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Identification of the microRNA signature of human CD4 regulatory T lymphocytes in Acute Myeloid Leukemia patients at diagnosis

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Abstract

There is a clear evidence of elevated numbers of CD4 regulatory T lymphocytes (Tregs) in solid and hematological malignancies in addition to possessing an increased suppressive function. This important feature has urged the scientific community to search for ways to interfere with Treg function during or after cancer therapy. But the underlying molecular mechanisms remain largely unknown. Thus, a special focus on microRNA regulation was the goal of our study. In our previous study, we investigated the molecular profile of circulating Tregs in the peripheral blood (PB) of healthy volunteers and identified several miRs differentially expressed between CD4+CD25+CD127low (Tregs) and CD4+CD25-CD127low T cells using the TLDA technique. In fact, a human Treg microRNA signature of AML patients at diagnosis has not been described yet. We thus investigated human CD4+CD25+CD127low Tregs purified from the peripheral blood of AML patients and identified a signature composed of ten differentially expressed miRs (miR-18a, miR-101, miR-133a, miR-135a, miR-302c, miR-324, miR-511, miR-542, miR-618, and miR-758) in comparison to their negative counterpart. Among those miRs, six were upregulated (miR- 18a, miR-101, miR-133a, miR-135a, miR-511, miR-618) whilst four were downregulated (miR-302c, miR-324, miR-542, miR-758). Many potential miRs potential targets were identified in the 3'UTR of genes indispensable for Treg function and are presently under investigation.

Publication

M Najar, G Raicevic, H Fayyad-Kazan, C De Bruyn, D Bron, M Toungou, "Stem Cell Reviews and Reports", 2015: 11 (3), 442-452.

H Fayyad-Kazan, WH Faour, B Badran, L Lagneaux, M Najar, "Inflammation research", 2016: 65 (6), 501-510.

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.

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