

Schwann cell-to-axon transfer of ribosomes

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It is long believed that protein synthesis in neurons is restricted to the cell body. However, an increasing body of evidence clearly shows that axonal protein synthesis is important in the development, maintenance and plasticity of the axon. Still, the presence of ribosomes in mature axons has never been observed. Recently, we have found that in peripheral nerve axons of the Wallerian degeneration slow (Wld^s) mouse strain, ribosomes and polyribosomes occur. While in intact axons ribosomes are sporadically detected, they are abundantly present in denucleated axons, as found by electron microscopy and various cytochemical methods. Here we show that also *in vitro* already after 24 hours the number of ribosomes is upregulated in both Wld^s and wild-type mouse axons, as shown by immunocytochemistry and electron microscopy. These data show that under certain conditions, e.g. trauma, the mature axon gains the ability to synthesize its own proteins. It furthermore strongly suggests that these ribosomes originate from the surrounding Schwann cells, since the axons are no longer connected to their somata. We currently investigate whether *in vitro* intercellular transfer of ribosomes from Schwann cell to axoplasm indeed occurs.

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