Chapter 12
Biotechnology in Medicine

1) Find one or more Websites that describe the actions of the following immune system components. Write a description of the function or action of each component and record the URL of the Website(s) you used to gather the information.

Immune System Component	Description of the Function	Website
lymph system (including the thymus and spleen)		
bone marrow		
white blood cells leukocytes (granulocytes, lymphocytes, monocytes)		
white blood cells B-cells (and the antibodies they produce)		
white blood cells T-cells (helper T-cells, killer T-cells, suppressor T-cells)		
white blood cells phagocytes		
white blood cells macrophages		
complement system		

2) What is the approximate maximum length of peptides made on peptide synthesizers?

3) Why are the peptides created on a peptide synthesizer not called proteins?

4) If scientists are screening thousands of samples daily or weekly, how can they process so much data?

5) Using a DNA synthesizer, suppose you want to make a primer that will recognize the following sequence: TAC CCG GGC AAT TCC AGT. What will the sequence on the primer have to be?

6) Allergies are caused by the overreaction of an antibody to an antigen. Suppose you are allergic to peanuts. Suggest an antibody therapeutic that might help you.

7) Explain how the antibody technology works on a pregnancy test strip. Create a flowgram or other illustration to accompany your explanation.

8) How do scientists acquire enough antibodies to purify antigenic proteins for vaccine trials?

9) If a vaccine is needed for a certain cancer, for instance, breast cancer, what type of vaccine antigen might cause an immune response and be a possible therapeutic candidate?

10) Using the following Website (www.fda.gov/oc/opacom/hottopics/anti_resist.html), Create a four-slide PowerPoint presentation, with at least one graphic image per slide that includes the following:

- What is an antibiotic, and what is antibiotic resistance?
- What causes antibiotic resistance and why is it a major health concern?
- Give an example of antibiotics resistance that has significant health implications.
- Offer recommendations and actions to combat antibiotic resistance.

Provide a rough draft of each PowerPoint slide below.