

9th WORLD CONGRESS ON IMMUNOLOGY AND CANCER

December 09-10, 2019 | Barcelona, Spain



Hussein Fayyad-Kazan

Lebanese University, Lebanon

Human CD8⁺ CD25⁺ CD127^{low} regulatory T cells: MicroRNA signature and impact on TGF- β and IL-10 expression

Regulatory T cells (Tregs) are central for maintaining immune balance and their dysfunction drives the expansion of critical immunologic disorders. During the past decade, microRNAs (miRNAs) have emerged as potent regulators of gene expression among which immune related genes and their immunomodulatory properties have been associated with different immune-based diseases. The miRNA signature of human peripheral blood (PB) CD8⁺ CD25⁺ CD127^{low} Tregs has not been described yet. We thus identified, using TaqMan Low-Density Array (TLDA) technique followed by individual quantitative real-time PCR (qRT-PCR) confirmation, fourteen miRNAs, among which twelve were downregulated whilst two were upregulated in CD8⁺ CD25⁺ CD127^{low} Tregs in comparison to CD8⁺CD25⁺ T cells. In a next step, microRNA Data Integration Portal (mirDIP) was used to identify potential miRNA target sites in the 3'UTR of key Treg cell-immunomodulatory genes with special focus on IL-10 and TGF- β . Having identified potential miR target sites in the 3'UTR of IL-10 (miR-27b-3p, miR-340-5p) and TGF- β (miR-330-3p), we showed following transfection, and transduction assays that overexpression of two under-expressed miRNAs, miR-27b-3p and miR-340-5p, downregulates IL-10 expression upon targeting its 3'UTR. Similarly, overexpression of miR-330-3p negatively regulates TGF- β expression. These results highlight an important impact of the CD8⁺ Treg mimome on the expression of genes with significant implication in immunosuppression. These observations could help in better understanding the mechanism orchestrating Treg immunosuppressive function towards unravelling new targets for treating auto-immune pathologies and cancer.

Biography

Hussein Fayyad-Kazan is a full time professor at the Lebanese University-Faculty of Science. He got his Bachelor degree in Biochemistry in 2005 from the Lebanese University-Faculty of Science. Later on, he continued his studies in the Free University of Brussels (ULB) where got his Master's Degree in Molecular Biology and Biotechnology in 2007 and then a PhD in December 2010. Thereafter, He did a postdoc in the Laboratory of Experimental Hematology-Jules Bordet Institute-ULB till September 2018 where he worked on several Molecular Immunology topics. He have about sixty scientific papers being published in high impact factor journals. His research work is focused on Cancer Biology and Molecular Immunology.

hfayyadk@gmail.com