

# New perspectives in early diagnosis of Parkinson's disease

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Immunohistochemistry for alpha-synuclein showing positive staining (brown) of an intraneural Lewy-body in the Substantia nigra in Parkinson's disease. Credit: Wikipedia

The American Academy of Neurology (AAN) has published the results

of a research project conducted jointly by Cardiocentro Ticino and the EOC Neurocentro, which delivers a message of hope in the fight against Parkinson's disease. The study focuses on the analysis of blood plasma microvesicles (exosomes), which could allow the disease to be detected at a very early stage, favoring more effective therapeutic approaches. The new method, non-invasive and economical, requires a simple blood sample.

The research was made possible by a close collaboration between the laboratories of the Neurocentro of the Ente Ospedaliero Cantonale (EOC) and Cardiocentro Ticino—both of which are directly involved in the training activities of the Faculty of Biomedical Sciences of the Università della Svizzera italiana (USI). The research project is the subject of the thesis work of Elena Vacchi, Ph.D. student in Neuroscience at USI, and Jacopo Burrello, visiting Ph.D. student at the University of Turin at Cardiocentro.

## **Toward early testing**

Today, the diagnosis of Parkinson's [disease](#) occurs at an advanced stage of its clinical manifestations, a limitation that significantly affects the therapeutic approach. The analysis of exosomes in plasma—as proven by studies conducted in the laboratories in Ticino—could lead the way to early testing for the disease at a stage in which the associated inflammatory process is already occurring. As the researchers point out, this is a revolutionary approach to the diagnosis of Parkinson's disease. It is also non-invasive, painless and inexpensive, as it requires a simple peripheral blood sample.

The study, published in *Neurology—Neuroimmunology & Neuroinflammation*, a journal of the American Academy of Neurology, was jointly conducted by the Parkinson's research group headed by PD Dr. med. Giorgia Melli and Prof. Dr. med. Alain Kaelin at the

Laboratory of Biomedical Neuroscience (LBN) of the EOC Neurocentro in Taverne and the Cardiocentro Ticino research group directed by PD Dr. Lucio Barile in collaboration with Prof. Giuseppe Vassalli.

Prof. Dr. med Alain Kaelin, medical and scientific director of the Neurocentro EOC and full professor at USI, says, "Besides the scientific value of the research and our satisfaction for the recognition, I think it is important to reflect on the added value of a synergy between apparently distant research fields—neurology and cardiology—which nevertheless manage to find original and very interesting developments in the daily and transparent comparison of their respective works, a condition that has been positively achieved in recent years in our joint laboratories in Taverne."

**More information:** Elena Vacchi et al. Immune profiling of plasma-derived extracellular vesicles identifies Parkinson disease, *Neurology - Neuroimmunology Neuroinflammation* (2020). [DOI: 10.1212/NXI.0000000000000866](https://doi.org/10.1212/NXI.0000000000000866)

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