The first goal of this reading assignment is to familiarize you with the aspects of molecular biology used in this course. The second goal of this reading assignment is to introduce you to a systems approach to studying molecular biology.


   (a) Briefly define the terms
   i. DNA
   ii. Gene
   iii. mRNA
   iv. protein

   (b) How are proteins related to DNA? (Use approximately 2 sentences to answer this question.)

2. Read “Computational systems biology” by H Kitano, *Nature*, 2002 (sent as email attachment by Stephanie). Note that he mentions two branches of systems biology – knowledge discovery and simulation. In this course, we will be following the simulation branch.

   (a) In the second paragraph, he mentions p53 and its role in tumor suppression. This is a good example of a system in which knowing the genome sequence and protein properties are not enough to fully understand the system. Why not?

   (b) What is robustness?


   (a) Briefly explain the ideal model for research in systems biology (i.e. Figure 1). (Answer in approximately 4 sentences.)

   (b) In what ways can modeling improve the efficiency of biological experimentation?
Further Reading