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Roles of antigen receptors in the innate immunity of cancer cells

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Abstract

Antigen receptors, including immunoglobulins and T-cell receptors, are known to be widely expressed by cancer cells through unconfirmed mechanisms and for uknown purposes. Recently, a monoclonal antibody, designated as RP215, was generated against the ovarian cancer cell line, OC-3-VGH, and was shown to react mainly with these cancer cell-expressed antigen receptors, but not with those of normal origin. Experimental evidence has clearly indicated that cancerous immunoglobulins play critical roles for the growth and proliferation of cancer cells *in vitro* and *in vivo*. RP215 and anti-antigen receptor antibodies were equally effective in inducing apoptosis and complement-dependent cytotoxicity (CDC) reactions to cultured cancer cells. Through gene regulation studies, both RP215 and antibodies against antigen-receptors, were shown to affect more than a dozen of genes involved in cell proliferation (NFκB-1, IgG, P21, cyclin D1, ribosomal P_1, and c-fos). Furthermore, selected toll-like receptor genes (TLR-2, -3, -4, and –9) were also found to be highly regulated by both RP215 and anti-antigen receptor antibodies against these three groups of related ligands. For example, RP215 and anti-antigen receptor antibodies were found to both up-regulate TLR-2 and/or TLR-3 and down-regulate TLR-4 and TLR-9 in cancer cells. Based on these studies, it is reasonable to postulate that cancerous immunoglobulins play important roles in the modulation of the innate immune system to allow the growth and survival of cancer cells within the human body.

Biography

Gregory Lee completed his Ph. D from California Institute of Technology and postdoctoral studies from University of California, San Diego. He became a full Professor at University of British Columbia in 1989, and retired in 2012 with the title of Professor Emeritus. He is the co-founder of Vancouver BioTech Ltd. He has published more than 200 papers, including 30 papers in cancer research. He has been serving as an editorial board member of the Journal of Carcinogenesis and Mutagenesis, and the Journal of Cancer Science and Therapy since 2012.