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RESEARCH AREA

I am currently an Assistant Professor of Dept. of Anatomy, Histology and Embryology at the University of Szeged. I obtained my Ph.D. degree in 2014 and joined Dr. Nógrádi's laboratory studying the curative effect of grafted stem cells and mRNA-LNP on injured spinal cord. We described that grafted undifferentiated neuroectodermal stem cells or induced pluripotent stem cells (iPSCs) into the injured spinal cord are able to induce significant functional recovery supported by neuroprotection and extensive axonal regeneration. The grafted stem cells produced so called lesion induced secretome. These factors were not produced by the native cultured stem cells, iPSCs or the spinal cords of injured animals. Furthermore, we provided evidence that intraspinal administration of nucleotide modified mRNA-LNP encoding human IL-10 is able to induce significant morphological and functional recovery following contusion injury in rats. I have expertise in microsurgery (spinal cord contusion injury, retrograde and anterograde labelings), histology, immunohistochemistry, cell culture methods, skeletal muscle physiology.

TECHNIQUES AVAILABLE IN THE LAB

- microsurgery
- immunohistochemistry
- fluorescent microscopy
- qPCR
- muscle force measurement

SELECTED PUBLICATIONS

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., Táncos, Z., Nemes, C., Tézsza, 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.

Pajer, K., Bellák, T., Redl, H., Nógrádi, A. (2019) Neuroectodermal Stem Cells Grafted into the Injured Spinal Cord Induce Both Axonal Regeneration and Morphological Restoration via Multiple Mechanisms. **J Neurotrauma** **36**(21): 2977-2990.

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.