

In the news

RESTORING CONNECTIONS

Patients with incomplete spinal-cord injury are sometimes able to partially regain function. Recent findings from animal models have suggested that new connections that bypass the damage might account for this recovery. A study published in *Nature Medicine* described how propriospinal neurons that project to other segments of the spinal cord can provide a detour for the signal coming from the damaged descending axon.

In earlier animal studies that showed partial recovery only half of the spinal cord was cut. "The previous explanation is that the other [undamaged] side was able to activate things," says study author Michael Sofroniew, a neurobiologist at the University of California, Los Angeles (ScientificAmerican.com, 6 January 2008). The new study showed that even if both sides of the spinal cord are damaged, new connections appeared between the propriospinal neurons, leading to a partial restoration of function.

If the propriospinal neurons were subsequently destroyed, the recovery disappeared. "That basically proves that these cells are essential for the recovered function," says Sofroniew (ScientificAmerican.com).

According to Geoff Raisman of University College London, "There has been a surge of interest in the possibility that such connections could be induced by therapeutic interventions." (Telegraph.co.uk, 7 January 2008.) The search is now on to identify the factors that induce the formation of connections between propriospinal neurons after incomplete spinal damage. Karim Fouad of the University of Alberta says that one of his studies showed that "...if we give [BDNF] to the brain, we can promote this rewiring." (ScientificAmerican.com) According to Sofroniew, "If we can use existing nerve connections instead of attempting to rebuild the nervous system ... repairing spinal cord damage will become much easier." (WebMD, 7 January 2008.)

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