1Q) 3 ways to get memory B cells?

A) Sick

B) Vaccine

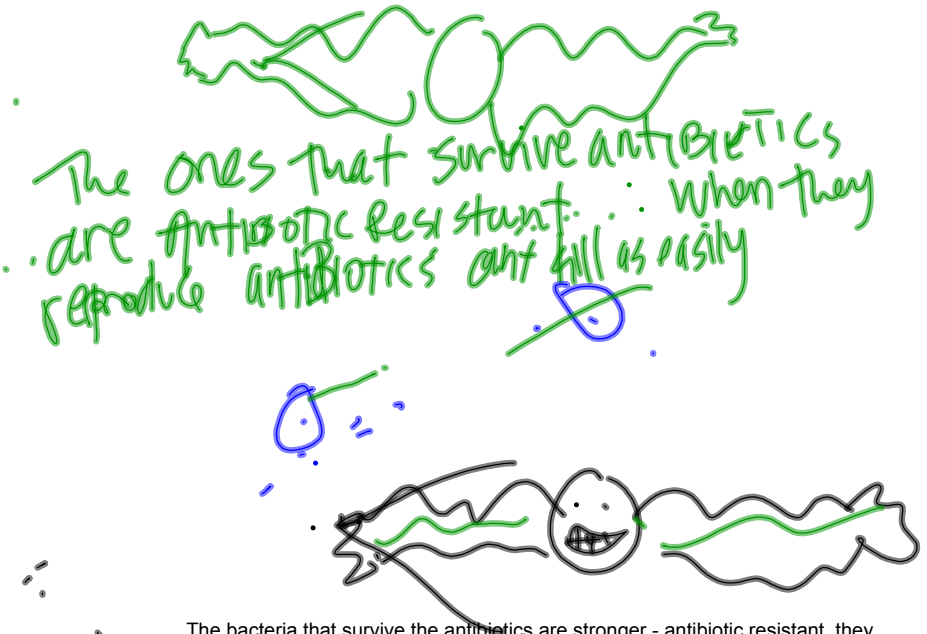
C) Mother breast milk - Colostrum

Vacine and Antibiotic)

Q) How does a vaccine work?

- Uses part of the disease, dead or weak virus/bacteria, inject it in, still has the **antigens** so it trains immune system without launching an attack

Q) Why do you need to take the whole course of antibiotics



The bacteria that survive the antibiotics are stronger - antibiotic resistant. they keep reproducing and getting stronger and then they will no longer be susceptible to the antibiotics - so antibiotics need to get stronger.

Non specific comes, before **specific,** BC its job is to treat everyone the same and keep them out. Specific takes more <u>time</u> to identify the pathogen so it can launch a specific attack.So try non-specific first, saves time and effort

White blood cells

B	T	Phagocytes
Recognize the pathogen using antibodies	Call 4 help - Chemicals (interleukin) attack/kill shut down the immune response - Why do they have to? you made 1000's of B and T cells that are no longer needed, so suppressor t-cells kill them to save you energy.	kill bad cells "flagged" by antibodies - Macrophage: eat - Neutrophil: barf bleach

Q3) what do B cells use to SEE the pathogen

Antibodies! Y

B) What are the seeing **on** the pathogen?

Antigen!

What is the difference between **antigen** and **pathogen?**

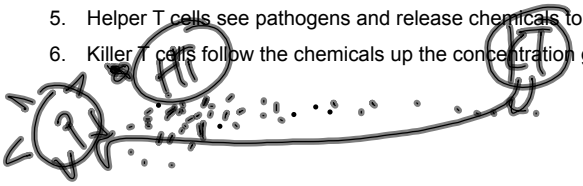
Pathogens are: Invader (bacteria/virus/parasites) - bad guy

Antigens are: bad guys face - **Protein** on the surface of the pathogen - how the B cells recognize the bad guy

Immune Story:

1. Splinter- infiltrates your skin, this is how it sneaks by your first line of Non-specific defense
2. Its in! Starts reproducing
3. Non Specific: second line -
    1. Fever!!!! Boil it alive - it sneaks by
    2. if its a virus **interferon** can slow reproduction
4. Specific -Defense!
    1. Plasma B-cells see it - Using Antibodies
    2. Making more antibodies!!! that match the antigen on the surface of the pathogen :)
    3. antibodies are going to work like hand cuffs to bind the pathogen
    4. Macrophage and Neutrophil see the clumps of pathogen and eat/bleach them - Macrophages train other cells to see the bad guy by wearing the antigen
    5. Helper T cells see pathogens and release chemicals to call for help
    6. Killer T cells follow the chemicals up the concentration gradient and stab the pathogen

Interlukin



5. VICTORY - We kill the pathogen and win
6. Surpressor T - kills all of the immune cells that arent needed (to save the organism energy)
7. Plasma B cells that are not eaten - remain as MEMORY B CELLS
    1. These remember how to fight the infection if you see it again - so next time you fight faster and dont get sick

Bio B