**Antigens**

- Immunogen – a molecule that specifically interacts with an antibody or lymphocyte and elicits an immune response
- Antigenic determinants (epitopes)

**Antibodies**

- Structure
- Protective outcomes
- Immunoglobulin classes

**Structure**

- Antigen – binding (Fab) site
- Fc region
- Heavy chains and light chains
- Variable region (Fab)
- Constant region (Fc)

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Figure 16.3 – Antibodies and Antigens

Figure 16.4 Antibody structure

Figure 16.5 – Model of an IgG Molecule
Protective outcomes

- Neutralization
- Immobilization and prevention of adherence
- Agglutination and precipitation
- Opsonization
- Complement activation
- Antibody – dependent cellular cytotoxicity (ADCC)

Immunoglobulin classes

- IgM (pentamer) – first class produced
- IgG (monomer) – 80-85% total serum Ig; secondary response
- IgA (dimer in secretions) – secreted Ab; mucosal immunity
- IgD (monomer) – minor Ab involved in development
- IgE (monomer) – bound to basophils and mast cells, important in elimination of parasites, allergies

Names for antibodies based on protective outcome:

- agglutinin – IgG antibody that agglutinates antigen
- precipitin – IgG antibody that precipitates antigen
- opsonin – IgG that coats antigen to promote phagocytosis
- complement fixing antibody – leads to complement lysis
- antitoxin – neutralizes antigen
- neutralizing antibody – neutralizes ability of virus to infect
Clonal selection

- Specific response of a lymphocyte to an antigen
- Lymphocytes
  - Immature
  - Naïve
  - Activated
  - Effector
  - Memory

Response to T – dependent antigens

- B cells present antigen (usually protein) to effector T cells
- B cell clonal expansion – affinity maturation, class switching and memory
- Primary and secondary response

B - lymphocytes

- Response to T – dependent antigens
- Response to T – independent antigens
Response to T – independent antigens

- Polysaccharides – trigger B cell response
- No T – helper cells are involved