

**Bio 5310 Graduate Student Questions  
Undergraduate Extra Credit**

**Exam 1 Fall 2004**

**1.** If all of the cells of Michele Robertson's immune system are completely destroyed by high levels of radiation and chemotherapy (to eliminate her Hodgkin's cancer cells), she will very likely experience which TWO of the following if her destroyed immune system is *not* successfully replaced? (select **TWO** answers and provide a brief explanation for each selection)

- A. an increase in the number of infectious diseases that might cause her harm
  
  
  
  
  
  
  
  
  
  
- B. an increase in the number of surviving tumor cells in her body
  
  
  
  
  
  
  
  
  
  
- C. an increase in the number of autoimmune diseases that might cause her harm
  
  
  
  
  
  
  
  
  
  
- D. an increase in the number of materials to which she will develop an allergy

2. Which **one** of the following characteristics would **NOT** correctly describe the innate protective mechanism? Provide an explanation for your selection.

- A. some of the protection is provided by phagocytic cells
  
  
  
  
  
  
  
  
  
  
- B. protection by this type of mechanism improves dramatically during the recovery from an infectious disease caused by a pathogenic microorganism
  
  
  
  
  
  
  
  
  
  
- C. protection provided by this type of mechanism is not specific for any particular pathogen, but is a generalized type of protection against all types of pathogens.
  
  
  
  
  
  
  
  
  
  
- D. this type of protection is already present in a newborn infant

**3.** The inflammatory response is one manifestation of the innate immune system. The response is initiated by the presence of bacterial cells in the extravascular tissues (i.e., outside of the blood vessels). Macrophages that encounter these bacterial cells are stimulated to release chemicals (cytokines) that can have a multitude of effects on nearby blood vessels and the contents of those blood vessels. Which of the following will occur as a result of the release of these cytokines by the macrophage? (**indicate all answers that are correct and provide an explanation for why the remaining answers are incorrect**)

A. the spaces between the cells that form the blood vessel will increase, thus allowing fluids from the blood to leak into the tissues

B. phagocytic cells that are moving through the blood vessels will stop at the site of the cytokine source

C. some phagocytic cells will actually squeeze between the cells that form the blood vessel and enter the tissue to assist in fighting the invading bacteria present there

D. T-lymphocytes that are in the blood circulation will leave the blood circulation right at the site of the bacterial infection, immediately enter the lymphatic system and begin to produce antibodies specific for antigens associated with the infecting bacteria

4. Describe each immunoglobulin's structure including number and kind of chains, domains, and presence or absence of a J chain.

- Ig\_\_:

- Ig\_\_:

- Ig\_\_:

- Ig\_\_:

- Ig\_\_:

5. Antigen is presented to the T cell by the macrophage in conjunction with what self antigen? Draw it.