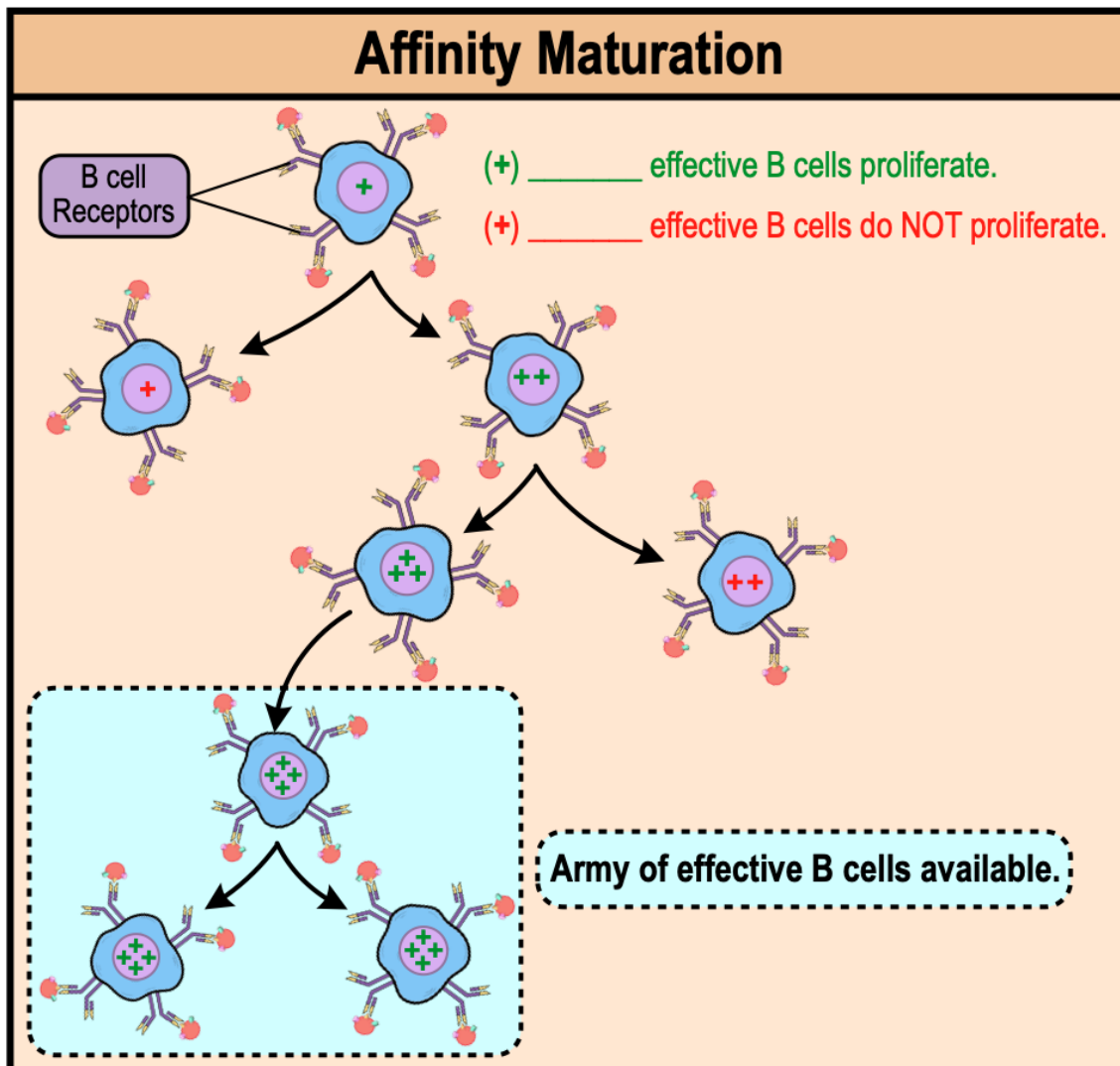


CONCEPT: AFFINITY MATURATION

- How does our immune system ensure mass production of the *most EFFECTIVE* antibody during an infection?
- As B cells proliferate, _____ occur in *variable* region of BCR/antibody genes, causing changes in antigen binding.
 - These *mutations* & changes in the BCR/antibody's ability to bind its antigen leads to _____ *maturation*.
- **Affinity Maturation:** form of natural selection among B cells allowing for mass production of _____ *effective* antibody.
 - B cells with *mutations* in BCRs that allow them to bind *MORE* effectively are _____ likely to proliferate.
 - B cells with *mutations* in BCRs that allow them to bind *LESS* effectively are _____ likely to proliferate.
 - Over time, the *majority* of B cells during an infection are able to bind the antigen more & more *effectively*.



- Between *antibody class switching* & *affinity maturation*, over time, plasma cells produce much more effective antibodies!!!

CONCEPT: AFFINITY MATURATION

PRACTICE: True or False? The process of affinity maturation generates antibodies with an increasing capacity to bind antigens and thus to more efficiently bind to, neutralize, and eliminate microbes.

- a) True.
- b) False.

PRACTICE: How does an antibody's ability to bind an antigen increase as B cells multiply?

- a) Genetic rearrangement of the DNA encoding the antibody's constant region occurs with each B cell generation.
- b) Genetic mutations of the DNA encoding the antibody's variable region occur with each B cell generation.
- c) Variation in the amino acid sequence of the antibody stem occurs & allows the antibody to bind various antigens.
- d) Genetic mutations of the DNA encoding the antibody occur changing the antibody into a BCR.

PRACTICE: Which of the following statements about antibody affinity maturation is *true*?

- a) It is a form of natural selection ensuring only antibodies that most effectively bind the antigen are produced.
- b) It occurs when mutations happen in the DNA encoding the variable region of the antibody.
- c) It ensures that only B cells with BCRs that effectively bind the antigen are allowed to proliferate.
- d) After an affinity maturation cycle, the majority of the B cell population will create antibodies that bind the antigen.
- e) A and B.
- f) B and C.
- g) All of the above are true about affinity maturation.