**Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Immunity and the Invertebrates: The fabulously complex immune systems of humans and other mammals evolved over hundreds of millions of years—in sometimes surprising ways**

*by Gregory Beck and Gail S. Habicht*

1. What discoveries would Metchnikoff’s research eventually prove?

2. Why does it take so long for acquired immunity to be activated?

3. Why do vertebrates reject a second graft more quickly than most invertebrates?

4. What evidence is there that antibody based immune responses have their origins in invertebrates?

5. What are defensins?

6. Why are placoderms significant to immune system study?

7. Explain one major difference between T and B cells, and list some responsibilities of each.

8. Does the small size of antibody gene segments limit the diversity of shark antibodies? Why or why not?

9. How do sharks overcome the amount of time it would take to find the correct antibody through junctional diversity alone?

10. What causes the high levels of nonfunctional genetic elements in the immunity sequences of mammals?