



Unit Plan Invertebrate & Vertebrate Dissection

Overview: Students gain an in-depth understanding of structure-function relationships through discussion, model building, and dissection of invertebrate and vertebrate nervous systems. Students also gain insight into the social context and complexity of science through participation in an ethics of dissection debate.

Grade Level 5-1

Unit Length
2-5 class periods

Topic: Neuroscience	Next Generation Science Standards listed on individual lesson plan pages
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Lesson Plan Title	Lesson Summary	Learning Objectives	Assessments
Ethics of Dissection Grade Level: 9-12 Lesson Length: 1-2 class periods	A memo from the school superintendent mandating the discontinuation of all dissection is read. Students take a position in agreement or opposed, then interview six adults on their position before re-stating their earlier position.	<ul style="list-style-type: none"> • Take and defend a position on a scientific issue. • Debate the merits and disadvantages of use of animals for scientific research. 	<ul style="list-style-type: none"> • Participate in graded discussion or debate.
<i>Manduca sexta</i> Wax Model Grade Level: 5-8 Lesson Length: 1 class period	Students construct a wax model of the nervous system of the caterpillar, <i>Manduca sexta</i> . Changes in the nervous system during metamorphosis from a caterpillar to a moth are illustrated by building and changing the wax model.	<ul style="list-style-type: none"> • Construct and change a wax model to illustrate metamorphosis of the <i>Manduca sexta</i>'s nervous system. • Identify differences in behavior, shape, and neural structure of the juvenile and adult moth. 	<ul style="list-style-type: none"> • Students correctly label the brain, SEG, ganglia, and locations of cell bodies, dendrites, and axons. • Students draw, or write, differences in behavior, shape, and neural structure between the juvenile and adult moth.
<i>Manduca sexta</i> Caterpillar Dissection Grade Level: 5-12 Lesson Length: 1 class period	Students observe and dissect a <i>Manduca sexta</i> caterpillar to learn about the structure and function of an invertebrate nervous system.	<ul style="list-style-type: none"> • Practice observation and dissection skills using the <i>Manduca sexta</i>. • Investigate an invertebrate nervous system, and use it as a model to learn about changes in human adolescent behaviors. 	<ul style="list-style-type: none"> • Students draw and label parts of nervous system of <i>Manduca sexta</i>. • Assess participation in lab and discussions.
Sheep Brain Dissection Grade level: 7-12 Lesson Length: 1-2 class periods	Students make observations and dissect a sheep brain to learn about the structure and function of a mammalian brain and to gain an appreciation for the complexity of the brain.	<ul style="list-style-type: none"> • Practice scientific drawing, observation, and dissection techniques. • Identify the major parts of the brain and explain their functions. • Explain what comprises white and gray matter. 	<ul style="list-style-type: none"> • Label brain parts and explain their functions. • Write a paragraph or draw a picture that explains the make up of white and gray matter of the brain.