, "enhanced" potency, cellular therapies encompass an autologous cancer vaccine [marketed in Japan] and multiple 'engineered' immune- and stem-cell therapies is various stages of clinical and pre-clinical development. In each of these instances, the primary objective of the design and delivery of the therapeutic product is to specifically 'enhance' the desired biological activity of cells resulting in improved product efficacy profile, while permitting rapid, robust, seamless, cGMP and regulatory compliant scale-up for cost-effective clinical / commercial delivery.

This presentation will summarize data on how modulation of biological activity leads to development and delivery of "enhanced" potency immune & stem cell therapies.

Biography

Peshwa currently serves as EVP, Cellular Therapies at MaxCyte. Previously, he was Limited Partner and EVP, R&D at NewNeural LLC (Lisle, IL); VP of Process Sciences and VP of Manufacturing at Dendreon Corporation (Seattle, WA). Dr. Peshwa obtained his Ph.D. from the University of Minnesota (Minneapolis, MD) and B.Tech. from the Indian Institute of Technology (Kanpur, India), both in Chemical Engineering. He has published ~40 papers; is co-inventor on ~8 issued patents and applications; served in Editorial capacity for Cytotechnology and Biotechnology & Bioengineering; and serveson Advisory Board for start-up companies, Research Institute and a Venture Capital firm.

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