

Description of Additional Supplementary Files

File Name: Supplementary Data 1

Description: **A list of 2855 DEG.** Gene symbols are shown with their clusters identified in Figure 2d. Columns “comparison1-4” show which category expressed the genes significantly higher in each differential expression test.

File Name: Supplementary Data 2

Description: **A list of Ahnak and AHNAK-covariant genes.** Gene symbols of Ahnak-covariant mouse genes and their human orthologs (*AHNAK*-covariant genes) are shown.

File Name: Supplementary Data 3

Description: **A list of recombinantly expressed antibodies.** Information of heavy and light chain genes and assay results are shown.

File Name: Supplementary Data 4

Description: **Eplet analysis of SAB assay-positive antibodies.** Top-10 hit antigens, trimmed mean MFI, and eplets present in the antigens are shown for each antibody. Eplets shared among all top-10 hits are colored in red.

File Name: Supplementary Data 5

Description: **DNA sequences of primers and Ki-67 fragments.** Sequences of cloning primers and purchased DNA encoding Ki-67 fragments.