

Immune System Background: Questions to Consider

A. For the reading:

1. What is the main function of the immune system? *The main function of the immune system is to distinguish between self and non-self in the body.*
2. What is an antigen and how is it different from an antibody? *An antigen is an agent that the immune system recognizes. An antibody is an immune produced substance that recognizes and functions against an antibody.*
3. What term describes an object that generates an immune response? *immunogenic*
How is it related to antigens and antibodies? *Production of an antibody is an example of an immunogenic response to an antigen.*
4. What are the (3) main types of immunity? *humoral, cellular, natural*
5. What are the main groups of cells involved in each type of immunity? *B-lymphocytes are primarily involved in humoral immunity; T-lymphocytes are primarily involved in cellular immunity; "Scavenger cells" such as macrophages and natural killer cells act in the natural immunity. Note that there are overlaps and interactions between immunities and cell types.*
6. What is the group of genes called that determines self/non-self markers? *MHC: major histocompatibility complex*
7. How are B cells related to plasma cells, antibodies, and antigen? *In response to an antigen, a B cell may produce plasma cells; the plasma cells produce antibodies to the antigen; the antibodies mark the antigen.*
8. What do helper T cells do? *Helper T cells activate B cells, natural killer cells and macrophages.*
9. What do cytotoxic T cells do? *Cytotoxic T cells attack malignant cells and cause cell death.*
10. What are the main differences between T cells and B cells? *T cells have to have antigen molecules presented to them by B cells or macrophages while B cells can respond autonomously to antigen.*

B. For the internet and other resources

1. Give some examples of antigens. *Two examples are bacteria and viruses (see <http://www.amfar.org/cgi-bin/iowa/bridge.html>).*

2. What is cancer? *Cancer is the uncontrolled growth of cells leading to abnormal tissues.*
3. What are some different cancer types? *Breast, prostate, lung, colon, melanoma of the skin, leukemia (see <http://www.acor.org/types.html>).*
4. What are some traditional cancer treatments? *Chemotherapy is common and involves the use of drugs to target cancer cells (not always exclusively possible); bone Marrow transplants are used to promote healthy blood cells (for leukemia patients).*
5. How might the immune system play a role in fighting cancer? *The system could generate an immune response against the cancer cells and help destroy them.*
6. What is an immunotherapy cancer treatment? *An immunotherapy treatment involves stimulating or using the bodies natural defense system in order to treat the cancer. An example of such a treatment would be a cancer vaccine that tries to stimulate an immune response against an antigen that is present on a tumor cell but not on a normal cell. (See: <http://www.cancersupportivecare.com/immunotherapy.html> and <http://www.oncolink.com/treatment/article.cfm?c=11&s=80&id=247> for example.)*