Supporting Information: Uncovering the Underlying Mechanism of Cancer Tumorigenesis and Development under Immune Microenvironment from Global Quantification of the Landscape

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Figure S1: Diagram of immune module and prey-predator system for oscillations. (A)The module of the cancer cells, mature dendritic cells and CD8<sup>+</sup> T cells. (B)The prey-predator system. Black arrows represent activation. Black bars represent inhibition.



Figure S2: Barrier changes of different cell types injections.  $\Delta Barrier_{s1n}$ : the change of barrier between s1 and normal steady state.  $\Delta Barrier_{s1l}$ : the change of barrier between s1 and low cancer state.  $\Delta Barrier_{s2l}$ : the change of barrier between s2 and low cancer steady state.  $\Delta Barrier_{s2h}$ : the change of barrier between s2 and high cancer steady state. The parameter  $c_i = 0.2$ .