

Antisera and Vaccines

Pages 456 - 473

1. Vaccine Introduction
 - A. Definitions
 - i. Immunity
 - ii. Susceptibility
 - B. Process and Goal
 - i. Herd Immunity (Page 458)
 - ii. Critical Mass
 - Small Pox (Page 456)
2. Immune Classifications
 - A. Natural Immunity (non-acquired)
 - B. Acquired Immunity (Page 457)
 - i. Active Acquired Immunity
 - a. Naturally Acquired

 - b. Artificially Acquired
 - ii. Passive (Inactive Acquired) Immunity
 - a. Natural Passive Immunity
 - IgG
 - IgA

b. Artificially Acquired Passive Immunity

- Classifications
 - * Antiserum
 - * Antitoxin
- Sources
 - * Heterologous
 - * Homologous

3. What Makes a Good Vaccine (Page 458)

- A. Stimulate life long immunity
- B. Be completely safe
- C. Require only one administration (i.e., no boosters)
- D. Be easy to produce
- E. Be stable in storage

4. Vaccine Types (Pages 460 - 461)

A. Live Attenuated (whole-agent) Vaccines (Page 460)

- i. Advantages
- ii. Disadvantages

B. Inactivated Vaccines (Pages 460 - 461)

- i. Advantages
- ii. Disadvantages

a. Boosters

iii. Inactivated Vaccine Classifications (Pages 460 - 461) SEE HANDOUT

a. Inactivated Whole Agent Vaccines

- Example: Rabies

b. Toxoid Vaccines

- Examples: Tetanus, Diphtheria

c. Subunit Vaccines

- Example: Pertussis (acellular) aP
- Example: Hepatitis B

d. Polysaccharid Vaccines

- Examples: Example: *Streptococcus pneumoniae*

e. Conjugate Vaccines

- *Haemophilus influenzae* type b

C. Adjuvant (Page 461)

i. Enhanced Inflammation

a. Alum

ii. Enhanced Transport and Uptake

4. Polio Example (Pages 461 - 462)

A. Trivalent

i. Salk Vaccine - Inactivated Polio Vaccine (IPV)

a. Boosters

ii. Sabin Vaccine - Oral Polio Vaccine (OPV)

a. Effectiveness

- Immunocompromised Individuals
- “Back Mutate”

5. Immunization Schedules (pages 506 - 507) (see also vaccine schedules at link below:

<http://www.cdc.gov/vaccines/recs/schedules/default.htm>

6. Antisera

- Serum Sickness

A. Antitoxin

i. Tetanus

B. Antivenom

7. Diagnostics (Pages 464 - 473)

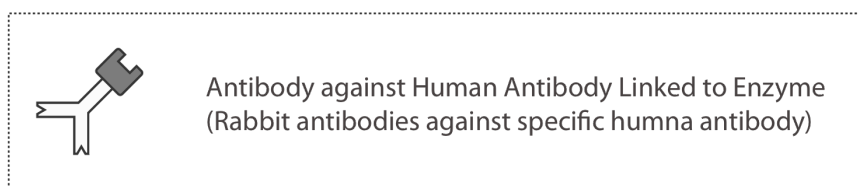
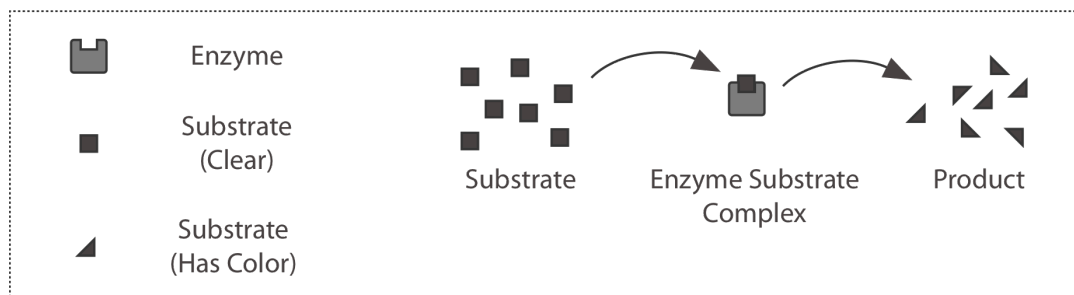
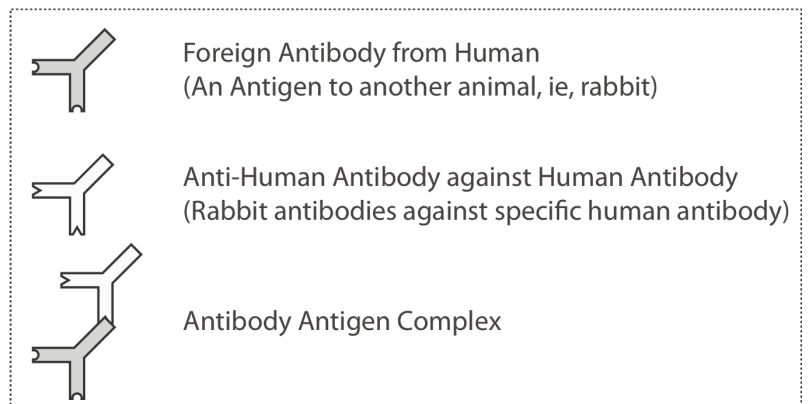
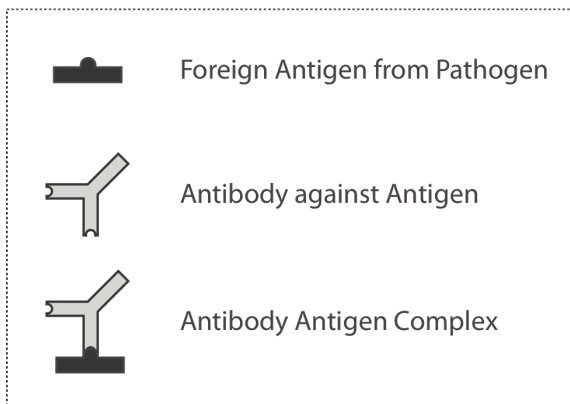
A. Introduction

- i. Plasma
- ii. Serum
- iii. Seroconversion
- iv. Titer

B. Monoclonal Antibodies (Pages 465 - 467) SEE Handout

C. Immunoassays

- i. Terminology
 - a. Assay
 - b. Secondary Antibodies
 - “Anti-human antibodies



ii. Direct Immunoassays (Look for Antigen)

iii. Indirect Immunoassays (Look for Antibody)

D. Enzyme-Linked Immunosorbent Assay (ELISA) (Pages 468 - 470)

* SEE HANDOUT !!

i. Direct ELISA

ii. Indirect ELISA

E. Western Blot (Pages 470 - 471)

* SEE HANDOUT !!

F. Agglutination Reactions (Pages 470 - 471)