Immunology

Lec. 4

Memory cells

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MEMORY

- The immune system mounts larger and more effective responses to repeated exposures to the same antigen. The response to the first exposure to antigen, called the **primary immune response,** is mediated by lymphocytes, called **naive lymphocytes,** that are seeing antigen for the first time (Fig.1 7). The term *naïve* refers to the fact that these cells are "immunologically inexperienced," not having previously recognized and responded to antigens. Subsequent encounters with the same antigen lead to responses, called **secondary immune responses,** that usually are more rapid, larger, and better able to eliminate the antigen than are the primary responses (see Fig. 1-7).

- Secondary responses are the result of the activation of **memory lymphocytes,** which are long-lived cells that were induced during the primary immune response. Immunologic memory optimizes the ability of the immune system to combat persistent and recurrent infections, because each encounter with a microbe generates more memory cells and activates previously generated memory cells. Memory also is one of the reasons why vaccines confer long-lasting protection against infections.

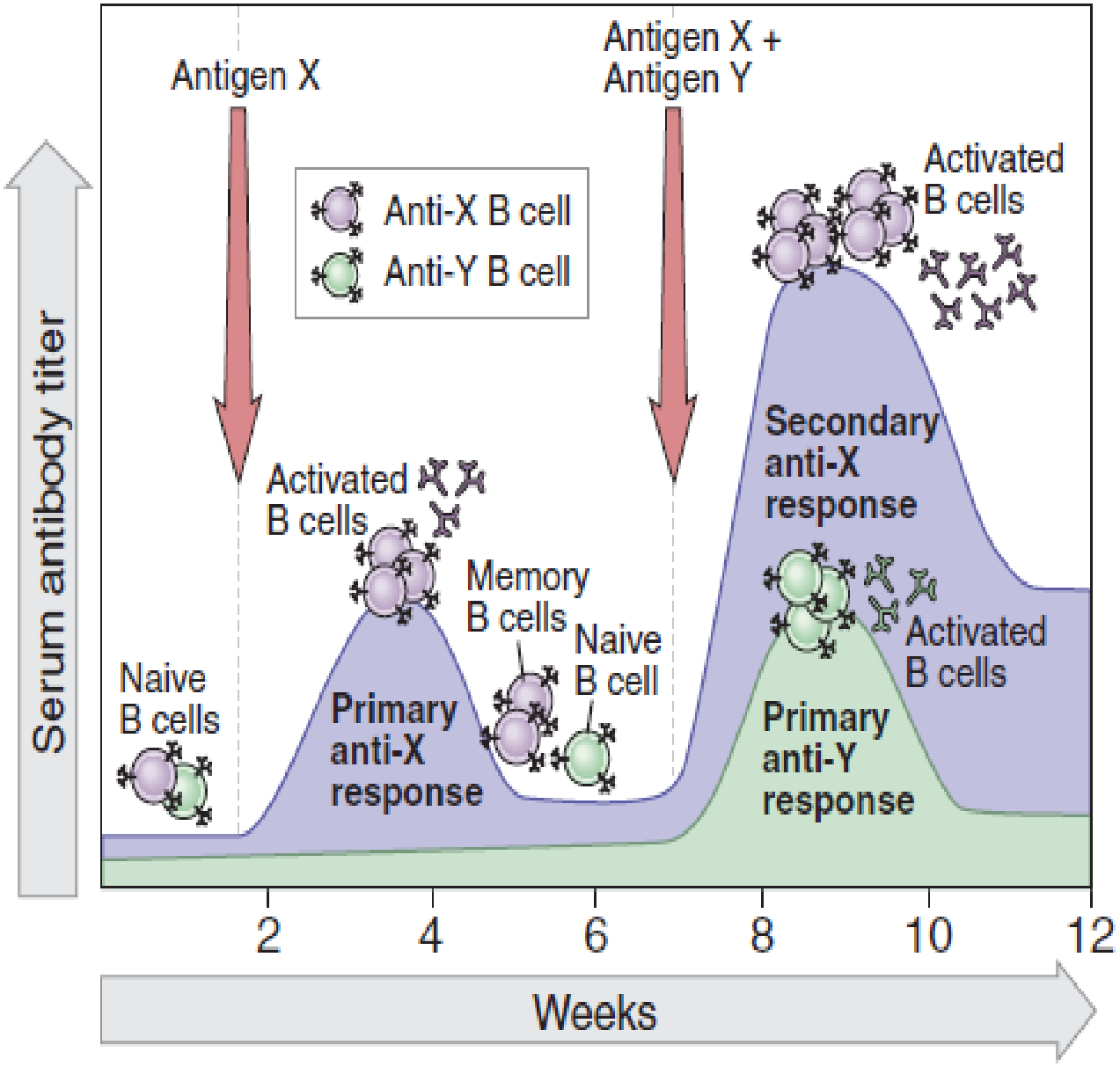

FIGURE 1-7 Primary and secondary immune responses. Antigens X and Y induce the production of different antibodies (a reflection of specificity). The secondary response to antigen X is more rapid and larger than the primary response (illustrating memory) and is different from the primary response to antigen Y (again reflecting specificity). Antibody levels decline with time after each immunization.

Immune response divided in two categories:-

Primary immune response	**Secondary immune response**
1. First exposure to the Ag	Second exposure to the same Ag
2-with out memory cells	With memory cell
3-initial with IgM	mostly with IgG,IgA or IgE
4- continue for short duration	Continue for long time
5- low affinity	High affinity
Slowly response	Rapid response