

Study Guide Lesson 14: Pharmaceutical Biotechnology

1. Pharmacy is the health profession that links the health sciences with the chemical sciences and

- (A) is a relatively new profession developed with the advent of synthetic insulin
- (B) produce compounds that cannot be rigorously tested in clinical trials
- (C) it is charged with ensuring the safe and effective use of pharmaceutical drugs
- (D) therefore cannot be regulated by the FDA
- (E) all of answers are correct

2. Pharmacy and pharmaceutical science is charged with ensuring the safe and effective development and use of pharmaceutical drugs. People around the world have used pharmaceuticals derived from plants and other organisms for thousands of years. The word 'Pharmacy' derives from the Greek: φάρμακον (*pharmakon*), meaning

- (A) from the Farm
- (B) "drug" or "medicine"
- (C) wild plant derivatives
- (D) deep biology
- (E) wonder cure

3. The ability to control and regulate materials use in medicine and pharmacy is essential to ensure against fraudulent claims and harm. The FDA is

- (A) the Facts on Drugs Administration
- (B) the Facts and Defense Administration
- (C) the Food and Drug Administration
- (D) the Food and Defense Act
- (E) the Finance on Drugs Act

4. Enzymes are usually proteins coded for by genes. Some of these genes can be cloned and used for therapeutic purposes. Enzymes are:

- (A) only used in commercial detergents
- (B) genes involved with biochemical pathways
- (C) made primarily of lipid
- (D) not involved with energy production
- (E) usually proteins that catalyze reactions in cells

5. Specialized proteins embedded in cell membranes can receive and transmit chemical messages causing a network of reactions inside of a cell. Some of these are often desirable drug targets to disrupt disease or other reactions. Proteins that are on the cell surface can act in signaling transduction networks for the information the inside of a cell. These types of proteins are referred to as:

- (A) Progenitor sequences
- (B) Receptors
- (C) Transgressors
- (D) Retractors
- (E) Transducers

6. An influenza pandemic is a global outbreak of disease that occurs when a new influenza A virus appears or “emerges” in the human population, causes serious illness, and then spreads easily from person to person worldwide. Such a pandemic

- (A) has only occurred once in recorded human history
- (B) is only the material of Hollywood movies such as "Contagion"
- (C) is only a matter of time before another occurrence
- (D) is totally preventable
- (E) proves that the theory of evolution is incorrect since viruses cannot evolve

7. Any sequence of DNA can now be cloned or synthesized. Also the regions of DNA which control expression, such as promoter regions. This technology has made biologic therapeutic drugs. Recombinant DNA technology has been able to make what class of compounds as a new class of effective drugs?

- (A) Muscle fibers
- (B) Antibodies
- (C) Lipids
- (D) Cox 2 inhibitors
- (E) Homeopathic treatments

8. There are certain heritable diseases that arise as an abnormal immune response to normal body endogenous proteins. These diseases are caused when antibodies are made to those normal proteins setting up an immune response as if those proteins were an infection. Celiac disease, diabetes mellitus type 1, Graves disease, inflammatory bowel disease, multiple sclerosis, psoriasis, rheumatoid arthritis, and systemic lupu erythematosus. . Rheumatoid arthritis is

- (A) curable with the correct diet and vitamins
- (B) totally eradicated
- (C) an autoimmune disease
- (D) has been most effectively treated with homeopathic remedies
- (E) best treated early with surgery

9. The “train dilemma” predicts that human morals for intervention are:

- (A) Are fixed and agreeable across all cultures
- (B) Dedicated by religious preference
- (C) Have no relevancy to actual experience
- (D) Are highly circumstantial
- (E) That there humans have no moral conscience

10. What is a genome?

- (A) The genetics of small people
- (B) A genetic disease associated with small stature
- (C) All the DNA in an organism, including its genes.
- (D) The absence of genetic markers with some body cells
- (E) The study of the information in a single gene

11. Antibiotic resistant tuberculosis is on the rise world-wide. Which approach to research treatment development would not be the best choice?

- (A) develop a vaccine using recombinant DNA technologies
- (B) develop RNAi methods to target the tuberculosis bacteria
- (C) develop cheaper methods to make the antibiotic
- (D) develop early detection methods based on PCR
- (E) sequence the tuberculosis genome to look for new drug targets

12. We now have the technological capability to analyze the sequences for DNA, RNA and proteins. The functional capabilities and internetworking of this information remains to be determined. Proteomics is :

- (A) The study of all the proteins produced by an organism and their interactions.
- (B) The study of the ecology of the Protista by molecular biology
- (C) One of the largest pharmaceutical biotechnology companies in the world
- (D) The exact measurement of protein structures using X-ray crystallography
- (E) a hoax perpetrated by molecular biologists about alien proteins

13. The ability to clone or synthesize fragments of DNA is changing pharmaceutical drug development. What are the implications of gene cloning for the pharmaceutical industry?

- (A) Technically a good idea but all candidates have failed in Phase III trials
- (B) It might work but it will never gain public acceptance
- (C) Drugs based on antibodies are now on the market made using this technology
- (D) Technically a good idea but has yet to be proven
- (E) none, it's the materials of science fiction and Hollywood movies

14. Regardless of your major or your interests, there is a distinct advantage to knowing how to write. Not just to be able to make letters or sentences, but to make communicative statements and longer documents. Sentence paragraph and document structure teach us how to communicate effectively. The best way to learn writing skills is:

- (A) Practice, write a lot**
- (B) Read a lot and pay attention to structure**
- (C) Get good feedback**
- (D) Read instructional texts, such as Strunk and White**
- (E) By all means necessary, including all these answers**