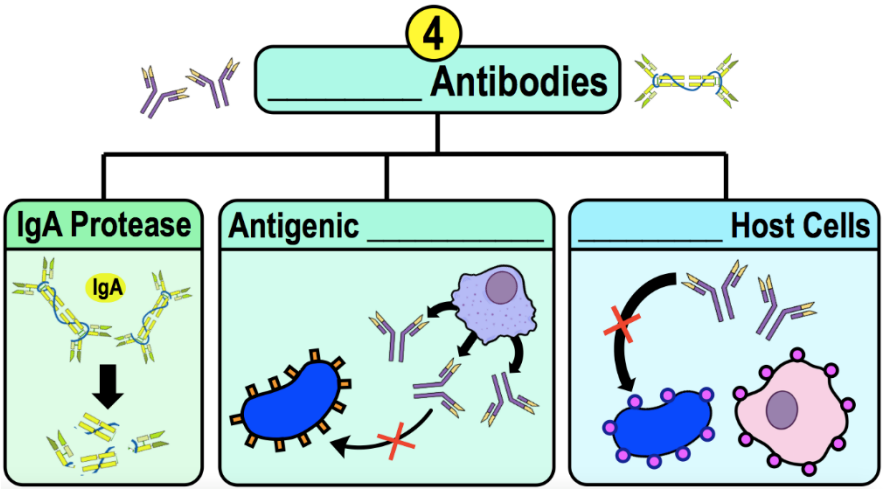
CONCEPT: 5) AVOIDING ANTIBODIES

●*Recall:* During adaptive immunity, antibodies are produced to tag pathogens/toxins for destruction by immune cells.

●There are several mechanisms that bacteria have evolved to avoid being bound by antibodies.

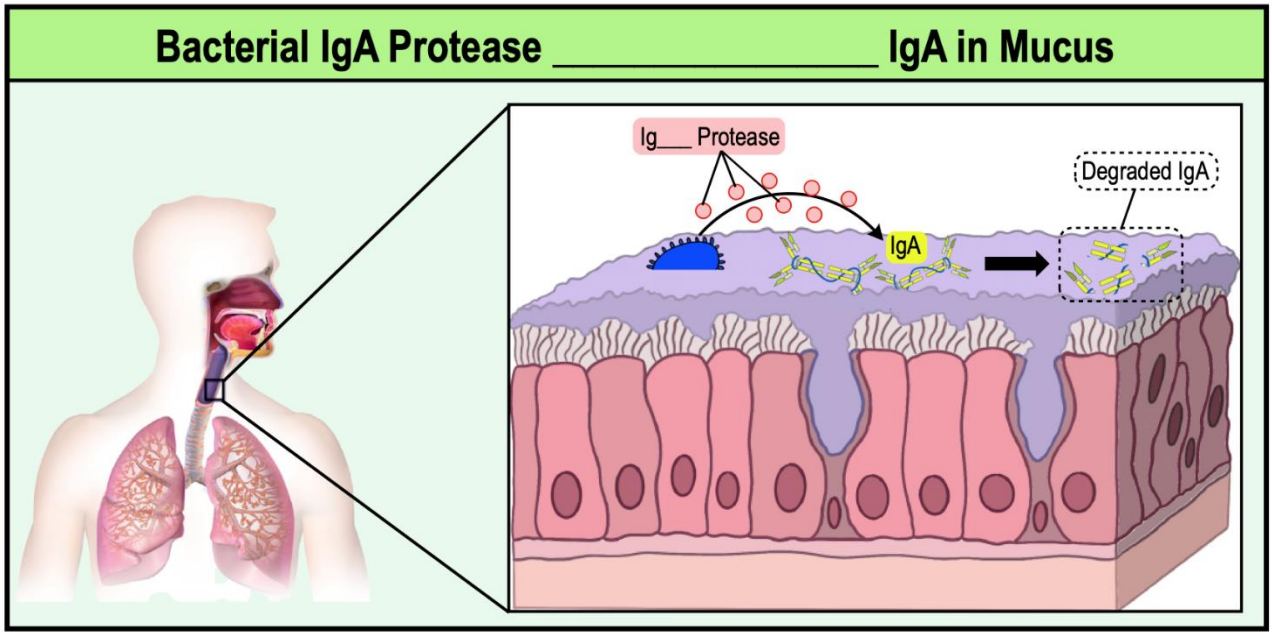


Bacteria Avoid Antibodies by Producing IgA Proteases

●*Recall*: IgA antibodies are primarily found in _____ membranes & areas where mucus is *secreted* for protection.

□ Mucous membranes are *protective* barriers that use local *antibodies* to tag pathogens for *destruction*.

●Bacteria produce **IgA** _____ to *degrade* antibodies in mucous membranes & avoid adaptive immune response.



PRACTICE: All of the following are known mechanisms that pathogens use to avoid the effects of antibodies ***except*** which of these answers?

a) Pathogens mimicking host cells.
b) Fc receptors.
c) Synthesis of IgG protease.
d) Remaining intracellular.
e) Antigenic variation.

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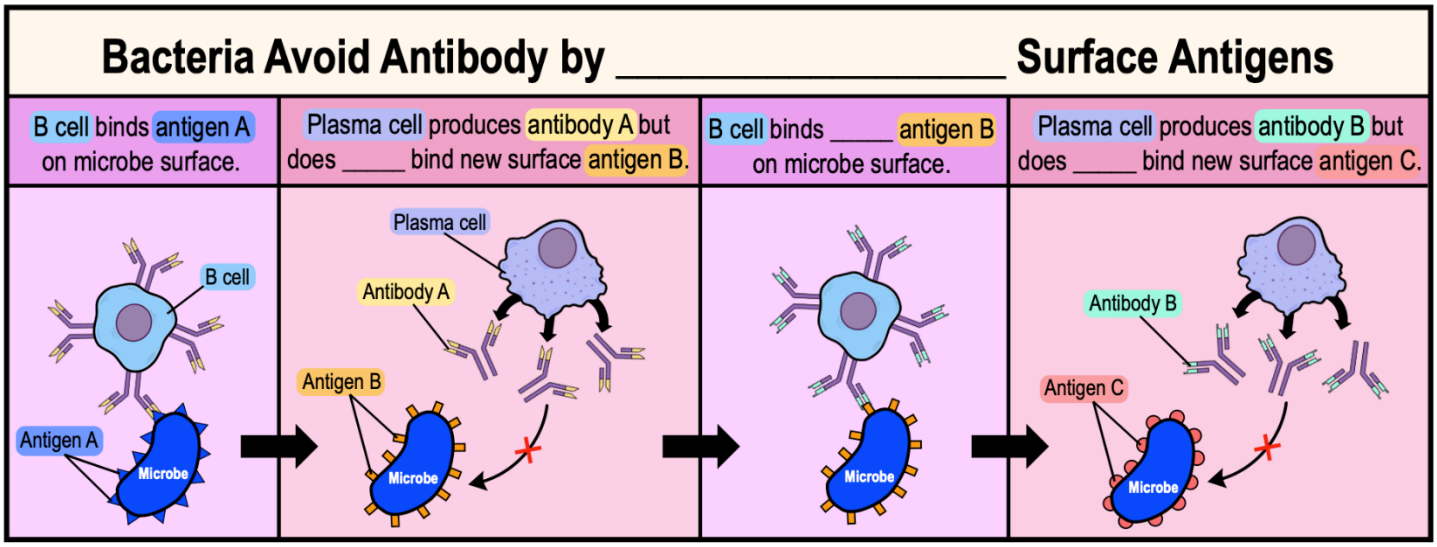
Bacteria Avoid Antibodies by Antigenic Variation

●In order to avoid antibodies, some bacteria constantly _____/alter their surface antigens (**Antigenic Variation**).

□ This allows the bacteria to "stay _____" of antibody production during the *adaptive immune response*.

□ Antibodies that bind to one variation of an antigen on a pathogen cannot bind to a new one.



PRACTICE: Each year it is recommended that healthy adults get a flu shot. Why do we need to get a vaccine for the flu every year instead of once in our lifetime?

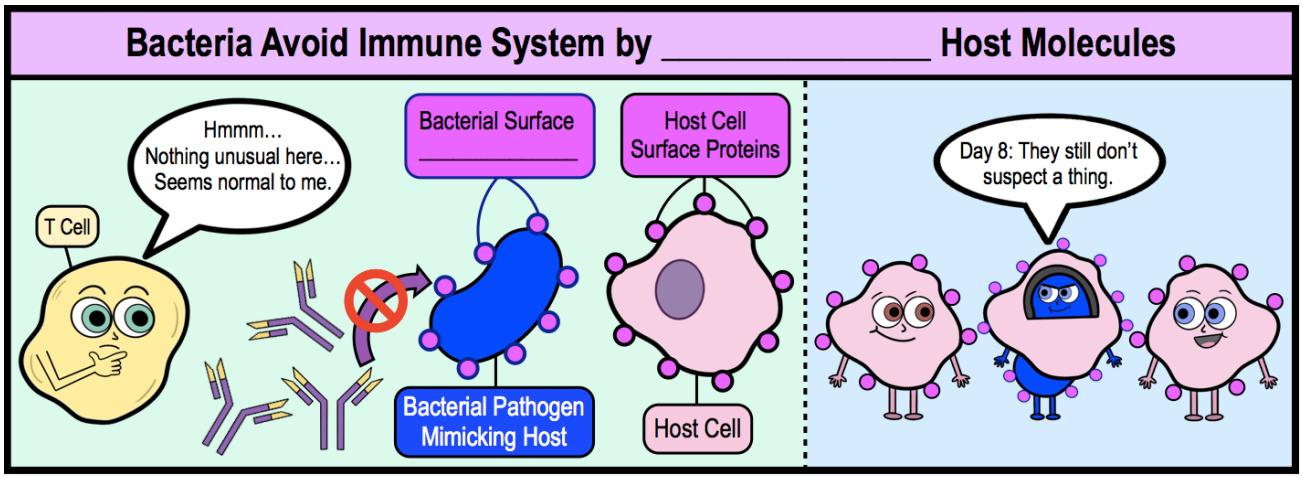
a) The flu virus evolves new antigens very quickly.
b) Each flu vaccine contains different flu antigens.
c) The flu virus has antigenic variation each year.
d) All of the above.

Bacteria Avoid Immune System by Mimicking Host Molecules

●Some bacteria produce surface antigens that are structurally _____ to molecules found on host cells.

●*Recall:* because of the *central* & *peripheral* tolerance, immune system generally does not attack "_____" cells.

□ Therefore, bacteria mimicking self-cells are _____ targeted by immune cells.



CONCEPT: 5) AVOIDING ANTIBODIES

PRACTICE: When pathogenic microbes possess surface antigens that mimic host cell proteins, they are able to avoid detection by antibodies and most immune cells. What stops the immune system from attacking these pathogens?

a) The immune cells have central and peripheral tolerance to host proteins and cells.
b) The immune cells cannot phagocytose the pathogens because they are encapsulated.
c) The immune cells recognizes that microbes expressing proteins similar to host proteins are not a threat.

PRACTICE: The host-pathogen "arms race" is referring to:

a) How quickly pathogens reproduce inside of a host.
b) How pathogens attempt to evolve new ways to infect their hosts.
c) How organisms attempt to evolve new ways to detect and fight infections.
d) The combination of A and B.
e) The combination of B and C.

PRACTICE: IgA is an antibody specifically designed to protect mucous membranes. Why would mucous membranes need extra protect against pathogens?

a) Pathogens can only infect a host through portals of entry that possess mucous.
b) Our mucous membranes are commonly exposed to substances and pathogens from the outside world.
c) Mucous membranes have significantly fewer immune cells to control pathogens than other tissues.
d) Mucous is built to collect foreign substances and pathogens entering the body.
e) A and B.
f) B and D.
g) C and D.