

Immunogenicity of IDO

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The enzyme indoleamine 2,3-dioxygenase (IDO) exerts an well established immunosuppressive function in cancer. IDO is expressed within the tumor itself as well as in antigen-presenting cells in tumor-draining lymph nodes, where it promotes the establishment of peripheral immune tolerance to tumor antigens. In the present study, we tested the notion whether IDO itself may be subject to immune responses. The study unveiled spontaneous cytotoxic T-cell reactivity against IDO in peripheral blood as well as in the tumor microenvironment of different cancer patients. We demonstrate that these IDO reactive T cells are indeed peptide specific, cytotoxic effector cells. Hence, IDO reactive T cells are able to recognize and kill tumor cells including directly isolated AML blasts as well as IDO-expressing dendritic cells, i.e. one of the major immune suppressive cell populations. Consequently, IDO may serve as an important and widely applicable target for anti-cancer immunotherapeutic strategies. Furthermore, as emerging evidence suggests that IDO constitutes a significant counter-regulatory mechanism induced by pro-inflammatory signals, IDO-based immunotherapy holds the promise to boost anti-cancer immunotherapy in general.