

**Supplementary Table S1.** Correlations of anti-glycolipid antibody levels with EAE scores in PLP-sensitized mice<sup>a</sup>

Anti-glycolipid antibody	PLP <sub>139-152</sub> -sensitized mice (n = 18) <sup>b</sup>			symptomatic EAE mice (n = 17) <sup>c</sup>			EAE mice with limb paralysis (n = 15) <sup>d</sup>		
	$r_s$	$p$	Power <sup>e</sup>	$r_s$	$p$	Power	$r_s$	$p$	Power
GM1	-0.34	0.16	0.29	<b>-0.51</b>	<b>&lt; 0.05</b>	0.58	<b>-0.74</b>	<b>&lt; 0.01</b>	0.92
GM3	-0.17	0.49	0.10	-0.24	0.34	0.16	-0.42	0.12	0.36
GM4	0.01	0.98	0.05	-0.23	0.33	0.15	<b>-0.60</b>	<b>&lt; 0.05</b>	0.70
sulfatide	-0.11	0.66	0.07	-0.16	0.55	0.10	-0.23	0.39	0.13

<sup>a</sup>We sensitized 18 SJL/J mice with PLP<sub>139-151</sub>, collected sera from the mice on days 14–21, and determined serum anti-glycolipid antibody levels (Abs<sub>492 nm</sub>) by ELISA. Neurological signs were evaluated using EAE scores. Since both Abs<sub>492 nm</sub> and EAE scores are non-parametric data, we used Spearman rank correlation to analyze the association between the antibody levels and EAE scores [66].

<sup>b</sup>In most EAE models, the induction rate of full-blown EAE (with hind limb paralysis, EAE scores  $\geq 2$ ) was not 100%. In this study, we found 15 of 18 (83%) mice had EAE scores of 2 or higher on days 14–21; one mouse did not develop any EAE signs, and two mice had only tail paralysis. We analyzed the correlations using data from all 18 mice sensitized with PLP<sub>139-151</sub> and found no significant correlation ( $P > 0.05$ ).

<sup>c</sup>When we used the data from all symptomatic EAE mice, excluding one asymptomatic mouse (EAE score = 0), anti-GM1 antibody levels had a moderate negative correlation with EAE scores statistically ( $r_s = -0.51$ ,  $p < 0.05$ ). We interpreted a Spearman correlation coefficient (“ $r_s$ ” or  $\rho$ ) based on Mukaka (2012) as follows: 0.7 to 1.0 (–0.7 to –1.0) high positive (negative) correlation; 0.5 to 0.7 (–0.5 to –0.7), moderate positive (negative) correlation; 0.3 to 0.5 (–0.3 to –0.5), low positive (negative) correlation; and 0 to 0.3 (0 to –0.3) negligible correlation.

<sup>d</sup>When we used the data from mice who developed hind limb paralysis (EAE score = 2 or higher), excluding one asymptomatic mouse and two mice who had only tail paralysis (EAE score = 1), anti-GM1 antibody levels had a high negative correlation with EAE scores ( $r_s = -0.74$ ,  $p < 0.01$ ); anti-GM4 antibody titers had a moderate negative correlation with EAE scores statistically ( $r_s = -0.6$ ,  $p < 0.05$ ).

<sup>e</sup>Power analysis was conducted, using an R version 4.3.0 and the package “WebPower” version 0.9.3 [67,68].