## Circulating microRNAs as Biomarkers for B-Cell Depletion Therapy/ Rituximab in Neuromyelitis Optica (Hadasit)

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**Need:**

Neuromyelitis optica (NMO) is a chronic autoimmune disease of the central nervous system (CNS). The main immunological feature of the disease is the presence of autoantibodies to Aquaporin 4 (AQP4+), identified in about 82% of cases. Currently, there are no reliable biomarkers for monitoring treatment response in patients with NMO. A common treatment for NMO is retuximab that can be further optimized based on such predictive markers.

**Innovation:**

Specific miRNA signatures in whole blood of patients with NMO can be used as biomarkers for therapy response and can potentially reflect the degree of disease activity in the CNS of inflammatory demyelinating disorders.

**Findings:**

Total RNA extracted from whole blood of 9 rituximab-responsive NMO patients before, and 6 months following treatment was subjected to small RNAseq analysis. The study included also an additional group of 7 untreated AQP4+ seropositive NMO patients and 15 healthy controls (HCs).

1. 14 miRNA were upregulated and 32 were downregulated significantly in the blood of NMO patients following effective therapy with rituximab (all p