

Figure S1. (A) Positive cytokeratin staining (light blue) represented tumor cell areas of PD-L1^{tumor-}/PD-L1^{tumor+} samples, so that regions of stromal cells were excluded. Scale bar, 200 μ m. (B) Kaplan-Meier analysis of recurrence free survival between the PD-L1^{tumor-}/PD-L1^{tumor+} groups. PD-L1, programmed cell death ligand 1.

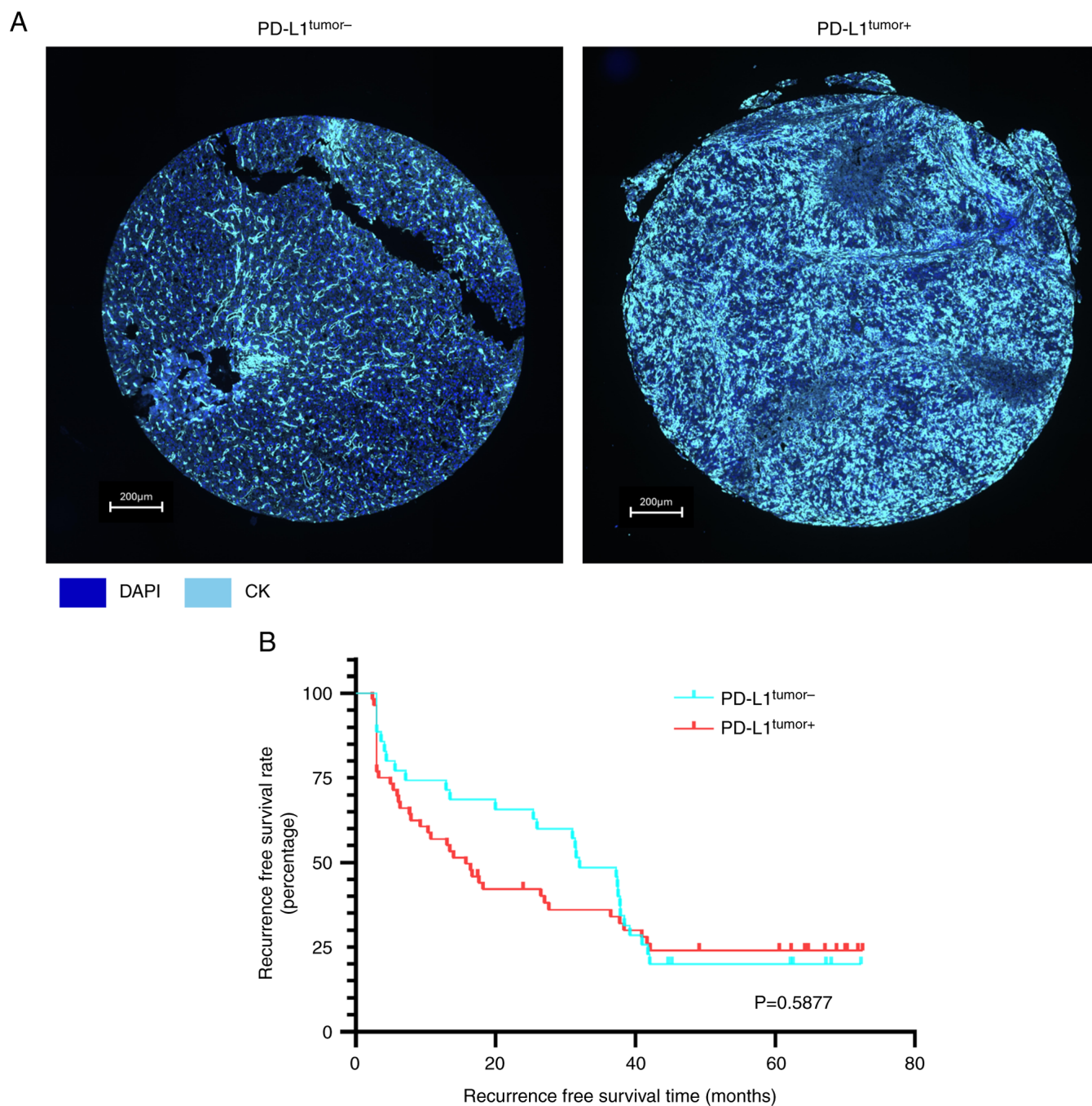


Figure S2. ROC survival curve was used to determine the inclusion criterion of the CD39^{T cell+} group to be the ratio of CD39⁺ T cells/CD39⁻ T cells ≥ 1.42 and the inclusion criterion for the CD39^{T cell-} group to be the ratio of CD39⁺ T cells/CD39⁻ T cells < 1.42 (AUC=0.534). AUC, area under the curve; ROC, receiver operator characteristic.

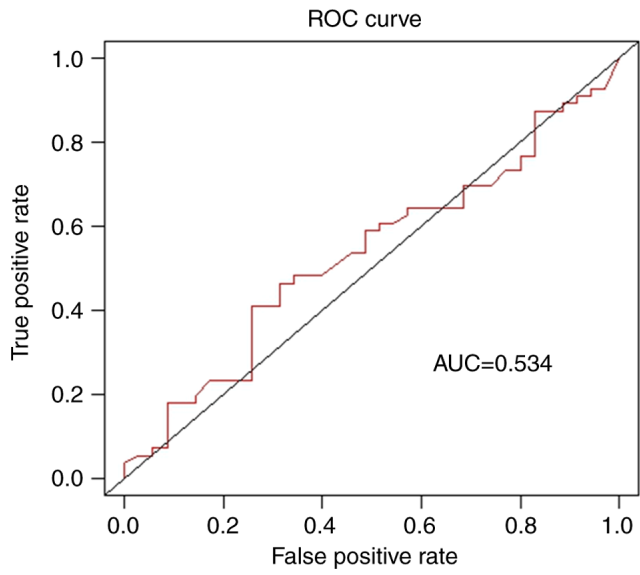


Figure S3. (A) Positive cytokeratin staining (light blue) represented tumor cell areas of CD39^{T cell-} and CD39^{T cell+} samples, so that regions of stromal cells were excluded. Scale bar, 200 μ m. (B) Kaplan-Meier analysis of recurrence free survival between the CD39^{T cell-}/CD39^{T cell+} groups.

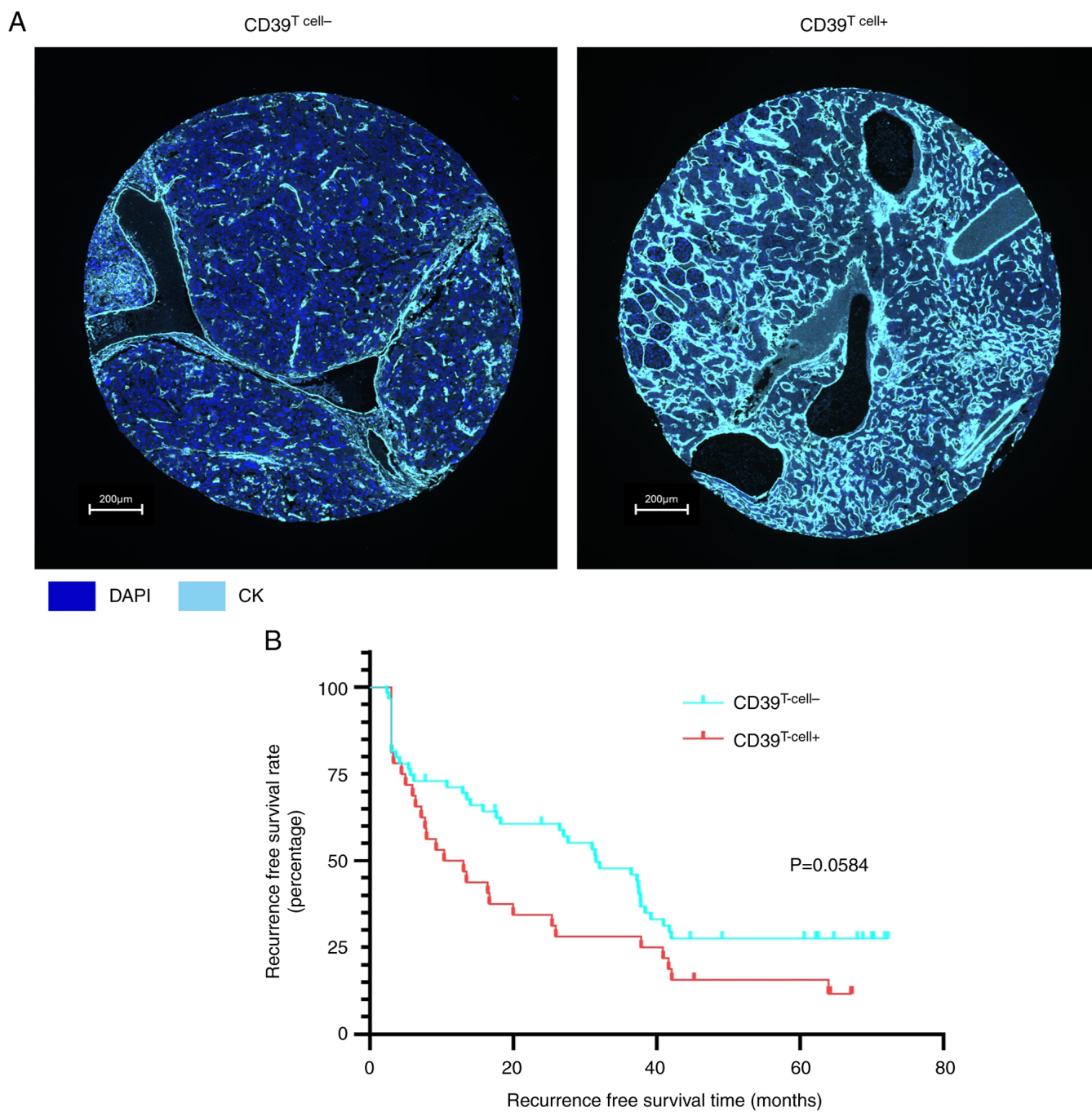


Figure S4. Kaplan-Meier analysis of recurrence free survival between the (A) co-upregulated/non-co-upregulated groups and (B) co-upregulated/co-low-expression groups. (C) Among the PD-L1^{tumor+} group, patient samples were further divided into two subgroups according to the expression level of CD39 in CD8⁺ T cells (PD-L1^{tumor+}/CD39^{T cell-}: PD-L1⁺ cell count $\geq 1\%$ in the tumor region and CD39⁺ T cell/CD39⁻ T cell < 1.42 ; PD-L1^{tumor+}/CD39^{T cell+}: PD-L1⁺ cell count $\geq 1\%$ in the tumor region and CD39⁺ T cell/CD39⁻ T cell ≥ 1.42). Kaplan-Meier analysis indicated no significant difference in overall survival was observed between the two subgroups ($P=0.1017$). PD-L1, programmed cell death ligand 1.

