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Functional roles of cancerous immunoglobulins and potential applications in cancer immunodiagnostics and immunotherapy

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RP215 is a monoclonal antibody generated against ovarian cancer cell extract and has been shown to react with a carbohydrate-associated epitope located mainly on the heavy chains of immunoglobulins expressed on the surface of most cancer cells. In contrast, these cancerous immunoglobulins, designated in general as CA215, are not found on normal human B cells. Upon isolation from the shed medium of cultured cancer cells, CA215 was found to recognize numerous human serum protein components or fragments, of which both anti- and pro-cancer activities have been identified. These observations strongly support the hypothesis of cancerous immunoglobulins possessing dual functions in cancer cells. Through decades of investigations, it was also revealed that apoptosis and complement-dependent cytotoxicity can be induced by RP215 or its humanized forms, as well as by antibodies against antigen receptors, such those against immunoglobulins or T cell receptors. For example, RP215 and these anti-antigen receptors were found to demonstrate a high degree of correlation in terms of the regulations of many genes involved in the growth and proliferation of cancer cells (eg., NFκB-1, IgG, P21, cyclin D1, ribosomal P1 and c-fos), as well as for toll-like receptors. Furthermore, significant dose-dependent reductions of implanted tumors were also observed following treatment with RP215 in nude mouse animal models. RP215-based immunodiagnostics were also developed for monitoring of the serum levels of CA215 among cancer patients. Judging from these experimental observations, humanized RP215 may be a suitable candidate for antibody-based anti-cancer drug development as it targets cancerous immunoglobulins which are widely expressed on the surface of most cancer cells in humans.

Biography

Gregory Lee received his PhD from the California Institute of Technology and completed his Post-doctoral studies at the University of California, San Diego. He became a full Professor at the 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.

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