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THE ROLE OF GLYCOSPHINGOLIPIDS IN IMMUNE TOLERANCE OF PREGNANCY

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he overall objectives of our studies are to interrogate the roles of pregnancyassociated glycosphingolipids (GSLs) in immune tolerance of pregnancy, and exploit their potential immune modulatory activities. Although it was demonstrated that one of the most prevalent tumor associated GSLs (Globo H ceramide) acts as an immune checkpoint to suppress T and B lymphocytes, and as an angiogenic factor to promote tumor growth in tumor microenvironment, very little is known about the role of this and other GSLs in pregnancy. An analogy to the immune suppressive milieu of the host microenvironment in tumor tissues is the immune tolerance of pregnancy. A deeper understanding of the events and the key regulators involved in the establishment of a healthy embryo implantation remains a goal only incompletely realized. We expect that GSLs mediated transfer from human microvilli, trophoblasts, or stromal mesenchymal stem cells from either maternal chorio-decidua or fetal origin, could be incorporated into immune cells and that certain GSLs may facilitate immune tolerance, leading to successful implantation of embryo. Specifically, we employ the new technology platforms, state of the art mass spec. facility, as well as expertise in reproductive medicine and tumor immunology, to explore an innovative concept concerning the embryo/endometrium crosstalk. In addition, similar mechanistic investigation of the immune checkpoint and angiogenesis activities will be carried out for uterine tissues and compared. Through such endeavours, our studies will likely provide a roadmap for heretofore un-chartered territory of research regarding the involvement of GSLs in early embryogenesis and the key regulators involved in the establishment of a healthy pregnancy.

Biography

John Yu is distinguished Chair Professor/Director at Institute of Stem Cell/Translational Cancer Research, CGMH. He is also distinguished Visiting Research Fellow at Institute of Cellular and Organismic Biology, Academia Sinica, and was the Director for the same Institute (2002-2009). He is the founding President for Taiwan Society for Stem Cell Research. He was elected to serve in many ISSCR Committees USA, the Steering Committee of Asia-Pacific Stem Cell Network, and advisor for Stem Cell Biology, Kumamoto Univ. He was Director of Exp. Hematology (1998-2002) at Scripps Research Institute, USA. He received an established Investigatorship Award from American Heart Assoc. and many other awards.

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