

MicroRNAs as key regulators of Waldenstrom Macroglobulinemia pathogenesis

Aldo M. Roccaro MD, PhD, Dept. of Hematology, Spedali Civili di Brescia, Brescia, Italy

Cytogenetic and molecular studies on gene expression analysis have demonstrated minimal changes in Waldenstrom Macroglobulinemia (WM) cells. Therefore, multi-level genetic characterization of WM is required to improve our understanding of the underlying molecular changes that lead to the initiation and progression of this disease. We have previously performed microRNA (miRNA) expression profiling of bone marrow-derived CD19+ WM cells, compared to their normal cellular counterparts; and found significant differences between WM clonal cells and normal cells. We performed functional assay *in vitro* and *in vivo*, in order to better define the biological role of miRNAs in regulating WM pathogenesis; and found the importance of miRNAs in modulating WM cell proliferation by targeting MAPK/ERK, PI3/AKT and NF- κ B pathways; as well as histone acetylation and HDAC activity in the tumor clone, providing the preclinical evidence for using novel miRNA-based therapeutical approaches in this disease.