LEAGUE OF IMMUNO LEGENDS – ASSESSMENT SHEET

Name: _____KEY_____ **Date**: _____

Directions: Match the following vocabulary words.

1. ___G___ **Pathogen**
2. ___D___ **Cytotoxic**
3. ___F___ **Histamine**
4. ___A___ **Antibody**
5. ___B___ **Antigen**
6. ___E___ **Heparin**
7. ___C___ **Cytokine**

A. (also known as immunoglobulins) Y-shaped proteins that can recognize and bind to antigens, further signaling to others involved in the immune system responses

B. Molecules capable of stimulating an immune response, could be proteins on the surfaces of bacteria, fungi and viruses

C. Protein involved in cell signaling, especially between immune cells

D. Substance or process that results in cell damage or cell death

E. Anticoagulant that inhibits blood clotting and promotes the movement of white blood cells in an area

F. Chemical that widens blood vessels and increases the flow of blood to injured tissue

G. Organisms or infectious agents that invade the body and can cause health issues

8. **Directions:** Name the TWO categories of the immune system, and state ONE difference between the categories.

Innate and adaptive immune system

Differences can include any of the following:

Innate

Specificity
- Non-specific
- No memory

Duration
- Initiates in minutes to hours
- Lasts days to weeks

Components
- The skin and all mucous membranes
- Different defensive white blood cells
- Various substances in blood and body fluids

Adaptive

Specificity
- Antigen specific
- Has memory

Duration
- Initiates in days to weeks
- Lasts months to years

Components
- T and B cells
- Antibodies
- Cytokines

Directions: Answer the following questions in 1-2 sentences.

9. What might happen if the immune regulation function (ability to inhibit immune responses) fails?

   The body may not be able to recognize self and begin attacking the body and healthy cells. This is more commonly termed, as an autoimmune disease.

10. Where might immune memory (ability to remember the antigens previously encountered be important for addressing diseases as a biomedical engineer)?

    Could be helpful for vaccines, with the vaccine giving a "safer" first exposure, allowing a faster response to later exposures.

11. Given the fact that the chemical histamine plays a large role in executing the allergic reaction, how might allergy medicines work?
    (Hint: Think about how the cell and cell receptors work)

    The medicines, known as antihistamines, aim to block the histamine receptors, thus leading to suppression of the histamine response.

12. What are some examples of an immunoengineering application?

    Vaccines, antibiotics, antivirals, cancer therapies (CAR-T, monoclonal antibodies, etc. although do not expect students to know specifics), over the counter medications for colds, flu, etc.

13. What category of the immune system do vaccines target and why?

    The adaptive immune system, as it acts as a regulated and controlled first exposure to better prepare the body for a potential exposure to the natural pathogen.