CHAPTER 10
BACTERIAL GROWTH

REQUIREMENTS FOR BACTERIAL GROWTH

- Bacterial growth has an effect on disease
- Successful bacterial growth depends on the physical and chemical environment
- Physical requirements include temperature, pH, and osmotic pressure

REQUIREMENTS FOR BACTERIAL GROWTH

- Chemical requirements include carbon, nitrogen, sulfur, phosphorus, organic growth factors, and trace elements
- Bacteria have different requirements for oxygen:
  - obligate aerobes require oxygen to grow
  - obligate anaerobes are killed in the presence of oxygen
  - facultative anaerobes can grow with or without oxygen

GROWTH MEDIA

- Identification of organisms is important for the study of infectious disease and requires that organisms be grown in a laboratory setting
- A culture medium is used to grow bacteria
- There are two types of medium: chemically defined and complex

GROWTH MEDIA

- Selective medium contains ingredients that prohibit the growth of some organisms while fostering the growth of others
- Differential medium contains ingredients that can differentiate between organisms

CHARACTERISTICS OF BACTERIAL GROWTH

- Bacteria grow by binary fission in which one cell divides into two
- Different bacteria have different generation times
- The bacterial growth curve has four phases: lag, log, stationary, and death

CLINICAL IMPLICATIONS OF BACTERIAL GROWTH

- The number of organisms can be determined directly through methods such as direct microscopic counting, filtration, and automated cell counting
- Indirect measurement of bacterial numbers involves methods such as spectrophotometry, total weight, and measurement of cell products
- Samples taken from different parts of the body are collected with different methods