2 Supplementary Table 1: Flow cytometry reagents

| Live dead/ Dextramer/Antibody | Panel | Dye/Fluorochrome | Clone | Function | Vendor |
|-------------------------------|-------|------------------|-------|----------|--------|
| Zombie Viability dye          | 1 & 2 | NIR              | n/a   | Dead cells exclusion | Biolegend |
| Dextramer®                    | 1     | PE               | n/a   | Identify antigen-specific T cells | Immudex |
| **Surface Antibodies**        |       |                  |       |          |        |
| CD3                           | 1 & 2 | AF700            | 17A2  | Define lineage | Biolegend |
| CD4                           | 1 & 2 | PerCP-Cy 5.5     | RM4-5 |          | BD     |
| CD8                           | 1 & 2 | BV510            | 53-6.7 |          | Biolegend |
| CD44                          | 1 & 2 | AF488            | IM7   | CD8/CD4 naive and memory subsets |        |
| CD62L                         | 1 & 2 | BV570            | MEL-14 |          |        |
| PD-1                          | 1 & 2 | BV421            | 29F.1A12 | Activation/Exhaustion Marker | Biolegend |
| KLRG1                         | 1     | BV785            | 2F1/KLRG1 | Short-lived effector (SLECs) and Memory precursor (MPECs) markers |        |
| CD127                         | 1     | PE-Cy5           | A7R34 |          |        |
| Tim3                          | 1 & 2 | BV605            | RMT3-23 | Exhaustion marker |        |
| **Intracellular Antibodies**  |       |                  |       |          |        |
| IFNγ                          | 2     | BV711            | XMG1.2 | Cytokine response | Biolegend |
| TNFa                          | 2     | AF647            | MP6-XT22 |          |        |
| IL-2                          | 2     | PE-Dazzle-594    | JES6-5H4 |          |        |
| **Transcription Factors**     |       |                  |       |          |        |
| TCF1                          | 1     | AF647            | C63D9 | Stem-like T cell marker | Cell signalling |
| Ki67                          | 1     | Per-CP           | 16A8  | T-cell proliferation marker | Biolegend |

3 Supplementary Figure 1: Gating strategy for Panel 1, ex vivo analysis of CD8+ T cell phenotypes

Splenocytes were identified following application of a time gate (SCH versus time) and exclusion of doublets (FSC-H versus FSC-A) on a SSC-A versus FSC-A dot plot. Viable CD3+ cells were characterized as CD4+ or CD8+ T cells. CD8+CD44+ Dextramer®+ T cells were identified and further characterized with PD-1 vs TCF1 (stem-like T-cells), PD1 versus Tim3 (exhaustion), KLRG1 versus CD127 (short-lived effector cells & memory pre-cursor effector cells) and CD44 versus CD62L (memory subsets). In addition, proliferating CD8+ cells were quantified using transcription factor Ki67. Analysis was conducted on FlowJo Software.

4 Supplementary Figure 2. Gating strategy for Panel 2, Intracellular Cytokine Staining
Splenocytes were identified following application of a time gate (SCH versus time) and exclusion of doublets (FSC-H versus FSC-A) on an SSC-A versus FSC-A dot plot. Viable CD3+ cells were characterized as CD4+ or CD8+ T cells. CD8+ T cells expressing intracellular cytokines IFNγ, IL-2 and TNFα were quantified.