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# Transduced autologous cells: New perspective for delivery of biologics

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## Abstract

Transduced autologous cells (TACs) are considered to be one of the dynamic systems to deliver many biologics in case of severe ailments like cancer, diabetes, chronic arthritis, hemophilia, neurodegenerative diseases and so many. Mammalian stem cells or progenitor cells can be properly engineered and transduced by adopting vectors viz. adenoviral vectors, baculoviral vectors, retroviral vectors, herpes viral vectors, adeno associated vectors or lentiviral vectors, which possess genes expressing the desired bio factors. These TACs can easily trace the target site and deliver the essential bio-active agent to treat the disease from the pedestal. Mesenchymal stem cells, muscle stem cells, neural stem cells, muscle progenitor cells, neural progenitor cells and platelets, when transduced with proper vectors were evidently found to be effective to deliver biologics like bone morphogenic protein (BMP-4), TNF related apoptosis induced ligand (TRAIL), interferon- $\alpha$ , superoxide dismutase, brain derived neurotropic factor (BDNF), aryl sulfatase, interleukin (IL) 10 and 12, factor IX and neurotrophin, which provide long term expression of biologics. Varieties of biomaterials from synthetic as well as natural origin are used as scaffolds for delivery of TACs. However, the most prominent problem associated with the delivery of transduced cells is their safety in humans. Generally, innate and adaptive types of immune responses are stimulated upon their delivery, but the novel approaches can engineer the safe TACs for effective delivery of biologics.

**Key words:** Biologics, stem cells, transduced cells

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