Abstract:
Atherosclerosis has been established as a chronic inflammatory disease of the vessel wall. Among the mononuclear cell types recruited to the lesions, specialized dendritic cells (DCs) have gained increasing attention, and their secretory products and interactions shape the progression of atherosclerotic plaques. The regulation of DC functions by microRNAs (miRNAs) may thus be of primary importance in disease. We here systematically summarize the biogenesis and functions of miRNAs and provide an overview of miRNAs in DCs, their targets, and potential implications for atherosclerosis, with a particular focus on the best characterized miRNAs in DCs, namely, miR-155 and miR-146. MiRNA functions in DCs range from regulation of lipid uptake to cytokine production and T cell responses with a complex picture emerging, in which miRNAs cooperate or antagonize DC behavior, thereby promoting or counterbalancing inflammatory responses. As miRNAs regulate key functions of DCs known to control atherosclerotic vascular disease, their potential as a therapeutic target holds promise and should be attended to in future research.