

NEWSLETTER

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Publication on Empty Particles for the Treatment of ALS

The publication “*Empty mesoporous silica particles significantly delay disease progression and extend survival in a mouse model of ALS*” has been published in Nature Research Scientific Reports, Nov 26, 2020. The publication relates to Nanologica’s patent application “*Porous particles for use in treatment, prevention and/or postponement of degeneration of neurons and glia*” that became public on Oct. 15, and demonstrates how empty porous silica particles has the potential of delaying the disease progression and extending survival time in ALS diseased mice.

Amyotrophic Lateral Sclerosis, ALS, also known as motor neuron disease, is a devastating incurable disease characterized by progressive degeneration of motor neurons in the brain and spinal cord, that leads to paralysis throughout the whole body. When motor neurons degenerate, muscles stop functioning and patients ultimately die from the inability to breathe, with a mean survival rate after diagnosis of only 2-5 years.

Nanologica has, together with the research group of Regenerative Neurobiology, at the Neuroscience Department, Uppsala University, led by Prof. Elena Kozlova, developed a method to deliver neurotrophic factor mimetics to transplanted cells using mesoporous silica particles. The work explored delay of ALS in diseased mice by implantation of stem cells or by implantation of mesoporous silica particles loaded with peptide mimetics, which support motor neuron survival.

All experimental treatments significantly improved the survival of ALS diseased mice. However, surprisingly, the most prominent effect was produced in the *empty* mesoporous silica particles. These were shown to dramatically delay the progression of disease and extend the lifetime by 2 times compared to untreated mice.

The reason for this effect has been linked to the property of the empty particles to sequester harmful molecules in vicinity of diseased motor neurons. These studies have now been published in Nature’s Scientific Reports <https://www.nature.com/articles/s41598-020-77578-x>

“ The results of these studies are very exciting and promising in such an important medical field as treatment of neurodegenerative disease. We will now continue the work together with Prof. Elena Kozlova and her research group to gain deeper understanding of the mechanisms behind the results. We are looking to progress this research for benefits of patients”, says Adj. Prof Adam Feiler, CTO Nanologica.

Ongoing experiments show that mesoporous silica particles absorb TDP43, SOD1 and other aggregated proteins, that are the hallmarks of neurodegenerative disease. It is hoped that this technology may be used as a therapeutic treatment in patients to delay disease progression and improve the life expectancy in ALS and other neurodegenerative diseases.

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About Nanologica AB (publ)

Nanologica was founded in 2004 and is a nanotechnology company developing nanoporous silica particles for applications within life science. Nanologica is world-leading in controlling the shape, size, and type of porosity of silica particles. This knowledge is applied within drug development and chromatography (a separation technique used in drug development and drug production). The company's mission is to contribute to better and cheaper treatments for patients worldwide through the technology platform NLAB Silica™. Nanologica's stock (NICA) is listed on Spotlight Stock Market. For further information, please visit www.nanologica.com.