Regulated selection of germinal center cells into the memory B cell compartment.

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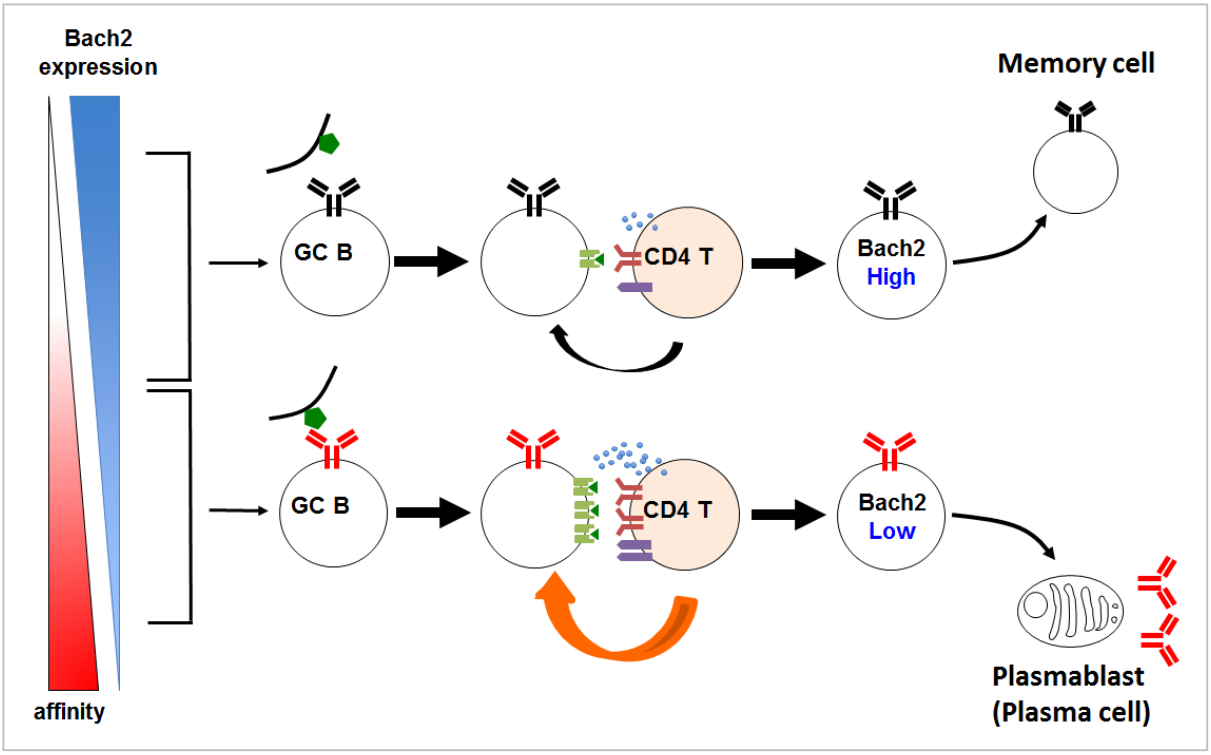
ABSTRACT

Despite the importance of memory B cells in protection from reinfection, how such memory cells are selected and generated during germinal-center (GC) reactions remains unclear. We found here that light-zone (LZ) GC B cells with B cell antigen receptors (BCRs) of lower affinity were prone to enter the memory B cell pool. Mechanistically, cells in this memory-prone fraction had higher expression of the transcriptional repressor Bach2 than that of their counterparts with BCRs of higher affinity. Haploinsufficiency of Bach2 resulted in reduced generation of memory B cells, independently of suppression of the gene encoding the transcription factor Blimp-1. Bach2 expression in GC cells was inversely correlated with the strength of help provided by T cells. Thus, we propose an instructive model in which weak help from T cells maintains relatively high expression of Bach2, which predisposes GC cells to enter the memory pool.

Keywords:

Memory B cell, Germinal center, Affinity maturation, Transcription factor Bach2



Mechanism of selection of memory B cells and plasma cells from germinal center B cells

The affinity of B cell receptor for antigen and the expression level of Bach2 are inversely correlated in germinal center B cells. Low affinity germinal center B cells, which receive weaker stimulation from antigen and antigen specific CD4 T cells, maintain a relatively high level of Bach2 expression and tend to be induced to form memory B cells in the germinal center. On the other hand, high affinity cells, which receive strong stimulation from antigen and antigen specific CD4 T cells, have difficulty maintaining Bach2 expression at high levels and tend to be induced to form plasmablasts (plasma cells).

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http://lymph.ifrec.osaka-u.ac.jp/index_e.html

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