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## Dental pulp stem cells-derived Schwann cells for peripheral nerve injury regeneration

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The peripheral nervous system (PNS) has an intrinsic ability for repair and regeneration even after severe injury. Schwann cells play a major role in PNS axon regeneration. They are able to dedifferentiate, re-enter the cell cycle and promote axonal regrowth by phagocytosis of the axonal and myelin debris, recruiting macrophages to the injury site, secreting several neurotrophic and key transcription factors and forming a unique column of cells called bands of Bungner within their endoneurial tubes for guiding the axonal sprouts from the proximal stumps. In clinical practice, nerve autografting is considered to be the “clinical golden standard” for promoting repair of segmental peripheral nerve injury and bridging a critical gap defect, but the results are still unsatisfactory. In addition, the reported outcomes of synthetic nerve conduits and allogenic nerve grafts have been voluminous and often conflicting. Therefore, cell-based therapies by transplantation of Schwann cells within appropriate scaffolds have been introduced as a promising treatment modality for peripheral nerve regeneration. The dental pulp of adult human teeth contains different stem cells populations, which show broad diversity and potentials. Here, the NC-derived DPSC population is discussed in term of their culturing method and induction of differentiation into SCs. The NC-derived DPSC population is to be recruited in the future for peripheral nerve injury regeneration after their induction into SCs *in vitro*. We recommend that these DPSC-derived SCs can be considered as a superior alternative source of SCs compared with a nerve donor source. DPSCs are feasible, cost and time efficient and are harvested without complicated surgical procedures.

### Biography

Heba Al-Zer is a Dentist who has completed her PhD in Stem Cells Biology from the University Medical Center Hamburger-Eppendorf in Germany, 2015. She is an Assistant Professor of the Conservative Department at the School of Dentistry, University of Jordan. Her work focuses on “The properties and the potentials of the human dental pulp stem cells (DPSCs)”.

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