

Description of Additional Supplementary Files

File Name: Supplementary Data 1

Description: **Gene list of the HuT_H17 CodeSet**

File Name: Supplementary Data 2

Description: **The presence of murine and human T_H cell signature genes in nCounter CodeSet HuT_H17.** a, murine pathogenic T_H17 signature genes in experimental autoimmune encephalomyelitis (EAE) identified by Lee et al.¹². b, murine EAE signature genes enriched in human myelin-specific CCR6⁺ CD4⁺ T cell libraries derived from patients with MS¹⁹. c, EAE signature genes enriched human CD45RO⁺CCR7^{lo}CCR6⁺CCR4^{lo}CXCR3^{hi} memory effector T_H17.1 cells from healthy donors³³. d, EAE signature genes in nCounter CodeSet HuT_H17. n.a., not available or not presented; +, gene expressed up-regulated; -, gene expression not up-regulated.

File Name: Supplementary Data 3

Description: **Up and down-regulated genes in T_H1/17 cells compared to T_H17 cells.** Differentially expressed genes between T_H1/17 and T_H17 cells were select with the two-tailed, paired Student's t-test $p < 0.05$ followed by supervised filtering for expression differences between Mean T_H1/17 and Mean T_H17 ($\Delta = \text{MEAN}_{\text{T}_{\text{H}}1/17} - \text{MEAN}_{\text{T}_{\text{H}}17}$) > 20 for robustness. Abbreviations: Mean T_H1/17, mean gene expression value of T_H1/17 cells; Mean T_H17, mean gene expression value of T_H17 cells.

File Name: Supplementary Data 4

Description: **Genes differentially expressed between human *ex vivo* T_H1/17 vs. T_H17 cells but not enriched in human and mouse pathogenic/non-pathogenic T_H17 gene set enrichment analysis comparisons.** Differentially expressed genes between T_H1/17 and T_H17 cells were select with the two tailed, paired Student's t-test $p < 0.05$ followed by supervised filtering for expression differences between Mean T_H1/17 and Mean T_H17 ($\Delta = \text{MEAN}_{\text{T}_{\text{H}}1/17} - \text{MEAN}_{\text{T}_{\text{H}}17}$) > 20 for robustness. Abbreviations: Mean T_H1/17, mean gene expression value of T_H1/17 cells; Mean T_H17, mean gene expression value of T_H17 cells.

File Name: Supplementary Data 5

Description: **Up and down-regulated genes in IL-10⁻ T_H17 clones compared to IL-10⁺ T_H17 clones.** Differentially expressed genes between IL-10⁻ and IL-10⁺ T_H17 clones were select with two tailed, paired Student's t-test $p < 0.05$ followed by supervised filtering for expression differences between Mean IL-10⁻ T_H17 clone and Mean IL-10⁺ T_H17 clone ($\Delta = \text{MEAN}_{\text{IL-10}^{-} \text{ T}_{\text{H}}17} - \text{MEAN}_{\text{IL-10}^{+} \text{ T}_{\text{H}}17}$) > 20 for robustness. Abbreviations: Mean IL-10⁻, mean gene expression value of IL-10⁻ T_H17 clones; Mean IL-10⁺, mean gene expression value of IL-10⁺ T_H17 clones.

File Name: Supplementary Data 6

Description: **The predicted upstream transcription factors for T_H1/17 differentiation identified with Enrichr ChEA2016 analysis**

All transcription factors with Benjamini-Hochberg adjusted p value smaller than 0.05 are shown.

File Name: Supplementary Data 7

Description: **The predicted upstream transcription factors for IL-10⁺ clone differentiation identified with Enrichr ChEA2016 analysis.** All transcription factors with Benjamini-Hochberg adjusted *p* value smaller than 0.05 are shown.

File Name: Supplementary Data 8

Description: **List of qPCR primers**