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Sphingosine-1-phosphate receptor 2 is required for retention of follicular helper T cells in germinal centers

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ABSTRACT

Follicular helper T (T_{fh}) cells access the B cell follicle to promote antibody responses, and are particularly important for germinal center reactions. However, the molecular mechanisms of how T_{fh} cells are physically associated with GCs are incompletely understood. Here we report that sphingosine-1-phosphate receptor 2 (S1PR2), which has recently been shown to play a role in GC B cell localization, is also important for GC-association of T_{fh} cells. Analysis using an *S1pr2*-reporter mouse strain suggested that S1PR2 is expressed at varied levels in T_{fh} cells, and that S1PR2-high T_{fh} cells are localized in GCs whereas S1PR2-low T_{fh} cells are scattered throughout the B cell follicle. S1PR2-deficient T_{fh} cells exhibited reduced accumulation in GCs, which was attributed to impaired retention in GCs based on two-photon imaging analysis. Expression of *Bcl6*, *Il4*, and *Il21* in T_{fh} cells was positively correlated with *S1pr2* expression. These results suggest that S1PR2-high T_{fh} cells are GC-resident T_{fh} cells bearing the advanced capability to promote long-term B cell responses.