**Chapter 3 Study Questions**

*Genetic Analysis: Genes, Genomes, and Networks in Eukaryotes*

1. What are the properties that make an ideal model organism? Which of these are the most difficult to accomplish?
2. In an era in which genome sequences and annotation are increasingly available, are more model organisms needed? What would be some organisms that might be included among the model organisms and why?
3. The chapter asserts that the same biological principles would have been learned even if different model organisms had been chosen. Is this true? Why or why not? What might have been different had other organisms become the widely used models?
4. For each of the model organisms discussed in the chapter, list some biological questions that this model organism is uniquely (or specifically) well-suited to study. Also list at least one biological question that could not be readily studied using this model organism.

1. Each of these model organisms has a well-established method for making transgenics. In every case, the method to introduce engineered genes and to make transgenic organisms takes advantage of some biological property of the organism. Discuss what these are for each organism. Could other methods have been used as effectively—for example, could transposable elements have formed the basis for transgenics in all organisms, as they do in Drosophila?
2. There are a number of model organisms that, for lack of space and expertise, are not extensively discussed in this book. Some of these are listed in Table 3-2, but there are many others as well. Using the on-line resources and the genome databases, research at least one of these organisms, and compile the same lists from question 4 with this organism. Also fill in the categories in Table 3-1 for this organism.
3. As will be discussed in more detail in Chapter 9, RNAi allows “genetic analysis” to be done for most metazoans. Describe how RNAi is done in general. (The specifics will be described in Chapter 9). What makes RNAi such a versatile approach for genetic analysis?