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# Abstracts

Articles appearing in the November 2020 issue

## Immune Profiling of Plasma-Derived Extracellular Vesicles Identifies Parkinson Disease

**Objective** To develop a diagnostic model based on plasma-derived extracellular vesicle (EV) subpopulations in Parkinson disease (PD) and atypical parkinsonism (AP), we applied an innovative flow cytometric multiplex bead-based platform.

**Methods** Plasma-derived EVs were isolated from PD, matched healthy controls, multiple system atrophy (MSA), and AP with tauopathies (AP-Tau). The expression levels of 37 EV surface markers were measured by flow cytometry and correlated with clinical scales. A diagnostic model based on EV surface markers expression was built via supervised machine learning algorithms and validated in an external cohort.

**Results** Distinctive pools of EV surface markers related to inflammatory and immune cells stratified patients according to the clinical diagnosis. PD and MSA displayed a greater pool of overexpressed immune markers, suggesting a different immune dysregulation in PD and MSA vs AP-Tau. The receiver operating characteristic curve analysis of a compound EV marker showed optimal diagnostic performance for PD (area under the curve [AUC] 0.908; sensitivity 96.3%, specificity 78.9%) and MSA (AUC 0.974; sensitivity 100%, specificity 94.7%) and good accuracy for AP-Tau (AUC 0.718; sensitivity 77.8%, specificity 89.5%). A diagnostic model based on EV marker expression correctly classified 88.9% of patients with reliable diagnostic performance after internal and external validations.

**Conclusions** Immune profiling of plasmatic EVs represents a crucial step toward the identification of biomarkers of disease for PD and AP.

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## EBV-Specific CD8 T Lymphocytes and B Cells During Glatiramer Acetate Therapy in Patients With MS

**Objective** Infection with Epstein-Barr virus (EBV) has been associated with clinical activity and risk of developing MS. The purpose of this study is to investigate the impact of glatiramer acetate (GA) therapy on EBV-specific immune responses and disease course.

**Methods** We characterized EBV-specific CD8 T lymphocytes and B cells during disease-modifying treatments in 2 groups of patients with MS. We designed a 2-pronged approach consisting of a cross-sectional study (39 untreated patients, 38 patients who had undergone 12 months of GA treatment, and 48 healthy donors compatible for age and sex with the patients with MS) and a 12-month longitudinal study (35 patients treated with GA). CD8 EBV-specific T cells and B lymphocytes were studied using pentamers and multiparametric flow cytometry.

**Results** We find that treatment with GA enhances viral recognition by inducing an increased number of circulating virus-specific CD8 T cells ($p = 0.0043$) and by relieving their features of exhaustion ($p = 0.0053$) and senescence ($p < 0.0001$, $p = 0.0001$). B cells, phenotypically and numerically tracked along the 1-year follow-up study, show a steady decrease in memory B-cell frequencies ($p = 0.025$), paralleled by an increase of the naive B subset.

**Conclusion** GA therapy acts as a disease-modifying therapy restoring homeostasis in the immune system, including anti-EBV responses.

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## Most-Read Articles

As of February 19, 2021

**Laquinimod dampens IL-1β signaling and Th17-polarizing capacity of monocytes in patients with MS**

S. Engel, V. Jolivel, S. H.-P. Kraus, et al. 2021;8:e908. doi.org/10.1212/NXI.0000000000000908

**Is *APOE* ε4 associated with cognitive performance in early MS?**

S. Engel, C. Graetz, A. Salmen, et al. 2020;7:e728. doi.org/10.1212/NXI.0000000000000728

**Clinical approach to the diagnosis of autoimmune encephalitis in the pediatric patient**

T. Cellucci, H. Van Mater, F. Graus, et al. 2020;7:e663. doi.org/10.1212/NXI.0000000000000663

**Intrathecal B-cell accumulation and axonal damage distinguish MRI-based benign from aggressive onset in MS**

S. Engel, M. Friedrich, M. Muthuraman, et al. 2019;6:e595. doi.org/10.1212/NXI.0000000000000595

**Association of intrathecal pleocytosis and IgG synthesis with axonal damage in early MS**

S. Engel, F. Steffen, T. Uphaus, et al. 2020;7:e679. doi.org/10.1212/NXI.0000000000000679

 