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Mechanistic basis of allotolerance induced by SA-FasL-engineered pancreatic islets

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We have recently shown that pancreatic islets engineered to display on their surface a novel form of FasL induce robust allotolerance. Tolerance is initiated by direct targeting of alloreactive pathogenic T effector cells with upregulated expression of Fas receptor for physical elimination through activation-induced cell death. The apoptotic process initiates a cascade of immunoregulatory mechanisms that involve phagocytes, TGF- β , and CD4⁺CD25⁺FoxP3⁺ Treg cells. Treg cells are not only critical to the induction but also maintenance of tolerance. This talk will focus on extensive discussion of these mechanisms and implication of this novel immunomodulatory approach for altering the balance between T effector and Treg cells with potential application to graft rejection and autoimmune diseases where a favorable balance for Treg cells has therapeutic potential.

Biography

Haval Shirwan is 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 conducted his Graduate studies at the University of California in Santa Barbara, CA, and Postdoctoral studies at California Institute of Technology in Pasadena, CA. He 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 member of several national and international societies and recipient of various awards.

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