

Dendritic cells: Master manipulators of age-associated chronic inflammation immune dysfunction

Anshu Agrawal

University of California, USA

Dendritic cells (DC) are the major antigen presenting cells of the body that are critical for generation of immunity and maintenance of tolerance. Advancing age has a profound affect on dendritic cell functions. DCs from aged display a higher basal level of activation and secrete pro-inflammatory cytokines even without activation leading to chronic inflammation. This results in increased response to self antigens such as mammalian DNA which compromises the capacity of aged DCs to maintain peripheral self tolerance contributing further to inflammation. In contrast to self antigens, DCs from aged subjects are impaired in their ability to mount effective immune responses against foreign antigens such as influenza virus. There is reduced Interferon secretion as well as reduced capacity to prime T cell responses. The mechanisms underlying the altered DC function in aged humans are not well understood. We have previously shown that functions of NFkB and PI3Kinase signaling pathways are altered in aged DCs. Affymetrix gene analysis of DCs from aged and young subjects suggested that upregulated PTEN may be responsible for increased NFkB activation. Studies using chromatin-immunoprecipitation (CHIP-IP) with histone antibodies (H3K4, H3K9) suggest chromatin remodeling may also be a key player in altering the response of DCs with age. Age-associated alterations at the genetic as well as chromatin remodeling may therefore be responsible for the changes in the function of DCs from aged subjects.

Biography

Anshu Agrawal completed his Ph.D. from Central Drug Research Institute, Lucknow and subsequently worked as a Research Scientist in the division of immunology at ICGEB, India. She won a scholarship to work in France and after completing postdoctoral studies is now working as a faculty in the Department of Medicine, University of California, Irvine since last 6 years. She is the recipient of the New Scholar award in aging from the Ellison Medical Foundation. She has published more than 30 papers and serves as a reviewer for several journals. Her primary area of interest is dendritic cells, innate immunity and aging.

aagrawal@uci.edu