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Natural killer cell receptors and targeted immunotherapy for cancer

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Abstract

This lecture will address the molecular basis of Natural Killer cell recognition and activation by cancer cells and how this information allows specific targeted killing of cancer cells by NK cells. NK cell functions are regulated by a delicate balance between signaling through activating receptors and inhibitory receptors. The interactions of activating receptors 2B4 (CD244), CS1 (CD319, CRACC) and LLT1 and their ligands (CD48, CS1 and CD 161) in modulating NK cytolytic function against cancer cells will be addressed. LLT1 expressed on cancer cells inhibit NK cell cytolytic function by interacting with the NK cell inhibitory receptor, NKRP1A (CD161). Monoclonal antibodies against NK receptors or their ligands could be used in inducing activation signals or blocking inhibitory signals from cancer cells. Current use of anti-CS1 mAb (Elotuzumab or Huluc63) against multiple myeloma and future prospects of use of anti-LLT1 mAb against glioblastoma and prostate cancer will be discussed.

Biography

Dr. Mathew has studied Natural Killer cell recognition and activation by cancer cells for more than two decades. Dr. Mathew is one of the pioneers who identified, cloned and characterized several receptors expressed on NK cells and his research has opened new NK cell based targeted immunotherapy for cancer. Dr. Mathew has served as grant reviewer for several institutions/organizations including The Wellcome Trust, The Israel Science Foundation, University of California and numerous NIH study sections.