

July 05-07, 2018
Vienna, Austria

Byoung S Kwon, Insights Allergy Asthma Bronchitis 2018, Volume: 4
DOI: 10.21767/2471-304X-C1-001

4-1BB-BASED ADOPTIVE T CELL THERAPY

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Adoptive T cell therapy has been proven to be a promising approach to the selected cases of cancer therapy. We, however, still need a simple and standardized procedure for producing cancer-specific CD8⁺ T cells that is generally applicable to most cancers. Based on a unique property of 4-1BB (CD137), the selective expression of 4-1BB on Ag-engaged T cells, we have developed a practical protocol to produce antigen-specific CD8⁺ T cells from peripheral blood mononuclear cells (PBMCs). We have proven the feasibility of this procedure by isolating and expanding cytomegalovirus (CMV)-specific CD8⁺ T cells, and applied to produce Epstein-Barr virus (EBV)-specific CD8⁺ T cells. Moreover, our protocol allowed us to produce CD8⁺ T cells from cancer patients that were specific for self/tumor antigens such as hTERT, WT-1, NY-ESO1 and MAGE3 and for neo-antigens. Our protocol can readily be translated into standard cGMP and is being used to produce EBV-, hTERT-, and WT-1-specific CD8⁺ T cells for phase 1 clinical trials. Among EBV-positive lymphomas, approximately 62% of patients responded to the 4-1BB CTL therapy including a durable complete regression of 2/2 NK/T lymphomas with no or minimum toxicity in all patients. We believe that the 4-1BB CTL will provide a practical and effective method for adoptive T cell therapy in the clinic.



Biography

Byoung S Kwon has his PhD from the Georgia Regents University, in 1981 and Postdoctoral studies at the Department of Human Genetics, Yale University from 1981 to 1984. He was a tenured Professor of the Indiana University School of Medicine, a Professor and Director of the Immunomodulation Research Center at the University of Ulsan, a Distinguished Professor and Investigator at the National Cancer Center, Korea, and Professor at the Department of Medicine Tulane University, New Orleans LA. He is currently the Founder and CEO of Eutilex who is developing T cell therapeutics and immunomodulatory antibody therapeutics. He has published over 300 peer-reviewed papers and has been serving as an Editorial Member of reputable journals.

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