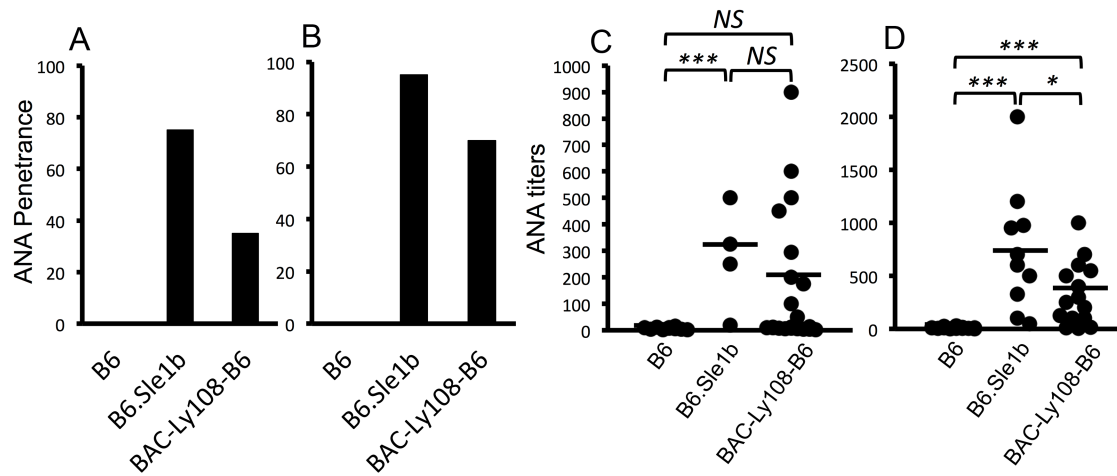**Supplementary Figure 1: ANA production in B6.*Sle1b* mice expressing each founder line for a given BAC transgenic strain.** Each founder line for a given BAC transgene carrying B6 allele(s) was introduced to B6.*Sle1b* mice. Serum ANA titers were measured by ELISA at 7 mo of age. The horizontal bars indicate the mean values. *p <0.05 considered significant. NS, not significant.
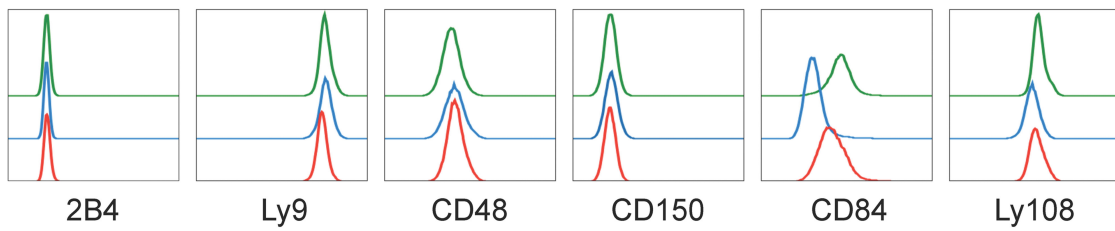
Supplementary Figure 2: Partial reduction in ANA production in B6.*Sle1b* mice transgenically expressing B6 Ly108. BAC transgene carrying B6 allele of Ly108 was introduced to B6.*Sle1b* mice (designated *Sle1b*-BAC-108). **(A- B)** IgG ANA penetrance or positivity and **(C- D)** ANA titers from 7 (left panel) and 9 (right panel) month old B6, B6.*Sle1b*, and *Sle1b*-BAC-Ly108 mice. *p <0.05, **p <0.01, ***p <0.001.*
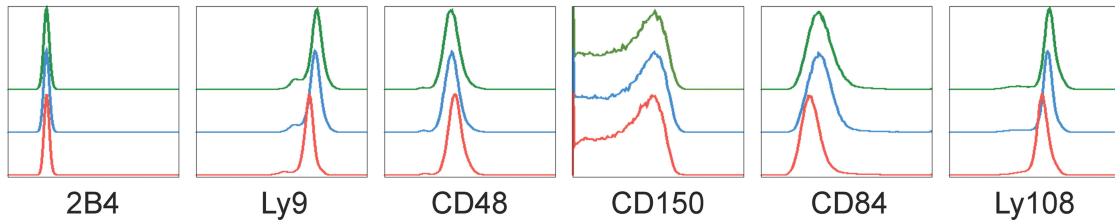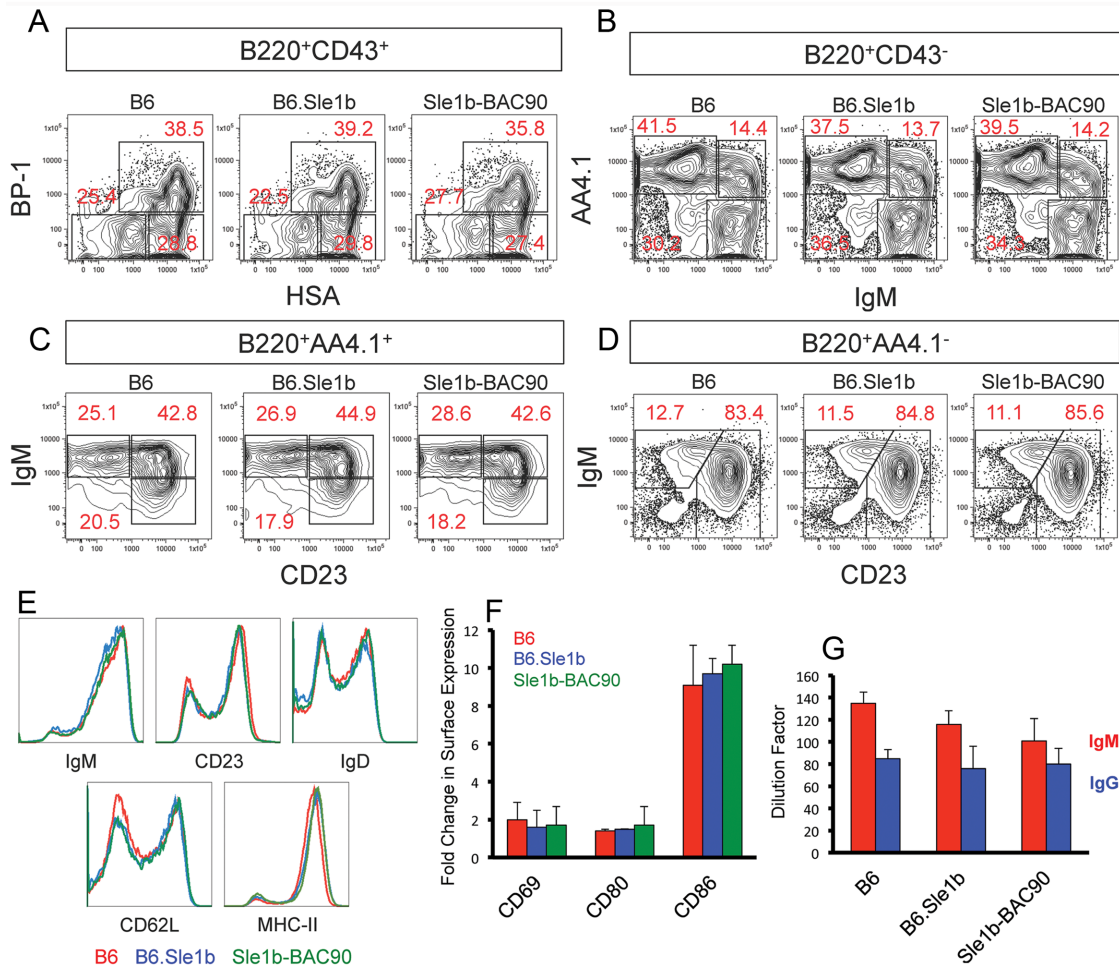
Supplementary Figure 3: Characterization of *Sle1b*-BAC90 mice. Flow cytometric analysis of B cell CD84 and Ly108 expression levels. Representative histogram plots of SLAM receptor expression on B220$^+$ B cells in 2 mo **(A)** and 8 mo **(B)** old mice of indicated genotypes. These data are representative of 5-6 mice per group.

Supplementary Figure 4: Reduced signaling capacity exhibited by B6.*Sle1b* B cells is not due to primary developmental defects. (A-B) Bone marrow B cell developmental stages: A fraction (B220$^+$CD43$^+$HSA$^-$BP-1), B fraction (B220$^+$CD43$^+$HSA$^+$BP-1$^-$), C fraction (B220$^+$CD43$^+$HSA$^+$BP-1$^+$), D fraction (B220$^+$CD43$^-$IgM$^-$AA4.1$^+$), E fraction (B220$^+$CD43$^-$IgM$^+$AA4.1$^+$), F fraction (B220$^+$CD43$^-$IgM$^+$AA4.1$^-$). **(C-D)** Splenic B cell developmental stages: T1 (B220$^+$AA4.1$^+$CD23$^-$IgM$^+$), T2 (B220$^+$AA4.1$^+$CD23$^+$IgM$^+$), T3 (B220$^+$AA4.1$^+$CD23$^+$IgM$^-$), marginal zone B cells (B220$^+$AA4.1$^-$CD23$^-$IgM$^+$), mature B cells (B220$^+$AA4.1$^-$CD23$^+$IgM$^+$). These data are representative of 8-10 mice per group. **(E)** Histogram plots show levels of IgM, CD23, IgD, CD62L, and MHC-II on B cells for each indicated group of mice. Data is representative of 5-6 mice per group. **(F)** CD69, CD80, and CD86 receptor expression on B cells after anti-IgM stimulation for 24 hours. MFI values were normalized to B6 controls to calculate fold change. These data represent 4-5 mice per group. **(G)** Total IgM and IgG titers measured in supernatants after anti-IgM stimulation of B cells for 24 hours. These data are representative of 4-5 mice per group.