

Supplementary Information

Supplementary Table S1. CLL-IPAs and CD5+B-IPAs

Supplementary Table S2. Novel TSG candidates

Supplementary Table S3. Primer sequences

Supplementary Figure 1.

Contains gel source data for Fig. 2a, 2d, 3c, 4f, Extended Data Fig. 5, 6a-d, 7b, c, e-g, and the individual *P* values for Fig. 2e.