**Supplementary Information:**

**Table S1. List of antibodies used for FACS analysis**

| Antibody | Clone | Catalog number | Manufacturer |
|---|---|---|---|
| anti-CD8α | 53–6.7 | 100706 | Biolegend |
| anti-PD-1 | 29F.1A12 | 135210 | Biolegend |
| anti-CD25 | PC61 | 102020 | Biolegend |
| anti-CD44 | IM7 | 103040 | Biolegend |
| anti-IL-6Rα | D7715A7 | 115812 | Biolegend |
| anti-PD-L1 | 10F.9G2 | 124308 | Biolegend |
| anti-IL-17 | Tc11–18H10.1 | 506916 | Biolegend |
| anti-IL-4 | 11B11 | 504104 | Biolegend |
| anti-IL-10 | JES5-16E3 | 505026 | Biolegend |
| anti-IL-2 | JES6-5H4 | 503808 | Biolegend |
| anti-CD69 | H1.2F3 | 104512 | Biolegend |
| anti-CD27 | LG.3A10 | 124226 | Biolegend |
| anti-CD107a | 1D4B | 121625, 121606 | Biolegend |
| anti-IL-23R | 12B2B64 | 150903 | Biolegend |
| anti-IFNγ | XMG1.2 | 25-7311-82 | Thermo Fisher Scientific |
| anti-CD44 | IM7 | 25-0441-81 | Thermo Fisher Scientific |
| anti-CTLA-4 | UC10-4B9 | 17-1522-82 | Thermo Fisher Scientific |
| anti-IL-21 | mhalx21 | 12-7213-82 | Thermo Fisher Scientific |
| anti-Eomes | Dan11mag | 12-4875-80 | Thermo Fisher Scientific |
| anti-TNFα | MP6-XT22 | 48-7321-82 | Thermo Fisher Scientific |
| anti-Granzyme B | GB12 | MHGB04 | Thermo Fisher Scientific |
| anti-RORγt | AFKJS-9 | 12-6988-82 | Thermo Fisher Scientific |
| anti-ICOS | 15F9 | 12-9940-81 | ebioscience |
| anti-BCL6 | K112-91 | 561525 | BD Biosciences |
| anti-TCF1 | S33-966 | 566692 | BD Biosciences |
| anti-CD45.2 | 104 | 553772 | BD Biosciences |
| anti-pSTAT3 (Rabbit mAb) | D3A7 | 9145 | Cell signaling |
| donkey anti-rabbit IgG | Poly4064 | 406414 | Biolegend |

**Table S2: Primer pairs used in quantitative real-time PCR**

| | |
|---|---|
| RORc | Forward: 5´-TGC AAG ACT CAT CGA CAA GG-3´<br>Reverse : 5´-AGG GGA TTC AAC ATC AGT GC-3´ |
| BCL6 | Forward: 5´- GGG ACA TCT TGA CGG ACG TT-3´<br>Reverse: 5´- TCA CGG GGA GGT TTA AGT GC-3´ |
| GAPDH | Forward: 5´-GTC CCG TAG ACA AAA TGG TG-3´<br>Reverse: 5´-CAA GCT TCC CAT TCT CGG -3´ |
| TCF7 | Forward: 5´-GAC ATC AGC CAG AAG CAA G-3´<br>Reverse: 5´-GTG CTG TCT ATA TCC GCA G-3´ |
| T-bet | Forward: 5´-TCA GGA CTA GGC GAA GGA GA-3´<br>Reverse : 5´-TAG TGG CAC CTT CCA ATT C-3´ |
| HIF1a | Forward: 5´-CGG CGA AGC AAA GAG TCT G-3´<br>Reverse : 5´-ATA ACT GAT GGT GAG CCT CAT AAC-3´ |
| IRF4 | Forward: 5´-TCT TCA GGC TTG GGC ATT G-3´<br>Reverse : 5´-CAC ATC GTA ATC TTG TCT TCC AAG TAG-3´ |
| IL-23R | Forward: 5´-TGA AAG AGA CCC TAC ATC CCT TGA-3´<br>Reverse : 5´-CAG AAA ATT GGA AGT TGG GAT ATG TT-3´ |
| IL-21 | Forward: 5´-CAT CAT TGA CCT CGT GGC CC-3´<br>Reverse : 5´-ATC GTA CTT CTC CAC TTG CAA TCC C-3´ |
| IL-17a | Forward: 5´-CTC CAG AAG GCC CTC AGA CTA-3´<br>Reverse : 5´-AGC TTT CCC TCC GCA TTG ACA-3´ |

Figure S1
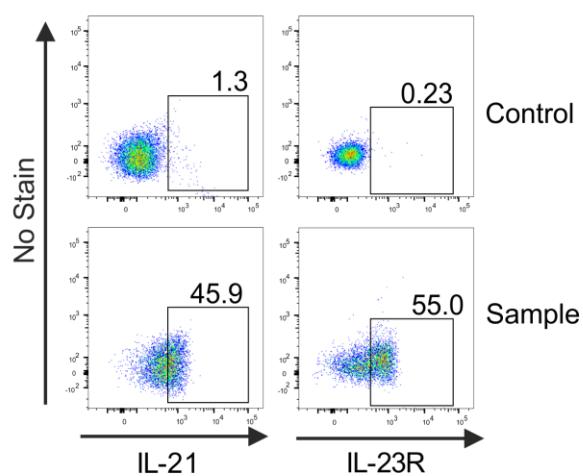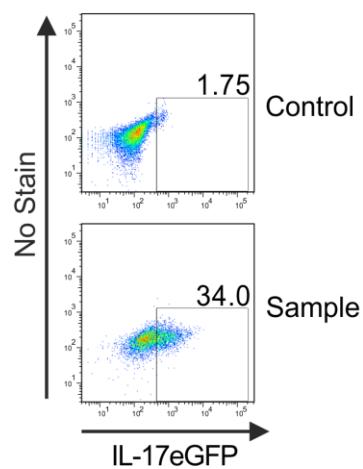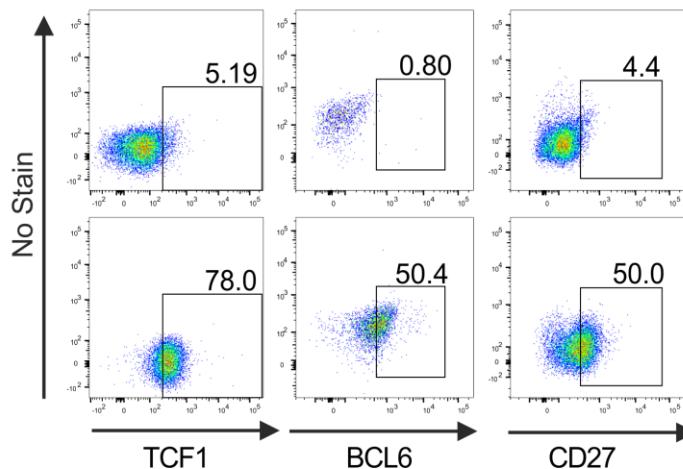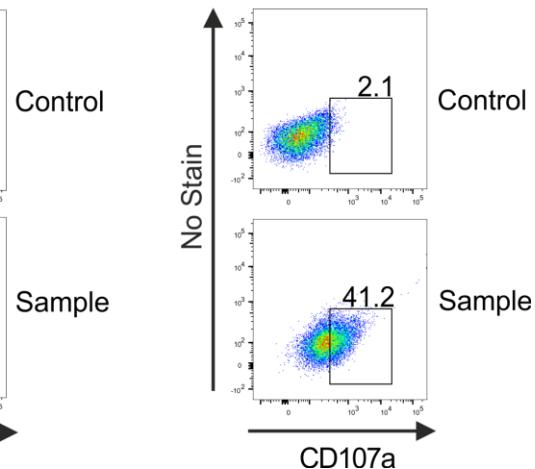


**Figure S1. Gating strategy of flow cytometric dot plots.**
(A,C,D) Unstimulated or unstained CD8$^+$ T-cells were used as controls to set the gate for IL-21, IL-23R, TCF1, BCL6, CD27 and CD107a staining in CD8$^+$ T-cells stimulated with microspheres immobilized with anti-CD3, anti-CD28 (Sample). (B) CD8$^+$ T-cells from C57BL/6 mice stimulated under Tc17 condition with anti-CD3, anti-CD28 were used as a control for IL-17eGFP gating in similarly stimulated CD8$^+$ T-cells (sample) from IL-17A-eGFP reporter mice.