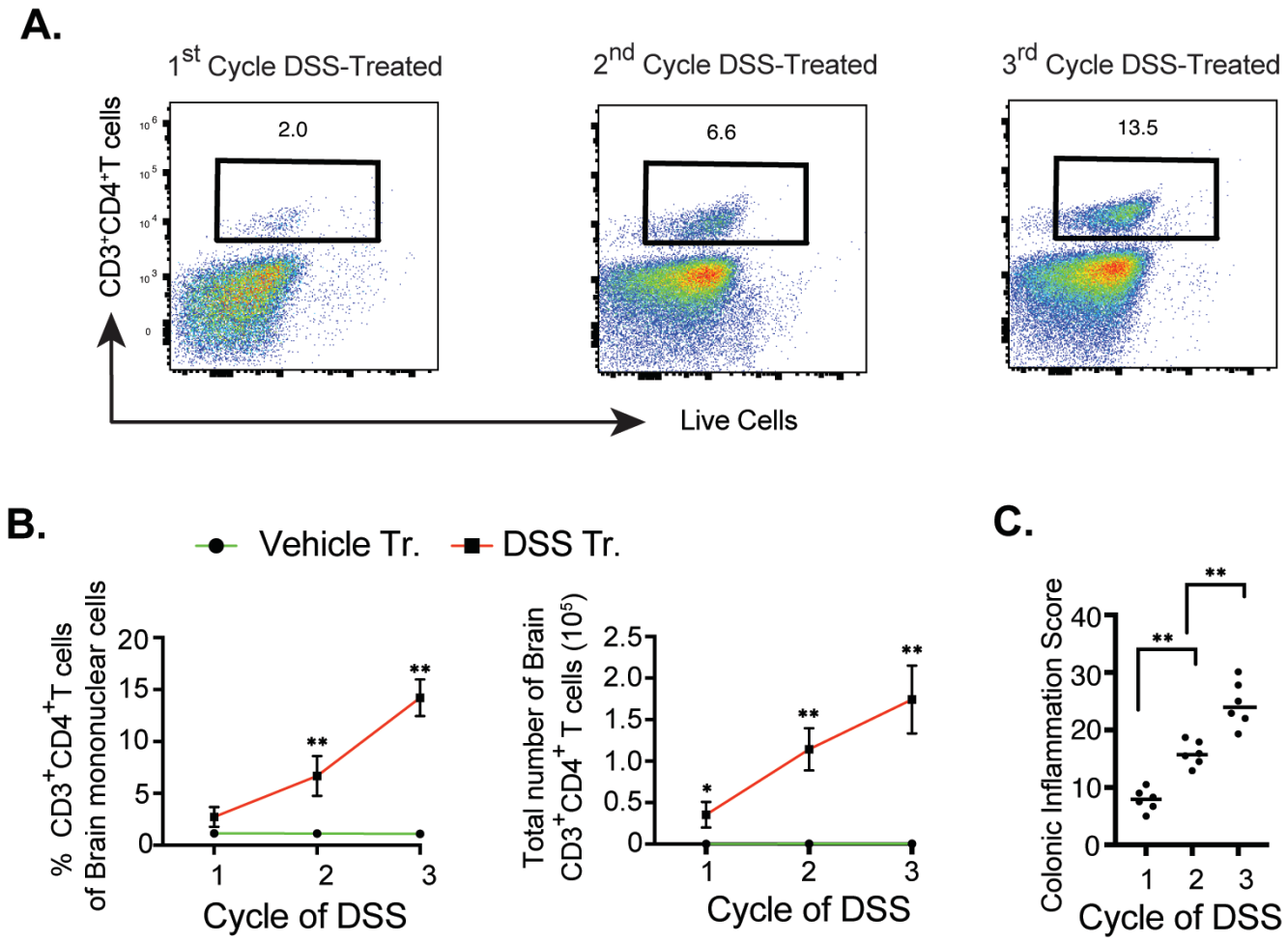
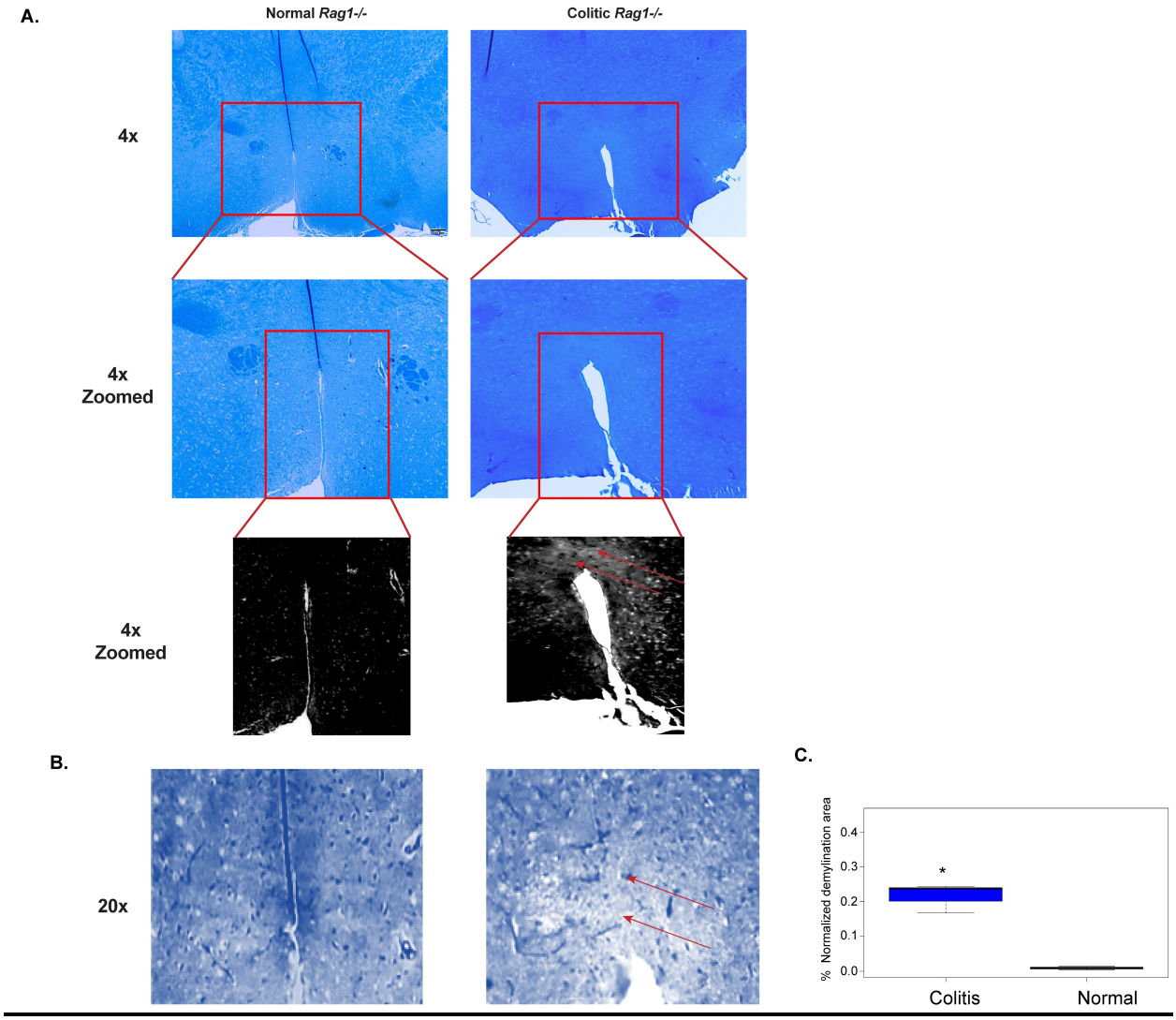
SUPPLEMENTARY FIGURE 1



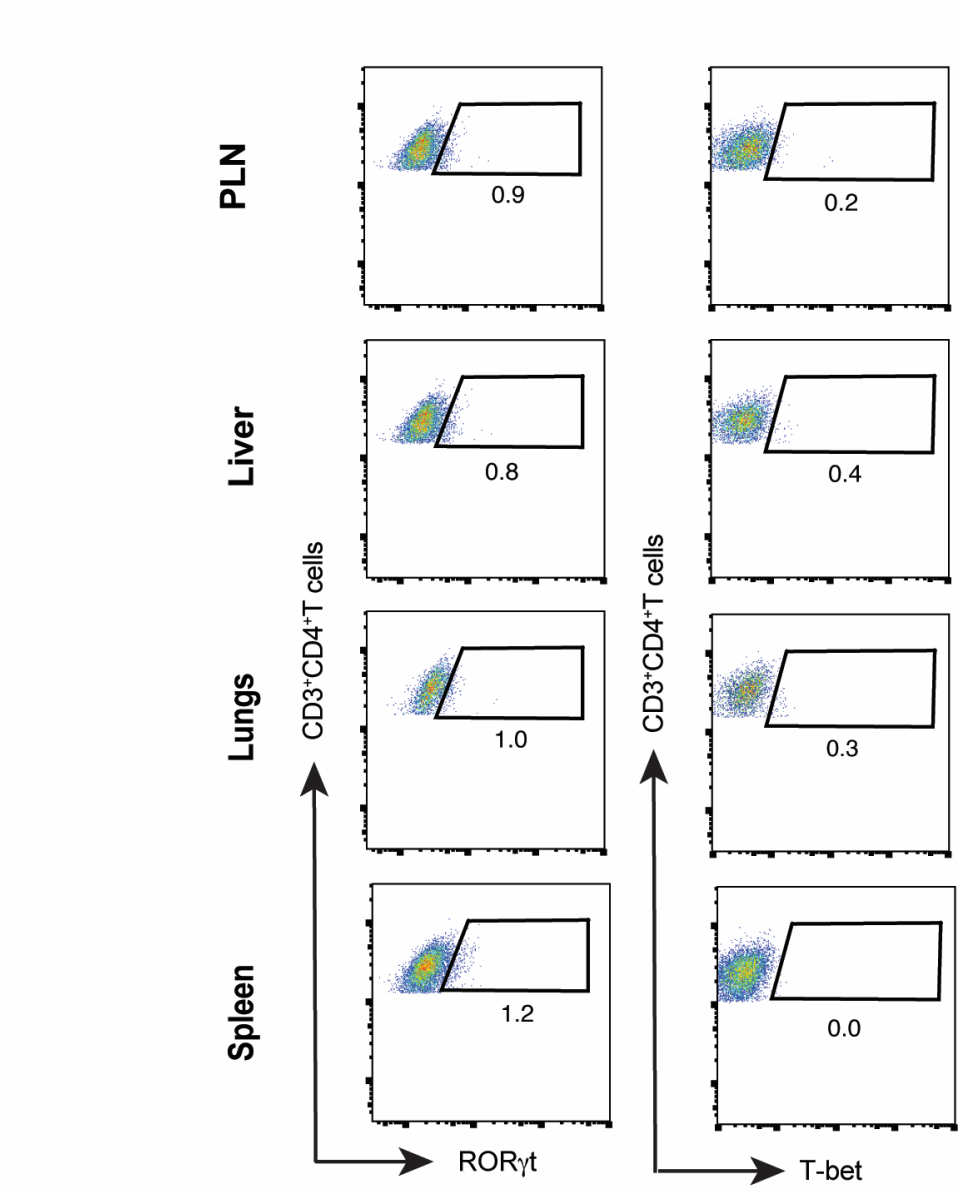
Supplementary Figure S1: **CD4$^+$ T-cell infiltration in the brain during DSS-induced chronic colitis.** **(A)** C57BL/6 mice were subjected to 3 cycles of 2.5% DSS in drinking water for one week followed by 10-14 days in normal drinking water in between DSS-cycles for colitis induction. Brain infiltrating CD4$^+$T cell frequency was analyzed by flow cytometry after each cycle of DSS-treatment. **(B)** Kinetics of CD3$^+$CD4$^+$ T cells infiltration in the brain of DSS-treated mice presented as percent (left) and total number (right) following each cycle of DSS-treatment. **(C)** Intestinal inflammation score of DSS-treated mice after each cycle of treatment. Data are shown as mean ± SEM. (C). Data are representative of three independent experiments (6 mice /group). *P* values, one-way ANOVA followed by Tukey's post hoc test (B) and two-tailed paired Student *t*-test (C) * $p< 0.05$; ** $p< 0.001$.

SUPPLEMENTARY FIGURE 2



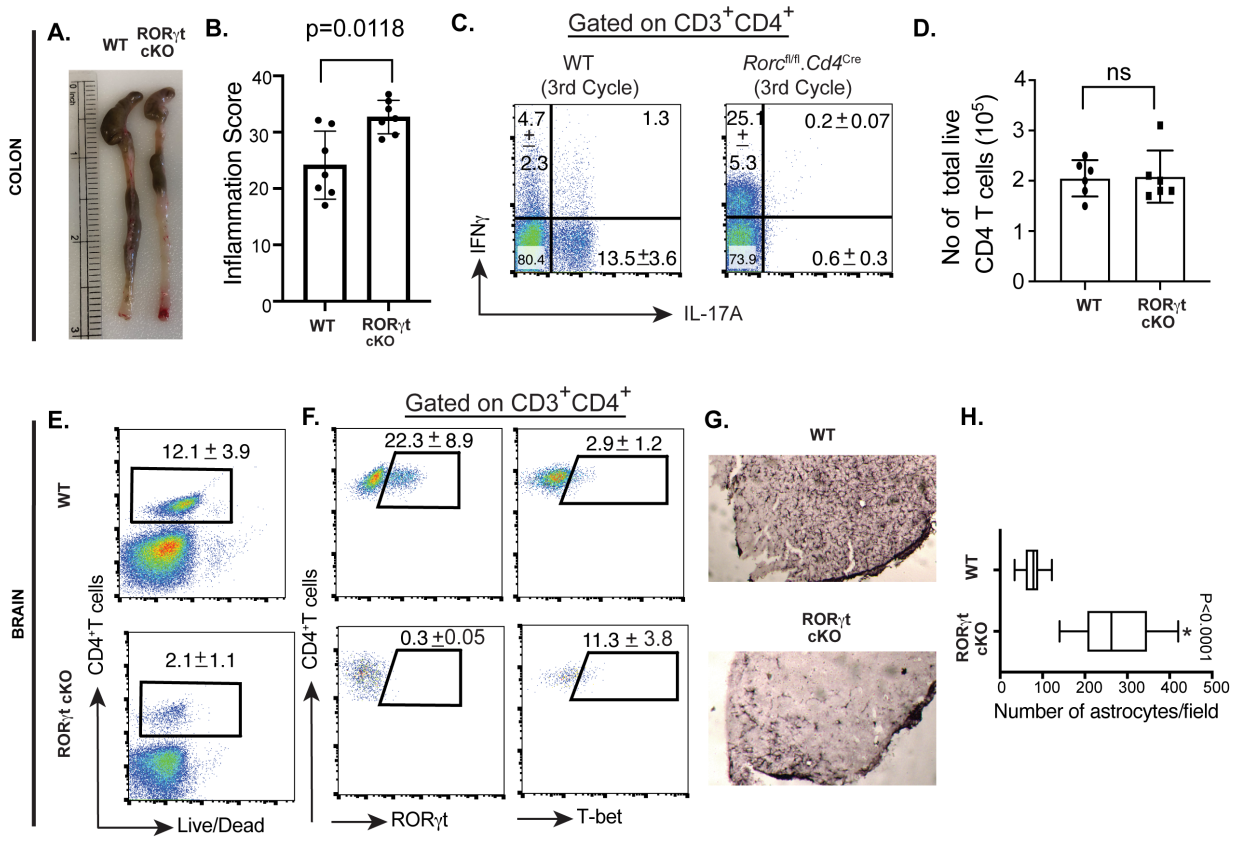
Supplementary Figure S2: **Evidence of demyelination in the hypothalamic region of colitic mice.** Luxol fast blue-PAS staining on the brain cross sections showing marked decrease in myelination in the hypothalamic region of CD45RB^{hi} CD4^{+}T cells recipient *Rag1*$^{-/-}$ mice compared to untransferred *Rag1*$^{-/-}$ normal mice at 4x or 4x zoomed magnification **(A)** and at 20x magnification. Red squares and Red arrows indicate the zone of demyelination **(B)**. **(C)** Quantitative analysis of demyelination between colitic and normal, untransferred *Rag1*$^{-/-}$ mice. Data are shown as mean ± SEM. Data are representative of two independent experiments (3 mice /group). *P* values, two-tailed paired Student *t*-test (C) * p< 0.001.

SUPPLEMENTARY FIGURE 3



Supplementary Figure S3: **Expression of RORγt and T-bet from CD4^{+}T cells in colitic *Rag1*$^{-/-}$ mice in the indicated organs.** Representative FACS plots showing RORγt and T-bet expressions in live CD4^{+}T cells retrieved from the PLN, Liver, Lungs and Spleen of colitic *Rag1*$^{-/-}$ recipient group at 8 wk post CD45RB^{hi} CD4^{+}T cell transfer.

SUPPLEMENTARY FIGURE 4



Supplementary Figure 4: Differential impact of DSS-induced chronic colitis on CD4$^+$T cell-infiltration and inflammation in the brain of WT and *Rorc$^{fl/fl}$.Cd4-Cre* mice. WT and *Rorc$^{fl/fl}$ Cd4-Cre* mice were subjected to 3 cycles of 2.5% DSS in drinking water. **(A, B)** Following cDSS treatment, *Rorc$^{fl/fl}$.Cd4-Cre* mice showed significantly more colonic inflammation. **(C)** Representative FACS plots showing colonic IFNγ and IL-17 expressions from gated CD3$^+$CD4$^+$T cells with mean percentages +/- SD of positive cells. **(D)** Total number of colonic CD3$^+$CD4$^+$T cells from the indicated groups. **(E)** Representative FACS plots showing percentages of brain-infiltrating CD4$^+$T cells with mean percentages +/- SD of positive cells. **(F)** RORγt and T-bet expressions from the brain infiltrating CD4+T cells where mean percentages +/- SD of positive cells are shown (F). **(G, H)** Photomicrograph showing astrogliosis in two groups of mice during cDSS-induced colitis. Data are representative of two experiments (n=6 or 7/group) except G & H (5 mice/group). *P* values, two tailed unpaired student *t* test are shown. Bar diagrams represent mean ± SEM where n.s.= not significant (D).