**Supplementary Information**

# Autoimmune susceptibility imposed by public TCRβ chains

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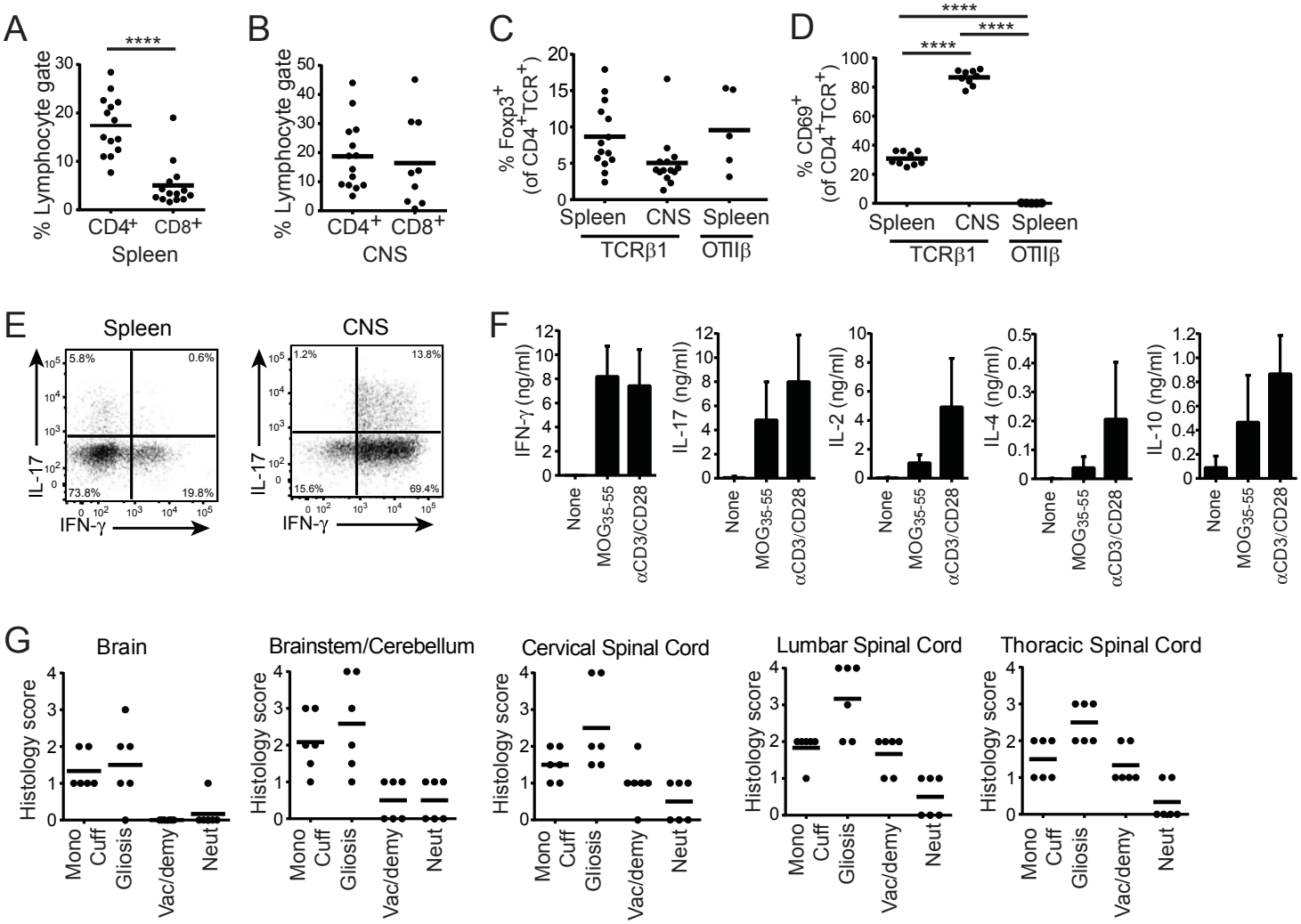
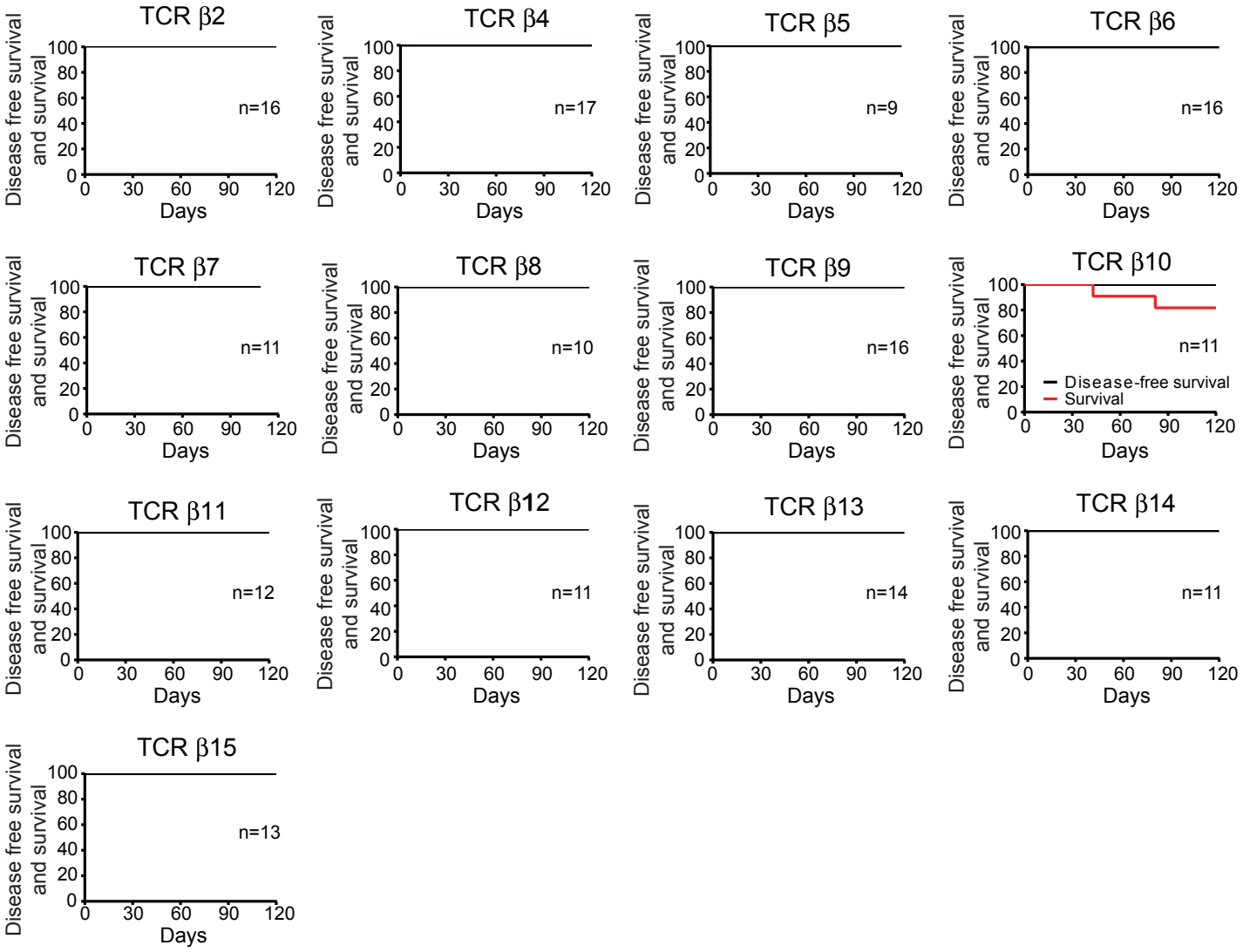
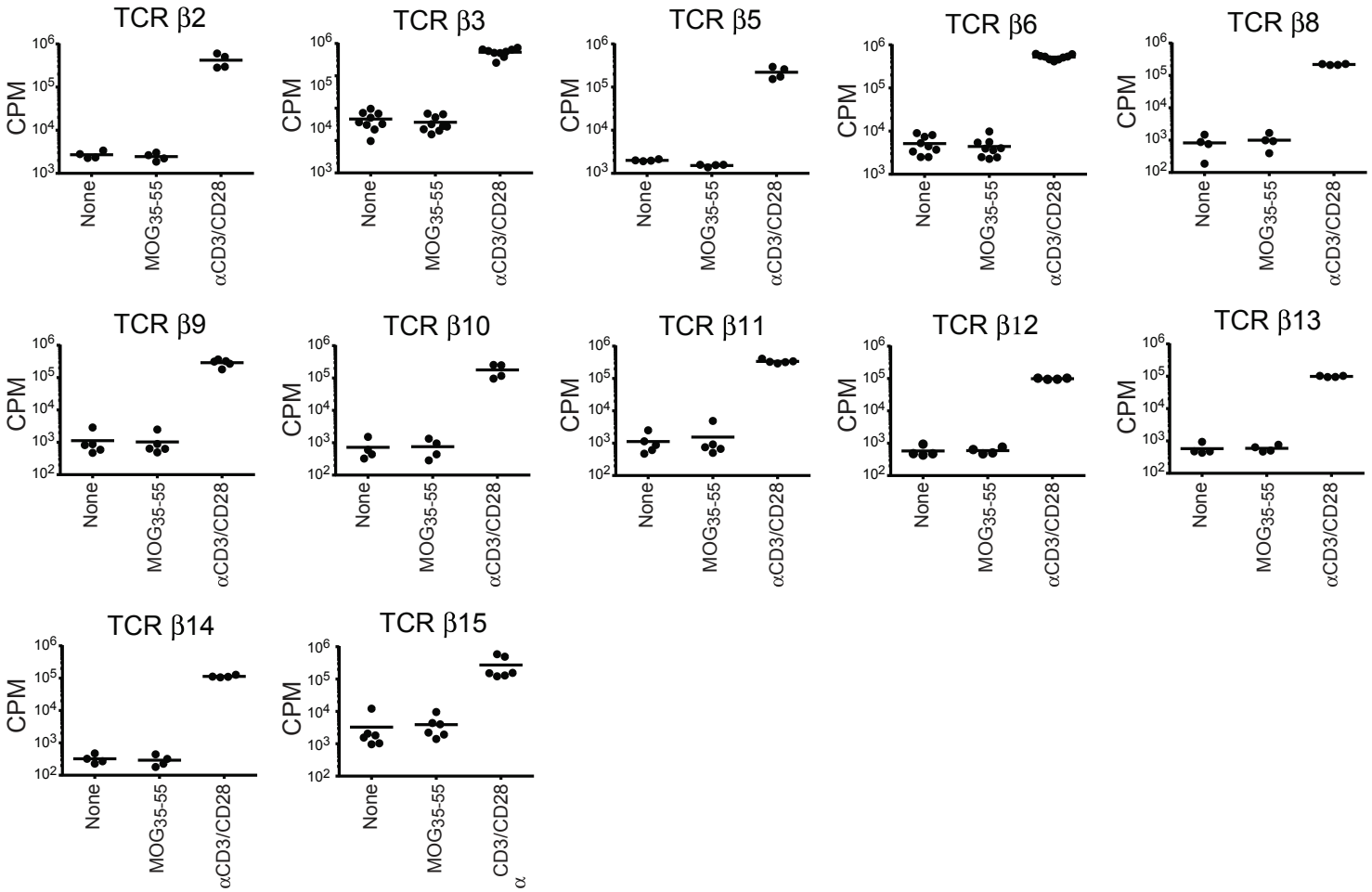



**Supplementary Figure S1. Characterization of spontaneous EAE development in TCRβ1 retrogenic mice.** Percent of $CD4^+TCR^+$ and $CD8^+TCR^+$ T cells within the lymphocyte gate in day 30-35 TCRβ mice in the spleen (A) and CNS (B). (C) Percent of $CD4^+TCR^+$ lymphocytes expressing GFP-Foxp3 in the spleens and CNS of TCRβ1 and control OTII TCRβ retrogenic mice is plotted. Groups are NS by ANOVA. (D) The percent of activated $CD4^+TCR^+$ cells was determined by CD69 activation marker expression in the spleen and CNS, and compared with results in the spleens of OTII TCRβ mice. (E) Splenic and CNS T cells from TCRβ1 mice with EAE were stimulated ex vivo with mitogen and IFNγ and IL-17 production measured by intracellular staining. Representative data is shown. Summary data is provided in Figure 1D. (F) Splenocytes from TCRβ1 mice with EAE were stimulated with $MOG_{35-55}$ and secretion of the indicated cytokines measured by bead array. (G) Major organs from TCRβ1 mice with EAE were analyzed histologically. Inflammation was localized to the CNS. Scoring of the indicated CNS regions was performed by a blinded reviewer as described under Methods. ****, $p<0.0001$.




**Supplementary Figure S2. Disease-free and overall survival of retrogenic mice. K**aplan Meier analysis of disease free and overall survival of group 1 (TCRβ1-6), group 2 (TCRβ7-10), and group 3 (TCRβ11-15) mice not otherwise shown in other figures. Disease free and overall survival was 100% over the 120 day observation period for all mice plotted except TCRβ10, of which two mice died without overt preceding illness or apparent cause.




**Supplementary Figure S3. $MOG_{35-55}$ response of retrogenic mice.** $CD4^+$ T cells were purified from splees of the indicated disease-free retrogenic mice and cultured for 3 days in the presence of syngeneic irradiated splenic APCs in the absence of additional stimulation or with 100 μg/ml $MOG_{35-55}$ or αCD3/CD28. Cultures were pulsed with 3H-thymidine at 72 hr and 3H incorporation measured. Circles indicate means of triplicates from individual mice. No significant differences were identified between unstimulated and $MOG_{35-55}$ stimulated samples for the mice shown.

| Mouse | Source | Cell Type | TRAV | TRAJ | CDR3 |
|---|---|---|---|---|---|
| **5'RACE clones:** | | | | | |
| 1 | CNS | Foxp3$^-$ | TRAV13-2 | TRAJ26 | CAPPAHAQGLTF |
| 1 | CNS | Foxp3$^-$ | TRAV13D-1 | TRAJ37 | CALITGNTGKLIF |
| 1 | CNS | Foxp3$^-$ | TRAV14-2 | TRAJ26 | CAARTYAQGLTF |
| 1 | CNS | Foxp3$^-$ | TRAV14D-3 | TRAJ31 | CAARKNSNNRIFF |
| 1 | CNS | Foxp3$^-$ | TRAV4D-3 | TRAJ49 | CAAVTGYQNFYF |
| 1 | CNS | Foxp3$^-$ | TRAV4D-4 | TRAJ42 | CAASGGSNAKLTF |
| 1 | CNS | Foxp3$^-$ | TRAV4D-4 | TRAJ57 | CAAGQGGSAKLIF |
| 1 | CNS | Foxp3$^-$ | TRAV4N-3 | TRAJ27 | CAAGGYTGKLTF |
| 1 | CNS | Foxp3$^-$ | TRAV6D-6 | TRAJ57 | CALGDRGSAKLIF |
| 1 | CNS | Foxp3$^-$ | TRAV7-1 | TRAJ21 | CAVRKRSNYNVLYF |
| 1 | CNS | Foxp3$^-$ | TRAV7-2 | TRAJ23 | CAASMDYNQGKLIF |
| 1 | CNS | Foxp3$^-$ | TRAV7-3 | TRAJ34 | CAVSPQSSNTNKVVF |
| 1 | CNS | Foxp3$^-$ | TRAV7-4 | TRAJ12 | CAASGRTGGYKVVF |
| 1 | CNS | Foxp3$^-$ | TRAV7-4 | TRAJ21 | CAASARSNYNVLYF |
| 1 | CNS | Foxp3$^-$ | TRAV7-6 | TRAJ33 | CAASNYQLIW |
| 1 | CNS | Foxp3$^-$ | TRAV8-1 | TRAJ39 | CATPYNNAGAKLTF |
| 1 | CNS | Foxp3$^-$ | TRAV9N-2 | TRAJ35 | CVLSSGFASALTF |
| 1 | CNS | Foxp3$^-$ | TRAV9N-2 | TRAJ35 | CVLSAGFASALTF |
| 1 | CNS | Foxp3$^-$ | TRAV9N-3 | TRAJ39 | CAVSAINAGAKLTF |
| 2 | CNS | Foxp3$^-$ | TRAV12-2 | TRAJ33 | CALSARVNYQLIW |
| 2 | CNS | Foxp3$^-$ | TRAV14D-1 | TRAJ57 | CAASPQNQGGSAKLIF |
| 2 | CNS | Foxp3$^-$ | TRAV6-2 | TRAJ17 | CVLGDRRSAGNKLTF |
| 2 | CNS | Foxp3$^-$ | TRAV6-3 | TRAJ45 | CAMSGADRLTF |
| 2 | CNS | Foxp3$^-$ | TRAV7-4 | TRAJ9 | CAAGISNMGYKLTF |
| 2 | CNS | Foxp3$^-$ | TRAV7-4 | TRAJ9 | CAARISNMGYKLTF |
| 3 | CNS | Foxp3$^-$ | TRAV19 | TRAJ24 | CAVPASLGKLQF |
| 3 | CNS | Foxp3$^-$ | TRAV4D-3 | TRAJ21 | CAAGGYNVLYF |
| 3 | CNS | Foxp3$^-$ | TRAV7-3 | TRAJ27 | CAANTGKLTF |
| 3 | CNS | Foxp3$^-$ | TRAV7D-3 | TRAJ37 | CAVGGNTGKLIF |
| 1 | CNS | Foxp3$^+$ | TRAV13D-1 | TRAJ39 | CALVMNNNAGAKLF |
| 1 | CNS | Foxp3$^+$ | TRAV4D-3 | TRAJ50 | CAARSSSSFSKLVF |
| 1 | CNS | Foxp3$^+$ | TRAV4D-3 | TRAJ42 | CAAGGSNAKLTF |
| 1 | CNS | Foxp3$^+$ | TRAV4D-4 | TRAJ57 | CAAALNQGGSAKLIF |
| 1 | CNS | Foxp3$^+$ | TRAV4D-4 | TRAJ57 | CAAGQGGSAKLIF |
| 1 | CNS | Foxp3$^+$ | TRAV4N-3 | TRAJ47 | CAAVPMDYANKMIF |
| 1 | CNS | Foxp3$^+$ | TRAV7-2 | TRAJ9 | CAASWMGYKLTF |
| 1 | CNS | Foxp3$^+$ | TRAV7-3 | TRAJ22 | CAVSASSGSWQLIF |
| 1 | CNS | Foxp3$^+$ | TRAV7-3 | TRAJ22 | CAVSMSFGSWQLIF |
| 1 | CNS | Foxp3$^+$ | TRAV7-4 | TRAJ12 | CAASGRTGGYKVVF |
| 1 | CNS | Foxp3$^+$ | TRAV7D-3 | TRAJ22 | CAVSISGSWQLIF |
| 2 | CNS | Foxp3$^+$ | TRAV12-3 | TRAJ39 | CALRRGNAGAKLTF |
| 2 | CNS | Foxp3$^+$ | TRAV7-6 | TRAJ32 | CAVLGSSGNKLIF |
| 2 | CNS | Foxp3$^+$ | TRAV9D-3 | TRAJ32 | CALSPYGSSGNKLIF |
| 2 | CNS | Foxp3$^+$ | TRAV9D-3 | TRAJ32 | CALSPYESSGNKLIF |
| 3 | CNS | Foxp3$^+$ | TRAV21 | TRAJ49 | CILKTGYQNFYF |
| 3 | CNS | Foxp3$^+$ | TRAV6-5 | TRAJ49 | CILKTGYQNFYF |
| **Additional TRAV4 PCR clones:** | | | | | |
| 3 | CNS | Foxp3$^+$ | TRAV4D-3 | TRAJ33 | CAAPDSNYQLIW |
| 3 | CNS | Foxp3$^+$ | TRAV4D-3 | TRAJ57 | CAARQGGSAELIF |
| 3 | CNS | Foxp3$^+$ | TRAV4D-3 | TRAJ40 | CAAPGNYKYVF |
| 3 | CNS | Foxp3$^+$ | TRAV4D-3 | TRAJ39 | CAAGGDNAGAKLTF |
| 3 | CNS | Foxp3$^+$ | TRAV4D-3 | TRAJ50 | CAAIASSSFSKLVF |
| 3 | CNS | Foxp3$^+$ | TRAV4D-4 | TRAJ57 | CAAENQGGSAKLIF |

**Supplementary Table S1. Distinct TCRα chains isolated from CNS CD4$^+$ GFP-Foxp3$^+$ and GFP-Foxp3$^-$ T cells from TCRβ1 mice with EAE.** TCRα were isolated by 5'RACE except for a subset of Foxp3$^+$ clones from mouse 3 that were isolated with TRAV4 and TCR Cα-specific primers.