

PD-L1/PD-1 co-stimulation, a brake for T cell activation and a T cell differentiation signal

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For T cell activation, three signals have to be provided from the antigen presenting cell; Signal 1 (antigen recognition), signal 2 (co-stimulation) and signal 3 (cytokine priming). Blocking negative co-stimulation during antigen presentation to T cells is becoming a promising therapeutic strategy to enhance cancer immunotherapy. Here we will focus on interference with PD-1/PD-L1 negative co-stimulation during antigen presentation to T cells as a therapeutic approach. We will discuss the potential mechanisms and the therapeutic consequences by which interference/inhibition with this interaction results in anti-tumour immunity. Particularly, we will comment on whether blocking negative co-stimulation provides differentiation signals to T cells undergoing antigen presentation. A major dogma in immunology states that T cell differentiation signals are given by cytokines and chemokines (signal 3) rather than co-stimulation (signal 2). We will discuss whether this is the case when blocking PD-L1/PD-1 negative co-stimulation.

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