

# DEFENSE AND IMMUNITY

3 March 2000, 12 March 2003, 5 Mar 04, 7 Mar 05, 3 Mar06, 7 Mar 08, 5Mar10, 2Mar12  
Campbell 6<sup>th</sup>: 901-921, 7<sup>th</sup>: 898-912, Sadava: 400-424, Campbell 9<sup>th</sup>: 929-

<b>Non Specific Defenses:</b> (p 930)	Barriers		skin, mucous membrane, cilia in lungs, lysozyme
	Phagocytosis	930	neutrophils, monocytes (then become macrophages)
	Inflammation	934	<b>histamine:</b> cause release of cytokines (attract WBCs)
	Calorigenic		(set on fire) Erythema, edema, pyrogenic

**Specific Defense System** recognizes foreign cells & materials invaded body, attacks, marks, kills

**IMMUNE SYSTEM:** huge library of immune cells housed in lymph nodes, each makes a different antibody  
(lymphatic system: p 933)

## HUMERAL AND CELLULAR IMMUNITY:

### HUMERAL IMMUNITY:

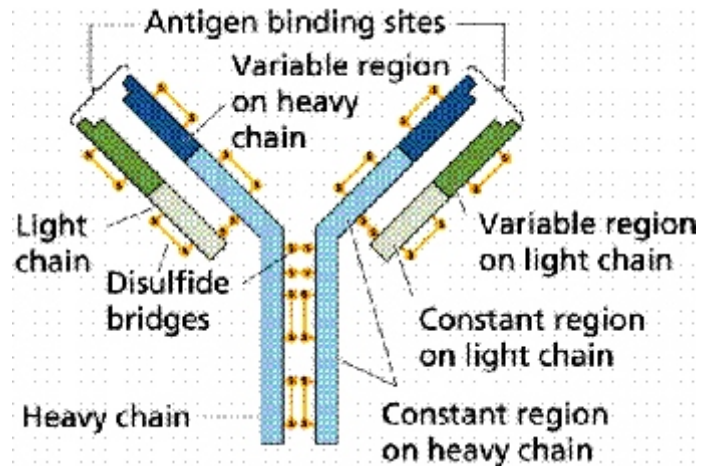
**Structure of Ab:** two heavy two light chains  
p 935: variable regions at binding sites  
constant on rest of molecule

Agglutination due to bivalent nature of antibody

**CLONAL SELECTION:** (P. 939) Each cell coats itself with the Ab it makes.

If Ag reacts with the Ab on the surface, triggers the cell to reproduce & make more Ab:

<b>memory cells</b>	increase in numbers in lymph nodes
<b>plasma cells</b>	circulate and make Ab, raising level (titer) of Ab in blood



**CELLULAR IMMUNITY:** T cells (thymus matured): (p 941)

T helper cells pick up antigens, presents to and activates immune cells.

T killer (cytotoxic) cells seek out cells with specific marking antigens, destroy them

Jenner (and Jesty) Noted in Turkey practice of scratching pus fr cow pox into skin, protect fr small pox. Demonstrated effectiveness by inoculating 10 yr old, then challenging later...

**Vaccination** got it name from Cow Pox.

Immunizations work by repeated stimulating responding immune cells to divide (draw curve)

### FETAL ESTABLISHMENT OF IMMUNE SYSTEM:

How is the immune system set up in the first place?

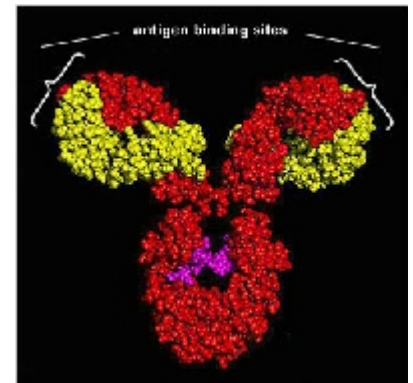
P 938: In fetus, a type of **recombinant DNA process generates random active sites for Ab**

Each new cell creating a new Ab. These are coated with the unique Ab they are capable of making.

But when an Ag interacts, has opposite effect from stimulation: kills cell, removing all cells which would react to "self."

Problems later in life if not selected out: "autoimmune" reactions

(rheumatoid arthritis, rheumatic fever, MS, juvenile diabetes, etc.)



clonal selection:

