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Haval Shirwan

University of Louisville, USA

Specific targeting of pathogenic T-cells for the induction of tolerance to pancreatic islet grafts for the treatment of type-1 diabetes

Type-1 diabetes (T1D) is an autoimmune disease initiated and perpetuated by T-cells targeting various auto antigens. Insulin treatment as standard of care is often ineffective in preventing recurrent hyperglycemic episodes with long-term undesired adverse effects. Transplantation of pancreatic islets as a source of beta cells producing insulin has proven effective in improving metabolic control/quality of life and preventing severe hypoglycemia in patients with T1D. Immune rejection of the transplanted islets is presently being controlled by chronic immunosuppression that is not only ineffective in controlling rejection but also has various side effects. Therefore, novel approaches that control rejection in the absence of chronic immunosuppression will have significant impact on the field of islet transplantation. In as much as T-cells are critical to graft rejection, we have developed an effective immunomodulatory approach based on the novel form of immune ligands to target pathogenic T-cells for physical elimination while simultaneously expanding protective Treg cells. The application of this concept to allogeneic and xenogeneic islet transplantation will be discussed.

Biography

Haval Shirwan is a Dr. Michael and Joan Hamilton Endowed Chair in Autoimmune Disease, Professor of Microbiology and Immunology, Director of Molecular Immunomodulation Program at the Institute for Cellular Therapeutics. He has completed his Graduate studies from the University of California in Santa Barbara, CA and Postdoctoral studies from California Institute of Technology in Pasadena, CA. He has joined the University of Louisville in 1998 after holding academic appointments at various academic institutions in the United States. His research focuses on the modulation of immune system for the treatment of immune-based diseases with particular focus on type-1 diabetes, transplantation and development of prophylactic and therapeutic vaccines against cancer and infectious diseases. He is an Inventor on over a dozen of worldwide patents, Founder and CEO/CSO of FasCure Therapeutics, LLC, widely published, organized and lectured at numerous national/international conferences, served on study sections for various federal and non-profit funding agencies and is on the Editorial Board of a dozen of scientific journals. He is also a member of several national and international societies and recipient of various awards.

haval.shirwan@louisville.edu

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