**Exam 1 BioMed**

**Dr. Thompson**

**2 questions**

**What is the total number of heavy chains and light chains comprising a monomeric immunoglobulin (antibody) molecule?**

* 2 identical heavy chains
* 2 identical light chains

**Where in the immunoglobulin (Ig) molecule does the Ig contact and bind to a specific antigen? What types of heavy chain and light chain domains (variable or constant) comprise the antigen-binding site?**

* The Fab region allows Ig contact and binding of a specific antigen
  + Variable domains comprise the antigen binding site on both the heavy and the light chains

**What part of the Ig molecule determines antibody class or isotype (e.g., IgG, IgA, IgM)?**

* The Heavy chain

**What part of the Ig molecule determines the effector or biological functions of the antibody?**

* The FC region
  + Comprised of constant regions on the heavy chains
  + Conserved among clones and is required for structural integrity and effector functions

**1 question**

**Describe the structure of C-reactive protein (CRP). Where is CRP synthesized in the body? Synthesis and release of CRP into the bloodstream is increased in response to what?**

* Consists of 5 identical, noncovalently associated 23-kDa protomers arranged symmetrically around a central pore
* Pentraxin family
* Predominantly synthesized in the liver
* Response to inflammation, infection, and tissue damage

**What does the “C” in C-reactive protein stand for?**

* Capsular polysaccharide of pneumococcus

**Describe the clinical significance of CRP.**

* CRP can be used to determine an acute inflammatory response
  + Autoimmune conditions
  + Pericarditis / Infection
  + Tissue injury/ Cancer

**1 question**

**Procalcitonin (PCT) is a serum biomarker for what? Where is PCT synthesized in the body?**

* Healthy people have calcitonin
* Biomarker for inflammation
* Synthesized by thyroid cells

**Explain why PCT is a promising biomarker for bacterial infections as opposed to viral infections.**

* PCT levels rarely increase in response to viral infections
  + High PCT levels most likely indicate a bacterial infection