

## **Hopes of a New Treatment Approach for Paralysis**

Scientists at the Deutsches Krebsforschungszentrum (German Cancer Research Center, Heidelberg) were recently able to show in experiments with mice that a paralysis can be reversed by blocking programmed cell death.

Paralysis in the form of paraplegia and quadriplegia is usually the result of traumatic spinal cord injuries, but can also be caused by tumors. When the spinal cord is cut off, information sent by the brain can no longer be transmitted to the limbs. Biological processes such as programmed cell death, or apoptosis, take place after the actual moment of injury of the nerve cords and lead to further destruction of the damaged tissue and thus to permanent paralysis.

Dr. Ana Martin-Villalba and collaborators at the Immunogenetics Division headed by Professor Dr. Peter Krammer describe in the latest issue of the science journal *Nature Medicine*\* how blockage of a key molecule of apoptosis restores the ability of coordinated movement of paralyzed limbs. Using specific antibodies, the investigators blocked a protein called CD95 L which triggers a suicide cascade in cells carrying the specific receptor protein CD95.

The experiments showed that mice treated with antibodies after selective spinal cord injuries performed significantly better in special skill tests than the control animals. In addition, tissue sections of the treated animals revealed newly growing nerve fibers beyond the place of injury. Treatment with antibodies also prevented oligodendrocytes from dying – cells that insulate the cord-like nerve fibers and thus facilitate signal transmission.

Brain injuries and spinal cord injuries are the leading causes of deaths and severe disabilities in individuals under 40 years of age. In the future, specific blockage of apoptosis may become a way of preventing life-long paralysis by protecting injured nerves from further destruction.

\*Deana Demjen, Stefan Klussmann et al.: Neutralization of CD95 ligand promotes regeneration and functional recovery after spinal cord injury. *Nature Medicine*, April 2004

The task of the Deutsches Krebsforschungszentrum in Heidelberg (German Cancer Research Center, DKFZ) is to systematically investigate the mechanisms of cancer development and to identify cancer risk factors. The results of this basic research are expected to lead to new approaches in the prevention, diagnosis and treatment of cancer. The Center is financed to 90 percent by the Federal Ministry of Education and Research and to 10 percent by the State of Baden-Wuerttemberg. It is a member of the Helmholtz Association of National Research Centers (Helmholtz-Gemeinschaft Deutscher Forschungszentren e.V.).

This press release is available at [www.dkfz.de/pressemitteilungen](http://www.dkfz.de/pressemitteilungen)

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