INTRAFLAGELLAR TRANSPORT AT THE IMMUNOLOGICAL SYNAPSE

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Intraflagellar transport (IFT) had been studied in ciliated cells in relation to its central role in the traffic of molecules along ciliary microtubules during ciliogenesis. However, starting from our finding that IFT proteins are implicated in the activation of T cells, which lack a cilium, accumulating evidence supports the notion that the role of IFT proteins is not restricted to ciliary- dependent processes. We demonstrated that in T cells the IFT component IFT20 acts in concert with other IFT proteins and Rab GTPases to regulate intracellular vesicular traffic, a process essential for T cell activation. Indeed, IFT20 regulates the assembly of the specialized interface that forms between T cell and cognate antigen presenting cell, known as the immunological synapse, by orchestrating the polarized recycling of the T cell antigen receptor to this membrane domain. These results demonstrate that IFT proteins are shared by T cells and ciliated cells for the assembly both the immunological synapse and the primary cilium, respectively, suggesting that these structures are functional homologues.

Key words:

Intraflagellar transport, Immunological synapse, T lymphocytes.