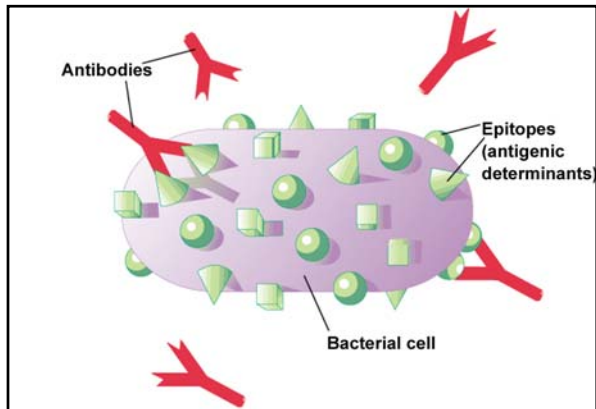


Antigens

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

16-1



16-2

Figure 16.3 – Antibodies and Antigens

Antibodies

- Structure
- Protective outcomes
- Immunoglobulin classes

16-3

Structure

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

16-4

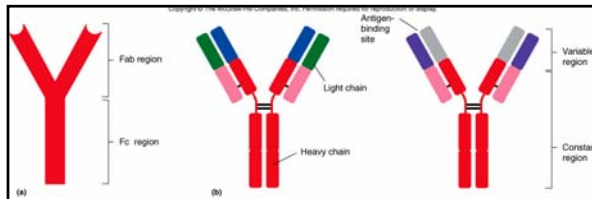


Figure 16.4 Antibody structure

16-5

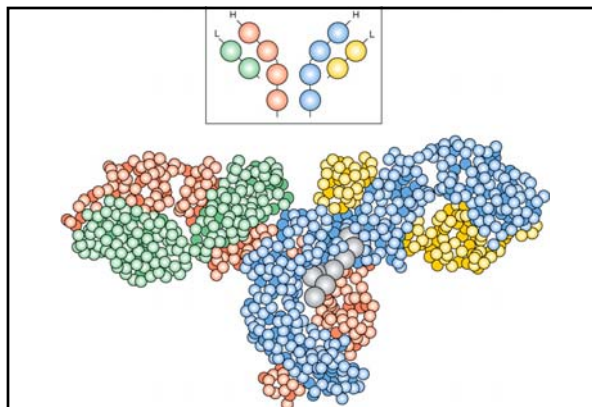


Figure 16.5 – Model of an IgG Molecule

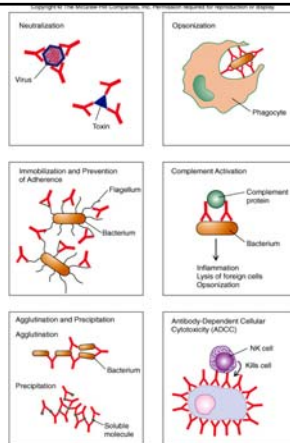
16-6

Protective outcomes

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

16-7

Figure 16.6
Protective outcomes
of Ab-Ag binding



16-8

Immunoglobulin classes

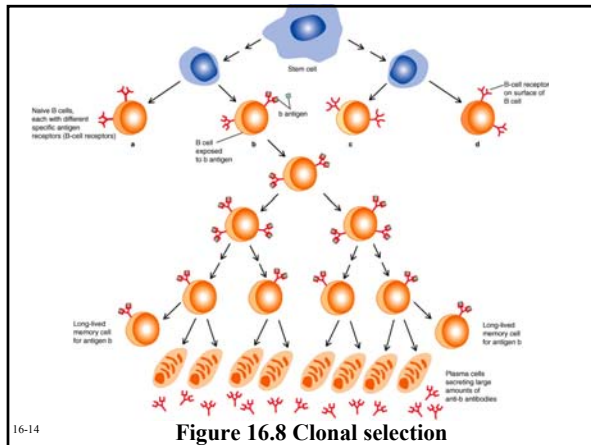
- IgM (pentamer) – first class produced
- IgG (monomer) – 80-85% total serum Ig; secondary response
- IgA (dimer in secretions) – secreted Ab; mucosal immunity
- IgD (monomer) – minor Ab involved in development
- IgE (monomer) – bound to basophils and mast cells, important in elimination of parasites,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

16-9

Clonal selection

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

16-13



16-14

Figure 16.8 Clonal selection

B - lymphocytes

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

16-15

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

16-16

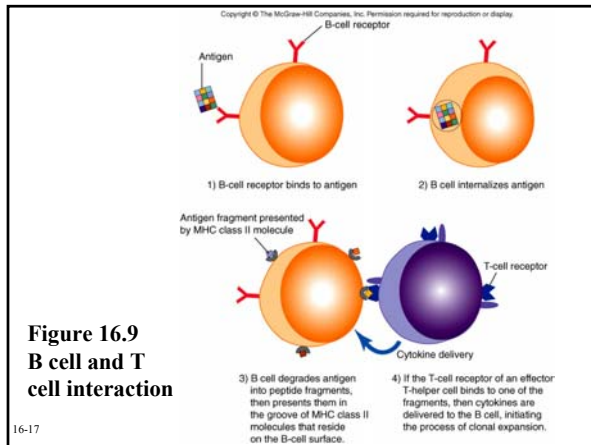


Figure 16.9
B cell and T
cell interaction

16-17

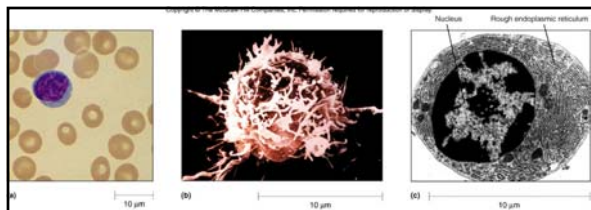
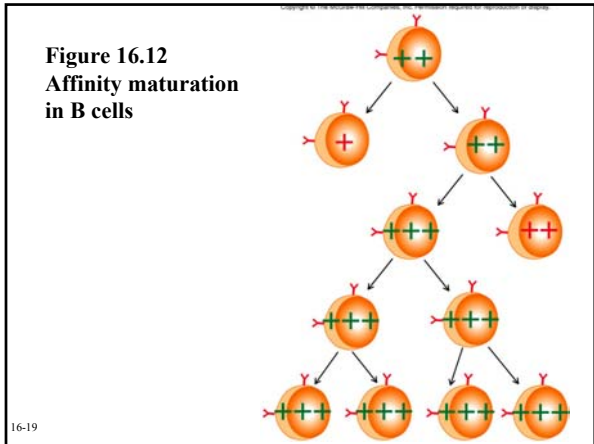
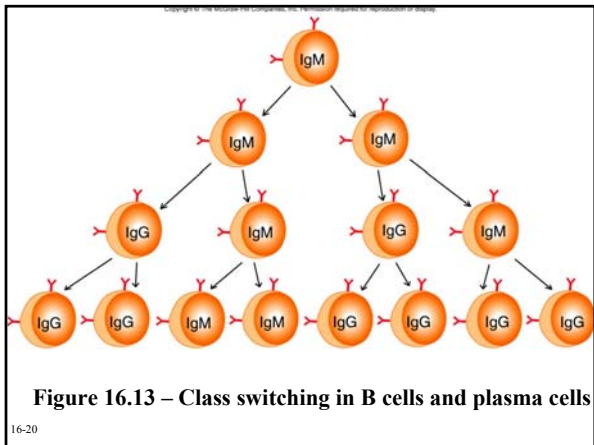
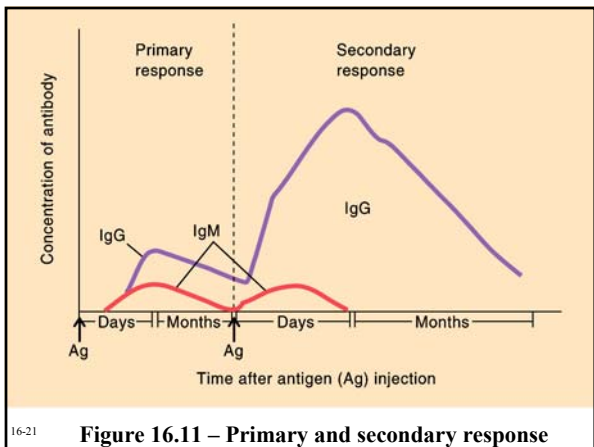


Figure 16.10 – Lymphocytes and plasma cells

16-18



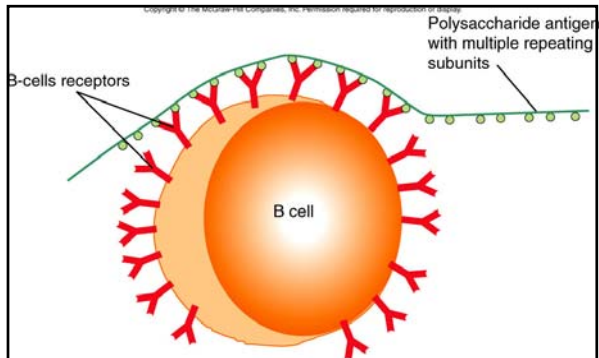




Response to T – independent antigens

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

16-22



16-23

Figure 16.14 - T – independent antigens
