Immunological testing

- Monoclonal antibodies
- Serology
- Quantifying antigen – antibody reactions

Perspective 17.1
Monoclonal Antibodies
Serology

- Antibodies
- Antibodies detect and identify antigens

Quantifying antigen – antibody reactions

- Seroconversion or rise in titer
- Serial dilutions
Figure 17.2 - Quantitation of immunologic tests

Precipitation reactions

- Immunodiffusion
- Immuno-electrophoresis
Figure 17.3
Precipitation reaction

Figure 17.4
Immunodiffusion
Figure 17.6
Immunoelectrophoresis

Agglutination reactions

- Direct agglutination
- Indirect agglutination
- Hemagglutination
Direct agglutination

- Cross – linking and lattice formation
- Antibodies react with particulate antigens (red blood cells, bacteria, fungi)
- Visible clumps
- Estimate amount of antibody

Indirect agglutination

- Soluble antigen is coated onto particles (red blood cells, latex beads)
- Allow for visible clumps (agglutination)
Immunofluorescence tests

- Direct fluorescent antibody test
- Indirect fluorescent antibody test
Antigen – antibody assays

- Radioimmunoassay (RIA)
- Enzyme – linked immunosorbant assay (ELISA)
- Western blot
Radioimmunoassay (RIA)

• Competitive inhibition assay
• Measure antigen or antibody
• Ex. Measure small amounts of hormones or drugs in a clinical sample
• Ex. Measure small amounts of IgE antibody (radioallergosorbent test)

Enzyme – linked immunosorbant assay (ELISA)

• Color reaction assay
• Indirect ELISA
• Direct ELISA
Figure 17.9 - Indirect ELISA

Figure 17.1 - Direct ELISA
Figure 17.1
Western blot

Complement fixation test

• Measures the binding of complement by an antigen – antibody interaction
• Indicator system determine positive or negative reactions
Neutralization test

- Antibody bind to specific antigen (virus, toxin)
- Antibody – antigen complex prevents antigen from binding (neutralization)
Cellular immunology test

- Identification of subsets of lymphocytes
- Lymphocyte response to mitogens
- Cytotoxic T – cell function
- Cell – mediated immunity to infectious agents