Internet Assignment: Activation of Complement

Name: \_\_\_\_\_\_\_KEY\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_ Class: \_\_\_\_\_\_\_\_

1st vocabulary review. Define the following:

1. Serum
2. Inflammation
3. Opsonization
4. Protease
5. Chemoattractant

<http://highered.mcgraw-hill.com/sites/0072507470/student_view0/chapter22/animation__activation_of_complement.html>

1. What are the 3 outcomes of complement?
   1. Inflammation
   2. Cell lysis
   3. opsonization
2. What are the major complement proetien named
   1. C1-C9
3. Do they function in this order?
   1. No, they were discovered in this order
4. What are the 2 pathways that can activate the complement cascade?
   1. Classical pathway
   2. Alternative pathway
5. Activation of C1 has what affect on C2 and C4
   1. It cleaves them into
      1. C2a & C2b
      2. C4a & C4b
6. What 2 things combine to form C3 Convertase, and what is its function?
   1. C2b and C4b
   2. It’s a protease that cleaves C3 into C3a & C3b
7. List 3 types of antigens that can activate complement
   1. Endotoxin
   2. Polysaccharides
   3. Cell wall components
8. What 3 proteins does C3b interact with, and what do these form
   1. Factor B, Factor D, Properdin
   2. C3 Convertase
9. Critical Thinking: Is this an example of positive or negative feedback? Explain!
   1. Positive feedback because the C3b interacts to ultimately form more C3b
10. At which point do the classical and alternative pathways convene and begin following the same sequence?
    1. After cleavage of C3
11. What stimulates inflammation
    1. C3a
12. How does complement make microorganisms more susceptible to phagocytosis?
    1. C3b, a product of complement, can bind to the surface of microorganisms. Because phagocytes also have a binding site for C3b this enhances their ability to recognize and ingest pathogens in a process called opsonization
13. Properdin + C3 convertase = C5 convertase. What is the job of this molecule
    1. To cleave C5 into C5a & C5b
14. What does C5a do:
    1. Increases inflammation and acts as a chemoattractant to attract phagocytes
15. What is the membrane Attack Complex (MAC), and what interacts to form it
    1. A complex that forms holes in target cell membranes causeing them to lyse
    2. C5b, C6, C7, C8, & C9

**Identify the following as being part of the Classical pathway, the alternative pathway, or both**

1. Antigens react directly with C3b 🡪 alternative pathway
2. Binding of C1 to antigen/ antibody complex 🡪 Classical

**For each of the following identify which components of Complement are responsible**

1. MAC formation 🡪 **C5b**, C6, C7, C8, & C9
2. Inflammation 🡪 C3a
3. C3 Convertase 🡪 C2b & C4b OR C3b, Factor B, Factor D, and properdin
4. C5 Convertase 🡪 properdin & C3 convertase
5. Opsonization 🡪 C3b