

Microbial Evasion of Host Immune Defenses

Microbiology encompasses many aspects of pathogens and human reactions to infections. This project will allow you to trace pathogens through the infection cycle and human response to the infection.

Laboratory Assignment requirements: Refer to Table 1.1 (below) and answer the questions that follow for the 3 organisms listed. For each of the microbes you choose, write four short paragraphs, one to answer each of the questions.

Your answers should include examples and scientific evidence to support your answer. You will find references to all of these organisms in your text, but your knowledge may be enhanced by referring to the CDC or the WHO websites, as well.

Organism	Strategy to Avoid Host Immune System	Common Disease
<i>Trypanosoma cruzi</i>	Changes surface antigens to avoid immune system detection	American trypanosomiasis
<i>Human Immunodeficiency virus (HIV)</i>	Virus infects and hides in macrophages and CD4 T-Cells	Acquired Immunodeficiency syndrome
<i>Streptococcus Pneumoniae</i>	Produce M proteins to inhibit phagocytes from attaching	Pneumonia

Table 1.1

Questions:

1. Give a brief overview of the disease including signs and symptoms. Who is typically affected by this infection (ie; Children, Immunocompromised, etc.)? What is the pathogen's portal of entry and exit?
2. How would the innate immune system react to this pathogen? Which components would react?
3. Would this pathogen primarily stimulate cell-mediated immunity or antibody-mediated immunity (T cells or B cells) Why?
4. All of the organisms listed above have the ability to evade the host immune system, at least temporarily. Reviewing Table 1.1 for the pathogen's strategies to avoid the human immune system, why is this particular strategy helpful to the pathogen? How would this impact its ability to cause infection? How would the immune system compensate?