Cell Wars: A Physiological Science Fiction Story

Background

An alien invader is about. Its purpose is not entirely clear, perhaps it is friendly, perhaps benign, perhaps intent on destruction. Regardless, the home defenses are quickly activated for response in a carefully orchestrated cascade. The defenders will endeavor to eat the intruder; attack it directly; produce chemicals to disable it; and finally, leave sentinels around to warn of future attack. *This science fiction movie occurs regularly inside your body.*

Focus Questions

- What anatomical structures are involved in the immune response?
- What is the physiological sequence of an immune response?
- What is the relationship between the immune response and the symptoms of disease?
- What is the relationship between the immune response, allergies, organ rejection and vaccinations?

Procedure

1. Work in teams of two (2)
2. Design and produce a "Cell Wars" story board that uses any analogy of your choosing to accurately depict the immune response.
3. Your story board must have a minimum of three (3) panels– recognize, respond and remember.
4. Your story must include a visual representation of the following characters: *antigen (virus, bacteria, etc.); phagocyte; macrophage; helper T cell; killer T cell; B cell; plasma cell; antibody; suppresser T cell; memory T cell; and memory B cell.*
5. During the planning stages, you will have the opportunity to receive feedback on your analogy from one other group. Your group will also provide feedback on another group’s analogy.
6. You will make a brief presentation of your analogy to one or two other groups. Each member of your group must participate in the presentation.
7. Your analogy and visual will be assessed during this presentation by your classmates.

Analysis and Conclusions

You will answer these individually and in class – like a quiz!

1. Construct a scaled time line that includes, in correct sequence, all of the events in the human immune response.
2. What is the role of inflammation and fever in the immune response? Which aspects of the immune system mediate these two aspects of the immune response?
3. Compare and contrast the cell-mediated immune response and antibody-mediated immune response.
4. Briefly describe the physiological sequence that follows a vaccination. How does that vaccination subsequently confer immunity against a particular disease?