Please answer four of the following six questions.

1. Discuss genomics as it is applied, or might be applied, to diagnosing, understanding and treating disease. In your answer, provide specific examples. What might be the downsides of using a genomics approach to disease identification and treatment?

2. Reports from the late 1800s indicated that fungal diseases were extremely rare. One hundred years later, such diseases have become much more common. What are possible explanations?

3. What are the common principles that underlie such complex neurodegenerative diseases as Alzheimer’s, Huntington’s, Parkinson’s and Amyotrophic Lateral Sclerosis? What are some of the research tools and strategies being used to understand the basic mechanisms of neurodegenerative diseases?

4. What qualities/functions define “endocrine disruptors?” There are multiple mechanisms through which endocrine disruptors might affect normal cell physiology. Discuss this with respect to bisphenol A.

5. Metals are essential for life and can be curative, but also can be toxic. Explain, using specific examples.

6. What might be three possible causes of reduced serum testosterone levels in aging men? How would you determine which among these in fact causes reduced testosterone?

Guidance:

- To the extent possible, focus on how biological understanding has been of importance in understanding and approaching the conditions you choose to discuss.

- Your responses should be no longer than 2 double-spaced pages for each of the four that you choose.

- You are welcome to talk to each other or to anyone else about your thinking and about your answers. But each of you should write his/her own answers independently of your classmates, and please be very careful to avoid plagiarizing.

- These questions can be answered from material presented in the lectures. You do not need to use other references but if you wish to do so, these must be properly cited. Avoid direct quotations from the references as we want to know about YOUR understanding. You DO NOT need to include citations for material presented in the lectures.

- Please format all documents in Word and be sure to include your name on the document.

- Your exam should be submitted to the Final Exam Dropbox by 11:59, Friday, October 31.