The enzyme indoleamine 2,3-dioxygenase (IDO) degrades the essential amino acid tryptophan, and this degradation is an immunosuppressive mechanism that is mainly used by antigen-presenting cells. IDO-expressing dendritic cells and macrophages have previously been identified as components of lymph node granulomas after *Listeria monocytogenes* infection. In this study we undertook an analysis of IDO expression in granulomas of infectious and noninfectious origin in the human skin. Lesional skin biopsy specimens (*n* = 22) from different granulomatous skin disorders (lupus vulgaris, sarcoidosis, granuloma annulare, leprosy) were analyzed. Immunohistochemistry was performed to identify and locate the enzyme IDO within the inflammatory granulomatous infiltrate (IDO, CD11c, CD68, S100, CD3, Foxp3). Two-color immunofluorescence of IDO in combination with multiple markers was applied to characterize the IDO-expressing cells. Cutaneous granulomas of different origin strongly express IDO, mainly in the center and in the ring wall of the granulomas. We demonstrate that in infectious, but also in noninfectious human cutaneous granulomas the large myeloid CD11c(+)S100(+)CD68(-) dendritic cells and the CD68(+) macrophages express IDO. This study was limited by
the lack of details about the exact stage or maturity of granuloma formation in the specimens investigated. These findings reveal that IDO expression in myeloid dendritic cells and macrophages is part of an integrated response of granuloma formation, which may be a unifying feature of granulomatous reactions in the skin.