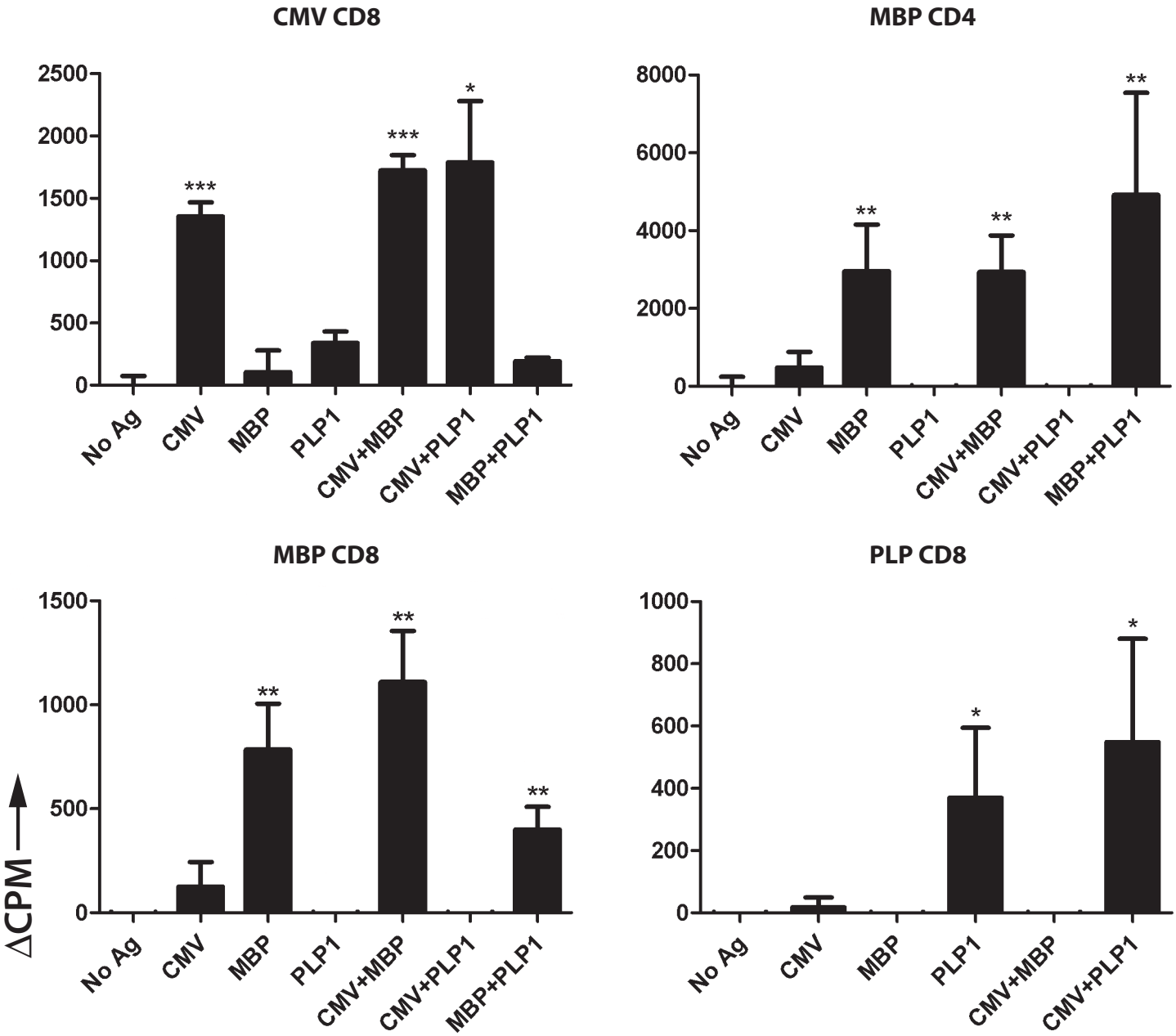
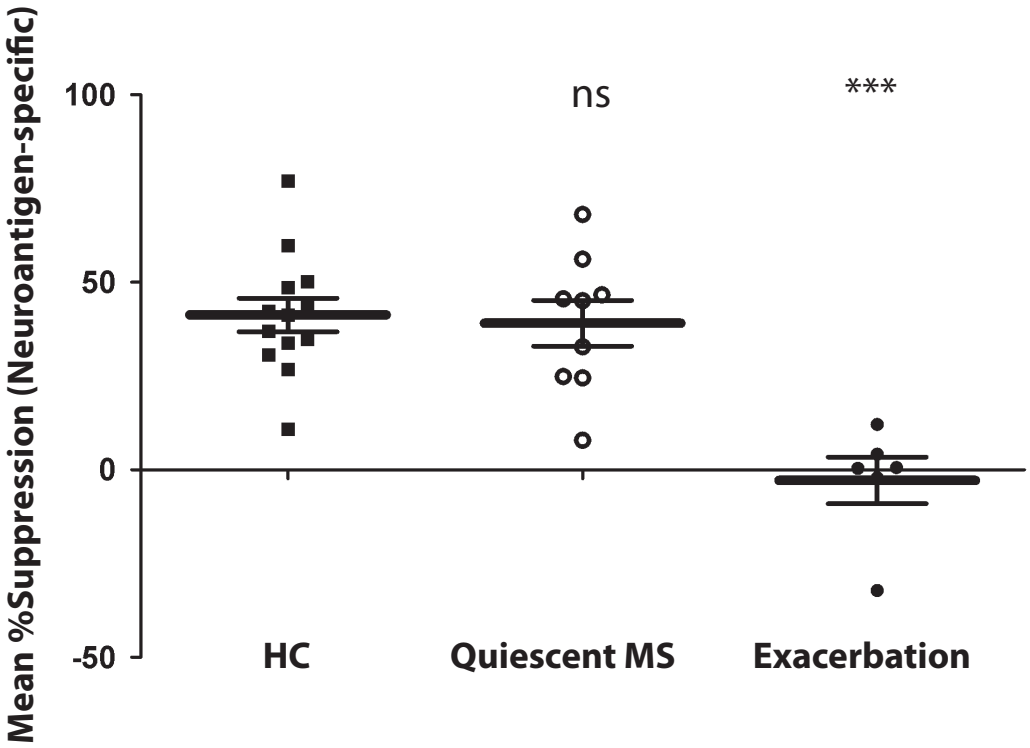
Supplemental Figure 1: Antigenic specificity of T cell lines. CD4+ and CD8+ T cell lines of multiple specificities were grown from PBMC, as described in methods. Antigenic specificity was confirmed using ^{3}H-Thymidine assays, before using these lines in suppression assays (Fig. 2). These bar graphs show ΔCPM (counts per minute, background subtracted) of representative lines, confirming response to the desired antigen (*) but not other antigens. These results are representative of 32 T cell lines derived from 8 HC.

Supplemental Figure 1



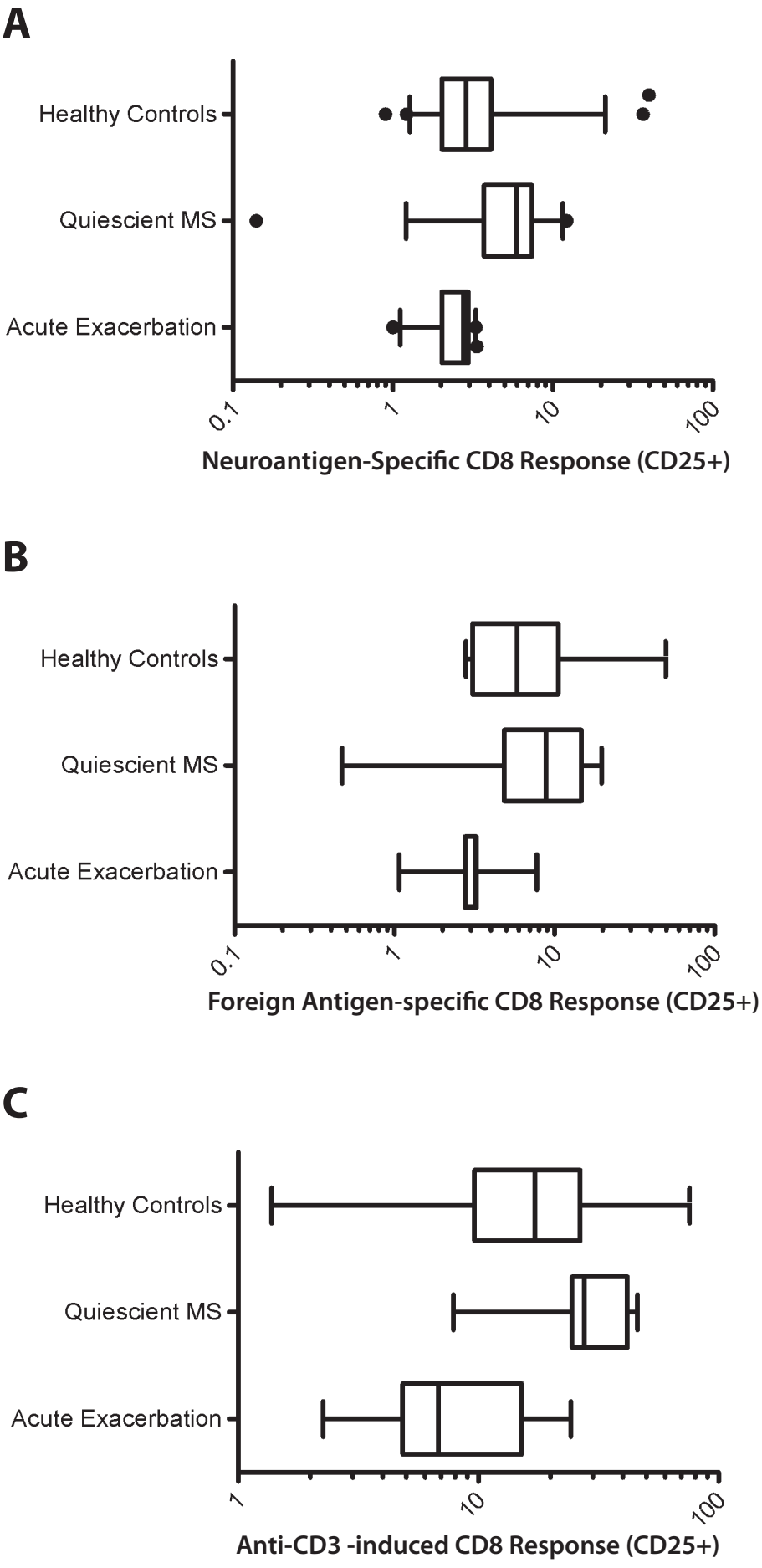
Supplemental Figure 2: Average neuroantigen-specific suppressive ability is deficient during acute MS exacerbation. Data from Fig. 3B were re-evaluated to obtain a single "mean neuroantigen-specific suppression" per subject, by averaging the %suppression against various neuroantigens. Each dot represents the mean neuroantigen-specific CD8 suppression per subject in HC, quiescent MS patients and acute MS exacerbation patients, as indicated (ns=not significant, compared to HC; ***p<0.001, compared to either HC or quiescent MS).

Supplemental Figure 2



Supplemental Figure 3: MS and healthy controls share similar CD8+ T cell activation. CMTPX-stained CD8+ T cells from suppression assays were evaluated for activation in the presence of various stimuli by comparing their CD25 expression to that in the absence of antigen. Cumulative stimulation indices (percent CD25 with stimulus divided by percent CD25 with no stimulus) are shown from (A) 50 neuroantigenic responses from 15 healthy controls, 29 responses from 11 quiescent MS patients, and 47 responses from 9 acute exacerbation patients; (B) 17 foreign antigen responses from 15 healthy controls, 13 responses from 11 quiescent MS patients, and 11 responses from 9 acute exacerbation patients; and (C) 15 anti-CD3 responses from 15 healthy controls, 11 responses from 11 quiescent MS patients, and 9 responses from 9 acute MS exacerbation patients.

Supplemental Figure 3



Supplemental Figure 4: Neuroantigen-specific CD8+ T-cell suppression decreases transiently during acute MS exacerbation. (A) Data from Fig. 4D were re-evaluated to obtain a single "mean neuroantigen-specific suppression" per subject, by averaging the %suppression against various neuroantigens. Each dot represents the mean neuroantigen-specific CD8 suppression per patient during an exacerbation and in a longitudinal specimen collected after quiescent state was established either with or without immunomodulatory therapy. Dot shape and lines indicate paired longitudinal values (**$p<0.01$). At follow-up, the four patients averaged 81.3 days since start of last relapse. At post-exacerbation, one patient was treatment naïve through out (closed circle), one was on Copaxone for 3 months (open triangle), one was on IFN-beta (open square) and one stopped IFN-beta therapy after two doses (open diamond). (B) Foreign-specific CD8 suppression from four acute MS exacerbation patients during and post-exacerbation is shown. (C) Longitudinal anti-CD3-stimulated CD8+ T cell suppressive ability is depicted. (D) These data represent neuroantigen-specific suppression assays performed longitudinally from a single MS patient, who was evaluated at a quiescent stage of disease before and after an acute exacerbation.

Supplemental Figure 4