Pre-lab: Model Organisms

Image credit: Max Westby. Some of the most important genetic model organisms in use today. Clockwise from top left: yeast, fruit fly, arabidopsis, mouse, roundworm, zebrafish. License: CC ANS 2.5

Purpose

The two activities in this assignment will familiarize you with the concepts of model organisms, with an emphasis on *Drosophila* (fruit flies).

Learning Objectives

1. Explain the importance of model organisms and identify some of their desirable characteristics.
2. Describe the usefulness of *Drosophila* as a model system.

Introduction

Scientists frequently use a few specific organisms, called **model organisms** for their experiments. The first activity will give a general overview of model organisms, introduce a few of the most popular model organisms and discuss why these organisms were chosen and what they are useful for.

The fruit fly (*Drosophila melanogaster*) is a popular model organism used to study a wide range of biological questions. The second activity will introduce you to some of the types of research being conducted with fruit flies, give a brief overview of *Drosophila* biology, and show you what it's like to work with *Drosophila* in the lab.

Activity 1 - Model Organisms

Estimated time: 10 min

Instructions

1. Work through the Introduction to Model Organisms tutorial on SciServer.
    1. If you can't access the tutorial on SciServer, click here to read a static copy of the Introduction to Model Organisms tutorial.

2. To move through the activities click “Continue” at the bottom of the screen. When you are done with a topic, click “Next Topic” to move on.
3. As you complete the lesson, answer the questions below.

Questions

1A. Explain what a “model organism” is and why they are useful.

1B. Define ortholog and explain how model organisms can be used to understand human genes.

1C. Name 4 commonly used model organisms.

Activity 2 - *Drosophila melanogaster*

Estimated time: 20 min

Instructions

1. Work through the *Drosophila melanogaster* tutorial on SciServer.
    1. If you can’t access the tutorial on SciServer, click here to read a static copy of the *Drosophila melanogaster* tutorial.
2. To move through the activities click “Continue” at the bottom of the screen. When you are done with a topic, click “Next Topic” to move on.
3. As you complete the lesson, answer the questions below.

Questions

2A. Provide 3 reasons why fruit flies are useful for scientific research.

2B. List 3 ways in which fruit flies are similar to humans.

2C. Compare and contrast the fruit fly genome to the human genome.

2D. Briefly describe the fruit fly life cycle.

Contributions and Affiliations

- Stephanie R. Coffman, Ph.D., Clovis Community College
- Katherine Cox, Ph.D., Johns Hopkins University
- Rosa Alcazar, Ph.D., Clovis Community College
- Frederick Tan, Ph.D., Carnegie Institution for Science

Last Revised: July 2023