東北大学グローバルCOEプログラム
「Network Medicine創生拠点」主催セミナー
The Tohoku University Global COE Program for Network Medicine

Regulatory chit-chat: "How Regulatory T cells and dendritic cells coordinate the induction of tolerance"

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日時：平成20年10月7日（火）17:30–18:30
場所：医学部5号館2階　201号室

Dendritic cells (DC) act as major decision makers in the induction of immune responses. Originally defined by their unsurpassed ability to induce T cell mediated immune responses, it recently became clear that DC are also involved in governing tolerance induction. Their ability to induce tolerance is linked to their activation status as we and others have shown that "steady state" DC induce regulatory T cells (Treg) or lead to deletion of effector T cells. Vice versa, Treg respond to DC and exert inhibitory functions on them. Antigen presentation as well as the T cell costimulatory capacity of the DC is impaired after interaction with Treg. Thus, this feedback mechanism result in a DC phenotype that fails to induce robust T cell responses.
To elucidate the means by which Treg tolerize DC in vivo, fluorescent dye-labeled Treg were injected into naïve mice Treg and followed by microscopy. We show, that Treg established gap junctions with dendritic cells (DC) in the respective lymph nodes. This gap junctional intercellular communication led to downregulation of T cell co-stimulatory molecules on the surface of the DC, abrogating their capacity to prime and to activate hapten-specific $CD8^+$ T cells in a contact hypersensitivity model. Consequently the ear swelling response induced by challenge with the respective hapten is prevented. Thus, Treg do not only modulate ongoing $CD4^+$ T cell mediated immune reactions at tissue sites but also abrogate the de novo induction of $CD8^+$ T cell driven immune reactions by interfering with T cell stimulatory activity of DC via gap junctional intercellular communication.

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