

## Description of Additional Supplementary Files

**File name:** Supplementary Data 1

**Description:** Literature collection and summary and the source data of Figure 1.

**File name:** Supplementary Data 2

**Description:** The source data of Figure 2.

**File name:** Supplementary Data 3

**Description:** T cell exhaustion and regulatory T cell differentiation gene set.

**File name:** Supplementary Data 4

**Description:** The source data of Figure 4.

**File name:** Supplementary Data 5

**Description:** The source data of Figure 5.

**File name:** Supplementary Data 6

**Description:** Nectin 2 sgRNA and Oligo sequences.