***Immune System Notes***

TOC #15

Immune System:

•Immunity:

–Function: Fight infection through the production of cells that inactivate foreign substances or cells.

•Immune System Notes: Nonspecific

*A. Nonspecific Defense:*

•*First line of nonspecific defense:*

•Hard-to-penetrate skin!

•Keep things out

•Mucous membranes (sticky)

•Trap things

•*Second line of nonspecific defense:*

•Inflammation: Heat (Fever)

•Response to damage or infection

•2nd line because it has snuck past the first line

•Interferon: Virus infected cells make this to interfere with viral growth

Immune System Notes: Specific

*B. Specific Defense: (if pathogen gets past non-specific already) = Immune Response*

•*Immune response triggered by Antigens (virus, bacteria, other bad guys)*

•*Humoral Immunity:*

•B-Cells recognize antigen and multiply making Plasma cells and memory B-cells

•Plasma cells: Make antibodies which are proteins that bind antigens

•Memory B-cells: Stick around so next time they can respond faster

•Why vaccines work!

White Blood Cells: destroy pathogens

Phagocytes:

•***Macrophages:*** engulf pathogens, release interleukin-1 to helper-T’s

•***Neutrophils:*** release bleach!

T-Cells: made in thymus gland.

•***Helper-T’s:*** release interleukin-2 to killers & Suppressors.

•***Killer-T’s:*** destroy infected cells by puncturing

•***Suppressor T’s:*** divide slowly; shut off Killers & B-Cells.

**B-Cells:** (made in bone marrow)

•Produce antibodies. **Y**  (Macrophages “eat” antibody-tagged invaders, plus antibodies link viruses together in a large mass.)

•A few b-cells become **memory cells**!

*(Vaccination triggers the immune system response, leaving you with memory cells.)*

*(Your own cells have marker proteins – Types A and B on red blood cells.)*

Immune System Notes: Specific

*C. Antibody Shape:*

•*Y- Shaped*

•*Top of the Y has 2 spots that “Fit” an antigen*

Label the part: (Antibody) (Antigen)

Immune System Notes: Specific

*D. Antibody Function:*

•*Grab Antigens and clump up*

•*Macrophages can come up and eat them pile of antibodies and antigen*

 Label the Parts: (Antibody) (Antigen) (Macrophage)



Immune System Notes: Specific

*E. Cell-mediated Immunity*

•*T-Cells identify and attach to the antigens on the macrophage and the T cell divides*

•*Those new T Cells can become helper T-Cells and then Killer T-Cells*

•*Killer T-Cells find infected cells displaying antigen and pop them to stop infection*

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*Immune System Notes: Acquired*

*F. Active Immunity*

*•Immunity after first exposure*

*•We can prepare our bodies so we have an active immunity if our bodies see the pathogen again.*

*•Vaccine: Injecting a weakened form of the pathogen to “train” your immune system.*

*Immune System Notes: Acquired*

*G. Passive Immunity*

*•Putting antibodies into our bodies*

*•Natural: From your mom*

*•Unnatural: Injected (ex: rabies vaccine)*

Summary