

**Supplementary Table 2.** Stage 2: CD8<sup>+</sup> T<sub>RM</sub> formation in peripheral tissues.

| Stage 2: Formation in the tissue |       |       | Tissue            | Model                     | References |
|----------------------------------|-------|-------|-------------------|---------------------------|------------|
| TRM markers                      | CD69  | +     | SI IEL, LN        | LCMV                      | (71,75)    |
|                                  |       |       | Skin              | HSV                       | (41,74,82) |
|                                  |       |       | Lung, intestine   | Healthy human tissue      | (73)       |
|                                  |       |       | Kidney            | LCMV, influenza           | (78)       |
|                                  |       | -     | SI IEL, lung, FRT | LCMV, influenza, VSV      | (78)       |
|                                  | CD103 | +     | SI IEL            | LCMV                      | (71)       |
|                                  |       |       | Skin              | HSV                       | (4,41)     |
|                                  |       |       | FRT               | HSV                       | (79)       |
|                                  |       |       | Liver             | LCMV                      | (82)       |
|                                  |       |       | Lung              | Influenza                 | (80,154)   |
|                                  |       |       |                   | Human                     | (72)       |
|                                  |       | -     | Intestinal LP     | LM                        | (42)       |
|                                  |       | Yptb  |                   | (81)                      |            |
|                                  |       | Liver |                   | LCMV                      | (82)       |
|                                  | CD49a | +     | Lung              | Healthy human tissue      | (73)       |
|                                  |       |       |                   | Influenza                 | (7,154)    |
|                                  |       |       | Intestine         | Healthy human tissue      | (73)       |
|                                  |       |       | Skin              | Human vitiligo, psoriasis | (24)       |
|                                  |       |       |                   | HSV                       | (4,82,83)  |

|                            |        |        |                                   |           |         |
|----------------------------|--------|--------|-----------------------------------|-----------|---------|
| Transcriptional regulators | S1p1   | ↓      | Skin                              | HSV       | (41,74) |
|                            |        |        | Intestine                         | LCMV      | (43)    |
|                            | KLF2↓  | KLF2↓  | Intestine                         | LCMV      | (43,77) |
|                            |        |        | SG, kidney,<br>brain,             | LCMV      | (77)    |
|                            | Hobit↑ | Hobit↑ | Skin                              | HSV       | (82)    |
|                            |        |        | Liver, intestine,<br>kidney       | LCMV      | (82)    |
|                            | Blimp↑ | Blimp↑ | Skin                              | HSV       | (82)    |
|                            |        |        | Intestine, liver,<br>kidney, lung | LCMV      | (82,88) |
|                            |        |        | Intestinal IEL                    | LCMV      | (90)    |
|                            | NR4A1↑ | NR4A1↑ | Liver, Lung,<br>intestine         | LCMV      | (43,97) |
|                            | NR4A2↑ | NR4A2↑ | Intestine                         | LCMV      | (90)    |
|                            | Junb↑  | Junb↑  | Intestine                         | LCMV      | (43)    |
|                            | Eomes↓ | Eomes↓ | Brain                             | LM        | (92)    |
|                            |        |        | Skin                              | HSV       | (93)    |
|                            | T-bet↓ | T-bet↓ | Skin                              | HSV       | (93)    |
|                            |        |        | Lung                              | Influenza | (94)    |
|                            | Runx3↑ | Runx3↑ | Intestine                         | LCMV      | (43)    |
|                            |        |        | Skin                              | HSV       | (32)    |
|                            |        |        | Intestine                         | LCMV, LM  | (90)    |
|                            |        |        | Lung                              | Human     | (72)    |

|                  |                    |                |           |              |  |
|------------------|--------------------|----------------|-----------|--------------|--|
| Antigen          | Dependent          | Brain          | VSV, LM   | (9)          |  |
|                  |                    | Lung           | Influenza | (99–102,160) |  |
|                  | Independent        | Skin           | DNFB-HSV  | (103)        |  |
|                  |                    |                | MVA       | (106)        |  |
|                  |                    |                | VV        | (107)        |  |
|                  |                    | Intestinal IEL | LCMV      | (104)        |  |
| Tissue migration | CXCR3-CXCL9/CXCL10 | Skin           | HSV       | (41)         |  |
|                  |                    | Intestinal LP  | Yptb      | (115)        |  |
|                  |                    | Intestine      | LM        | (125)        |  |
|                  |                    | FRT            | HSV       | (105)        |  |
|                  | CCR9               | Intestinal IEL | LCMV      | (5,43)       |  |
|                  | CCR8               | Skin           | Human     | (117,118)    |  |
|                  | CCR10-CCL27        | Skin           | HSV       | (116)        |  |
|                  | CXCR6              | Skin           | DNFB      | (116)        |  |
|                  | TGF-β              | Intestine      | LCMV      | (104,108)    |  |
| Cytokines        |                    | Skin           | HSV       | (41)         |  |
|                  |                    | Kidney         | LCMV      | (109)        |  |
|                  |                    | Lung           | Influenza | (94)         |  |
|                  |                    |                | LCMV      | (110)        |  |
| IL-12            | Intestinal LP      | Yptb           | (81)      |              |  |
| IFN-β            | Intestinal LP      | Yptb           | (81)      |              |  |
| Immune cells     | CD4 <sup>+</sup>   | Induce         | Lung      | Influenza    |  |
|                  |                    |                |           | (94)         |  |

|                  |                           |               |                        |       |
|------------------|---------------------------|---------------|------------------------|-------|
|                  |                           | Intestinal LP | Yptb                   | (115) |
|                  | NK1.1 <sup>+</sup><br>ILC | Inhibit       | Salivary gland<br>LCMV | (119) |
| Immune mediators | 4-1BB-4-1BBL              | Lung          | Influenza              | (120) |
|                  | GITRL                     | Lung          | Influenza              | (121) |
|                  | miR-155                   | Brain         | LM                     | (123) |
|                  | ATP/ P2RX7                | Intestine     | LCMV                   | (169) |

Table abbreviations: + Expressed; - Not expressed; ↑ upregulated; ↓ downregulated; DNFB: 2,4-Dinitro-1-fluorobenzene; MVA: poxvirus modified Vaccinia Ankara; LM: listeria monocytogenes; LCMV: lymphocytic choriomeningitis virus; HSV: herpes simplex virus; VSV: vesicular stomatitis virus; VV: vaccinia virus; Yptb: Yersinia pseudotuberculosis; SI: Small intestine; LP: Lamina propria; IEL: Intraepithelial lymphocytes; FRT: Female reproductive tract; GITRL: glucocorticoid-induced TNFR-related protein ligand; miR: microRNAs.