

NRG1 isoforms could be an effective therapeutic candidate to promote peripheral nerve regeneration

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Neuregulin 1 (NRG1) is a pleiotropic factor characterized by the existence of numerous isoforms arising from alternative splicing of exons that confer to the protein deeply different characteristics. NRG1 plays an important role for both the myelination occurring during development and the different phases occurring after injury in the peripheral nerve: axon degeneration, axon regrowth, remyelination and target reinnervation

Researchers at the University of Western Australia have discovered that the soluble NRG1 upregulation observed in Schwann cells immediately after nerve injury suggests that denervated Schwann cells require autocrine stimulation with soluble NRG1 for survival and that the peripheral nerve regeneration impairment observed in animals lacking Schwann cell derived soluble NRG1 is the indirect consequence of problems occurring during the early phases of [axon degeneration](#) and axon regrowth, not during the following phases of remyelination and target reinnervation. These observations suggest that soluble NRG1 plays a role during the early phases following nerve injury corresponding to axon degeneration and regrowth, while transmembrane NRG1 plays a role during later phases corresponding to the remyelination process. Therefore, soluble NRG1, already used in human trials for heart failure treatment, could be an effective therapeutic candidate to promote [nerve](#) regeneration. The Perspective article is released in *Neural Regeneration Research*.

More information: Gambarotta G, Ronchi G, Geuna S, Perroteau I. Neuregulin 1 isoforms could be an effective therapeutic candidate to promote peripheral nerve regeneration. *Neural Regen Res.* 2014;9(12):1183-1185.

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