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Significance of antigen receptors in the innate immunity of cancer cells

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Abstract

During the last decade, substantial research has been performed to explore the expression and role of cancerous antigen receptors, such as immunoglobulins and T cell receptors, compared with those of normal immune cells. These cancerous immunoglobulins differ from immune cell-derived immunoglobulins by the presence of a unique carbohydrate-associated epitope recognized by RP215 monoclonal antibody. CA215 is a group of glycoproteins, with this RP215-specific epitope, and consists of antigen receptors, and other members of the immunoglobulin superfamily. Through numerous biological and immunological studies, it was generally concluded that the expression of cancerous immunoglobulins is essential for the growth and proliferation of cancer cells *in vitro* and *in vivo*. Furthermore, through gene regulation studies, the respective effects of RP215 monoclonal antibody against CA215, and anti-antigen receptor antibodies on a dozen of selected genes which are expressed in cancer cells, such as NFκB-1, IgG, P21, cyclin D1, ribosomal P_1, and c-fos, were found to be highly correlated. In particular, the expressions of toll-like receptors (TLR-2, -3, -4, -6, -7 and -9), which are involved in the innate immunity of cancer cells, were similarly altered in treatments with RP215 and with anti-antigen receptor antibodies. 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 are highly involved in or modulate the innate immune system to allow the growth and survival of cancer cells within the human body.

Biography

Upon completion of his PhD degree in Biophysical Chemistry at California Institute of Technology in 1972, he joined UCSD as a NIH Postdoctoral Fellow to carry out pioneer work on general ligand affinity chromatography. In 1976, he studied enzymology and biochemical genetics at the National Institutes of Health and in 1981, he was appointed as a faculty member and director of the Andrology Laboratory at the University of British Columbia. During the last two decades, he has created numerous monoclonal antibodies for diagnostic and therapeutic applications in human health care, including RP215 and GHR106 for potential use as anti-cancer drugs.