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B cell exhaustion in HIV: A role for programmed death receptor 1 (PD-1) immune checkpoint

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Programmed cell death protein 1 (PD-1) and PD-L1 function as major immune checkpoint regulators, which are the inhibitory pathways in the immune system that maintain self–tolerance and modulate the immune response. The most studied of these checkpoints is PD-1 pathways in T cells. Generally, PD-1 a surface protein expressed on B cells and T cells transmits inhibitory signals when bound to its ligands, programmed cell death ligands 1 and 2 (PD-L1/PD-L2) expressed on other antigen presenting cells. Various studies suggest that during the HIV infection the up-regulation of PD-1 could possibly cause the diminishing of B cell responses thereby interfering with antibody production. Suggesting that using anti-PD-1 antibodies could enhance antibody responses in infections like HIV that comprises B cell responses. Failure of immune protection is caused in patients with HIV partly due to B cell dysfunction and the reduction of viral-specific T cells during the chronic infection. It is possible that the exhaustion of these cells is characterized by lowering the competence of the cells to proliferate due to the up-regulation of the inhibitory receptors, therefore making them poorly responsive to stimulation. Whether the upregulation of inhibitory receptors in exhausted B cells includes the canonical immune checkpoint inhibitor programmed cell death protein 1 (PD-1) is unknown. Therefore we have investigated the HIV-driven expression of inhibitory surface molecules, specifically PD-1, to explain any impairment of SHM in the HIV infected patients.

Biography

Jacobus Hendricks is a qualified Molecular Biologist. He is a lecturer in the Discipline of Human Physiology at the School of Laboratory Medicine and Medical Sciences at UKZN. He is responsible for the supervision of research students within the School of Health Sciences. He completed his Doctoral Degree in the field of Immunogenetics at the University Medical Center Groningen, Netherlands (2015). The tile of his Doctoral study is: "Heterogeneity of memory marginal zone B lymphocytes", where he has studied the nature and origin of these memory B-cells in the Marginal Zone.

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