

## Figure legends:

### Fig. S1. Diversity measures and CDR3 length distribution.

(A, B) The number of unique sequences and their copies for the 5 different group (Control-young, control-old, no-cancer, pre-cancer and cancer) in alpha (a) and beta (b) chains. (C, D) Shannon entropy and ecological diversity measures of the different groups. (E, F) CDR3 length distribution of the different groups in alpha and beta chains.

### Fig. S2. Public repertoires.

(A-F) The ratios of private, inclusive-public and exclusive-public repertoires in alpha unique NT clones (A) and AA clones (B), beta unique NT clones (C) and copies (D) and beta unique AA clones (E) and copies (F).

### Fig. S3. Convergent recombination.

(A-D) Frequency of convergent recombined clones in alpha (A) and beta (B) and non-convergent recombined clones in alpha (C) and beta (D). (E) The average CR level in the Control group (blue line) and the Tg group (red line) over time.

### Table S1.

The final count of productive libraries and their count of TCR  $\alpha$  and  $\beta$  sequences.