

Title: Sub-optimal activation of Akt and its role in T-cell survival and apoptosis

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Abstract: Whereas mature T cells proliferate in response to TCR/CD28 costimulation, immature CD4⁺CD8⁺ thymocytes die. The molecular basis for this difference in response is not fully understood. Akt is a serine/threonine kinase in the T cell signaling pathway that phosphorylates downstream pro-apoptotic targets, sequestering them and preventing cell death. Akt is recruited to the cellular membrane by phosphatidylinositols (PIP₂ and PIP₃) which are abundant in lipid rafts. Immature thymocytes have previously been shown to inefficiently cap lipid rafts in response to T cell receptor stimulation and therefore may not concentrate PI's. As a result, Akt may be sub-optimally activated in immature thymocytes. Investigation into the substrates of Akt in immature versus mature T cells provides preliminary evidence in support of this possibility.