Chapter 11 - Biotechnology and medicine - Condensed version

11.1 Introduction
- A. 20th Century
- B. Public health vs. clinical medicine
- C. Infectious disease vs. chronic disease
- D. Early biotech impact

11.2 Pharmaceuticals and biopharmaceuticals
- A. Pharmaceutical drugs
- B. Biopharmaceuticals
- C. Other impact of biotechnology

11.3 Antibiotics
- A. Alexander Flemming
  - 1. source
- B. Definition
- C. How many
- D. Introduction
- E. Spectrum
- F. Production
  - 1. new improvements
- G. Major applications of genetic manipulation on production
- H. Orphan drugs
- I. Resistance
- J. Animal feeds & food preservation

11.4 Vaccines and monoclonal antibodies
- A. Vaccines
  - a. antigen
  - b. antibody
  - 1. kinds of vaccines
  - 2. definition
  - 3. manufacturing
  - 4. successes
  - 5. bottom line
  - 6. production
  - 7. how different
  - 8. test for acceptability
- B. Antibodies
  - 1. polyclonal
    - a. definition
    - b. source
  - 2. monoclonal
    - a. definition
    - b. source
    - c. uses
    - d. production

11.5 Biopharmaceuticals / therapeutic proteins
    1.compare & contrast most pharmaceutical products with biopharmaceuticals
    2.development requirements
    3.difficulties with protein based biopharmaceuticals
  A.Insulin
  B.Somatostatin
  C.Interferons
  D.Lymphokines
  E.Hematopoietic growth factors

11.6 Pharmacogenetics
  A.Definition

11.7 Molecular biology and human disease
  A.Biomarkers

11.8 Diagnostics in developing countries

11.9 Gene therapy
  A.Definition
  B.Goal
  C.Challenges
    1.delivery
      a.retro virus
      b.DNA virus
      c.direct injection
      d.lipofection
      e.Ab-like protein
    2.expression
  D.Results so far
  E.Cell type
    1.germ
    2.somatic

11.10 Systems biology and medicine
  A.Vision