

ANTAL NÓGRÁDI



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RESEARCH AREA

Our groups on one hand is interested in the survival and regeneration of motoneurons in case of injuries or neurodegenerative diseases. It was our group who first published that transplantation of embryonic spinal cord grafts or administration of the anti-excitotoxic compound, riluzole are able to improve the survival of the host motoneurons and induce the regeneration of their axons into the vacated ventral roots. This latter finding lead to new clinical approaches in the treatment of brachial plexus injuries.

Our other research field focuses on the rescue of injured spinal cord cell populations and the improvement of their regenerative capacity. We have isolated the secretome of a neuroectodermal cell line, NE4C which is able to induce regeneration in the injured spinal cord. The administration of this lesion-induced secretome proves to be as successful as the transplantation of the stem cells themselves. At present we use various forms of the mRNA-based gene transfer technology to induce expression of the stem cell secretome in the injured cord.

TECHNIQUES AVAILABLE IN THE LAB

Microsurgery, cryostat sectioning, immuno histochemistry, electron microscopy, fluorescent microscopy (epifluorescent, confocal, superresolution), PCR, Western blotting, muscle electrophysiology, functional locomotor analysis, in vivo imaging, etc.

SELECTED PUBLICATIONS

Pajer, K., Bellák, T., Grósz, T., Nógrádi, B., Patai, R., Sinkó, J., Vinay, L., Liabeuf, S., Erdélyi, M., **Nógrádi, A.** (2023) Riluzole treatment modulates KCC2 and EAAT-2 receptor expression and Ca²⁺ accumulation following ventral root avulsion injury. *Eur J Cell Biol* **102**: 151317.

Gál, L., Bellák, T., Marton, A., Fekécs, Z., Weissman, D., Török, D., Biju, R., Vizler, C., Kristóf, R., Beattie, MB., Lin, PJC., Pardi, N., **Nógrádi, A.**, Pajer, K. (2023) Restoration of Motor Function through Delayed Intraspinal Delivery of Human IL-10-Encoding Nucleoside-Modified mRNA after Spinal Cord Injury. *Research (Wash D C)*. **6**: 0056.

Molnár, K., Nógrádi, B., Kristóf, R., Mészáros, Á., Pajer, K., Siklós, L., **Nógrádi, A.**, Wilhelm, I., Krizbai, IA. (2022) Motoneuronal inflammasome activation triggers excessive neuroinflammation and impedes regeneration after sciatic nerve injury. *J Neuroinflammation* **19**(1): 68.

Bellák, T., Fekécs, Z., Török, D., Tánkos, Z., Nemes, C., Tézsla, Z., Gál, L., Polgári, S., Kobolák, J., Dinnyés, A., **Nógrádi, A.**, Pajer, K. (2020) Grafted human induced pluripotent stem cells improve the outcome of spinal cord injury: modulation of the lesion microenvironment. *Sci Rep* **10**(1): 22414.

Simandi, Z., Pajer, K., Karolyi, K., Sieler, T., Jiang, LL., Kolostyak, Z., Sari, Z., Fekécs, Z., Pap, A., Patsalos, A., Contreras, GA., Reho, B., Papp, Z., Guo, X., Horvath, A., Kiss, G., Keresztessy, Z., Vámosi, G., Hickman, J., Xu, H., Dormann, D., Hortobagyi, T., Antal, M., **Nógrádi, A.**, Nagy, L. (2018) Arginine Methyltransferase PRMT8 Provides Cellular Stress Tolerance in Aging Motoneurons. *J Neurosci* **38**(35): 7683-7700.