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New Antibody-Based GnRH Antagonists for Women Reproductive Health

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Abstract

GHR106 is a monoclonal antibody generated against a synthetic oligopeptide corresponding to N1-29 amino acid residues in the extracellular domains of the human GnRH (Gonadotropin Releasing Hormone) receptor. The humanized form of GHR106 in human IgG4 isoform, GHR106(hIgG4) can be mass-produced by a permanent cell line containing CHO-K1-GEMs. Through numerous preclinical studies during the last decade, GHR106(IgG4) was established as the first-in-class long-acting GnRH antagonist, similarly in biological actions to those clinically available such as short acting Cetrorelix and Elagolix. This new class of GnRH antagonist can act on human GnRH receptor in the anterior pituitary to reversibly suppress the release the LH/FSH as well as estradiol/progesterone for longer than 7 to 10 days upon a single injection to model animals. Therefore, GHR106 can work like a reproductive "faucet" to regulate the pituitary GnRH receptor for clinical applications in women's reproductive health. Many gynecological disorders can be treated clinically with this class of GnRH antagonist for premenstrual syndrome, endometriosis, uterine fibroids, assisted reproductive technology and several others under investigations. As a GnRH Antagonist, GHR106 can also be used to target GnRH receptor expressed on the surface of extra-pituitary tissues as well as many types of cancer cells. The cellular apoptosis of many cancer cells can be induced upon treatments with GHR106 or its CAR-T or CAR-NK (Chimeric Antigen Receptor- T or Natural killer cells) constructs, to achieve the objectives of cancer immunotherapy. In conclusion, GHR106 is a promising new antibody-based GnRH antagonist for widespread clinical applications, not only in therapeutic treatments of gynecological disorders, but also for cancer immunotherapy.

Keywords: Antibody-based GnRH Antagonist, GHR10(hIgG4), Gynecological Disorders, or Diseases Cancer Immunotherapy, CAR-T and CAR-NK Constructs

Biography

Dr. Gregory Lee is a Professor Emeritus of the University of British Columbia. He has been a pioneer of biotechnology industry in fostering R&D, technology transfer and commercialization of technologies and products. He has promoted / cofounded over 10 start-up biotech companies in Vancouver, Canada. He is the founder and CEO of Vancouver Biotech Ltd. Since 1989. He has generated numerous monoclonal antibodies for immunodiagnostic and therapeutic applications, including early pregnancy detection, ovulation, myocardial infarction and cancer. During the last decade, he has focused on research and development of monoclonal antibody-based anti-cancer drugs (noticeably RP215 and GHR106) for immunotherapy of cancer. He received his Ph.D. in physical biochemistry from California Institute of Technology Pasadena, CA in 1972. He has over 200 publications in peers review journals and 8 patents. He has also been serving as editors of several international journals related to cancer research since 2012. Research Interests includes Monoclonal antibody for immunodiagnostic and therapeutic applications, Cancer immunotherapy, Antibody-based GnRH Antagonists and clinical applications

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