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Reactivation of denervated Schwann cells by neurons induced from bone marrow-derived mesenchymal stem cells

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Highlights

- neurons were induced from bone marrow-derived mesenchymal stem cells.
- co-culturing neurons reactivated denervated Schwann cells in vitro.
- grafted neurons reactivated native denervated Schwann cells in vivo.
- grafted neurons promoted sciatic nerve regeneration in vivo.

Abstract

The use of neurons induced from stem cells has been introduced as an effective strategy for promoting peripheral nerve regeneration (PNR). The evolution and role of native denervated Schwann cells (SCs) were often ignored when exploring the mechanisms underlying neural transplantation therapy for PNR. The aim of this study was to understand if following injury, native denervated SCs could be reactivated by transplanting of neurons induced from bone marrow-derived mesenchymal stem cells (NI-BMSCs) to promote PNR. We co-cultured denervated SCs with NI-BMSCs in