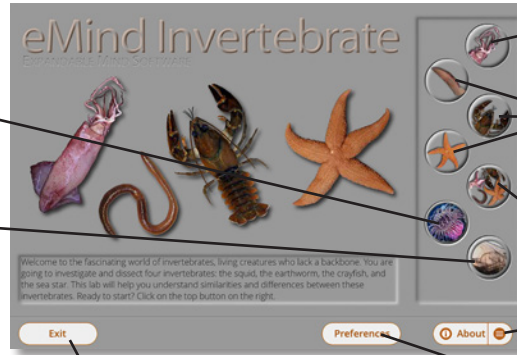


GETTING STARTED WITH eMind INVERTEBRATE

How to Begin

Click here to survey characteristics of most common invertebrates

Click here to begin the Daphnia MiniLab



Click the Squid icon to begin exploring invertebrates in the recommended sequence

Click any of these icons to begin exploring other invertebrates

Click here to compare the features of the invertebrates

Click here to navigate through the program

Click here to set preferences

Click here to exit the lesson

Earthworm Dissection

A look at ventral, cross-section, and internal vies of the earthworm.

Sea Star Dissection

The aboral, oral, and internal views are explored.

Survey of Invertebrates

The characteristics of twenty-one groups of invertebrates are compared.

Squid Dissection

The external and two internal views of the squid are explored.

Crayfish Dissection

Dorsal, ventral, and internal views of the crayfish are investigate.

Invertebrate Comparisons

All major systems of the four invertebrates are compared.

Daphnia MiniLab

Determine the effects of various drug on the heart rate in Daphnia.

Completing the Guided Dissection

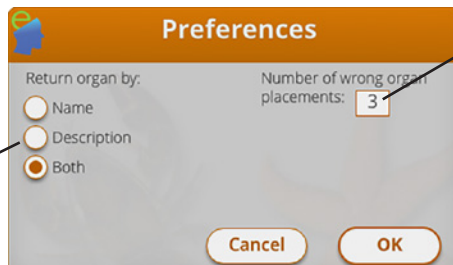
As you complete each invertebrate view, *eMind Invertebrate* enables you to review topics and test your knowledge with the system quizzes.

1. Click the **Squid** button on the main screen.
2. Complete the module by clicking the specified parts of the squid. When you finish, the program gives you the option to continue or review.
3. If you are ready for the External Squid Quiz, click **Continue**, or click a squid part on the screen to review its function.
4. Click **Continue** and complete the quiz as directed by the software.
5. Click **Repeat** to take the quiz over, or click **OK** and then **Next** to continue to another module in the dissection. Some modules ask you to click specified parts of the squid, while others ask you to drag specified organs to and from their proper locations in the invertebrate's body.
6. When you complete this sequence in all four animals, and the Comparisons screen, *eMind Invertebrate* gives you the option of completing the comprehensive Invertebrate Test, or reviewing other modules before continuing into the test.

Setting Preferences

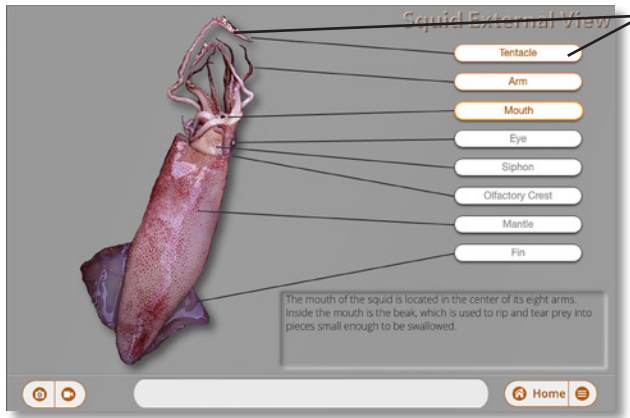
Press the Preference button on the topics screen to display the Preferences dialog box.

Click a button to be quizzed by organ, name, their descriptions, or both



Sets the number of incorrect placements of organs accepted during a quiz

DISSECTING THE INVERTEBRATES



Click a part or its label to view more information

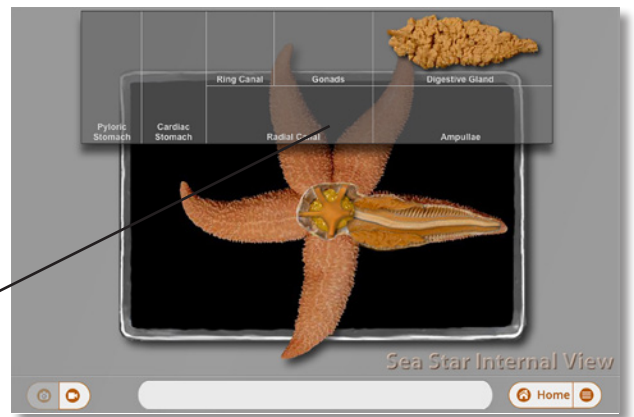
Examining the External Views

Squid External, Earthworm Ventral, Earthworm Cross-section, Crayfish Dorsal, Crayfish Ventral, Sea Star Aboral, Sea Star Oral

Internal Features

Squid Shallow, Squid Deep, Earthworm, Crayfish, Sea Star

Drag each organ to the correct location on this dissection tray.



Comparing Invertebrates				
System	Squid	Earthworm	Crayfish	Sea Star
Phylum				
Digestive System	The squid uses its long tentacles to capture prey. The prey is held near its mouth with its eight arms and torn into small pieces by the beak. The caecum is the main organ of digestion and absorption. Undigested food is removed out the anus. It will feed on fish, crabs and shrimp.	The earthworm feeds on organic matter in the soil. Its powerful pharynx (FAIR-inks) sucks soil into the mouth. Sand in the muscular gizzard helps grind the soil into tiny pieces. The intestine chemically digests and absorbs the food. The typhlosole (TIE-flow-sole) increases the surface area of the intestine.	The crayfish uses its claws, mandibles and other appendages to tear and pulverize food before it enters the mouth. In the stomach, chitinous (KIE-tin-us) teeth continue to break up the food. The digestive gland chemically digests and absorbs the food.	The sea star uses its arms to open a bivalve, then inverts its lower stomach between the shells and begins to digest its prey. The stomach retracts with the half-digested food. Digestive glands in each arm chemically digest and absorb or store the food.

Comparing Invertebrate Systems

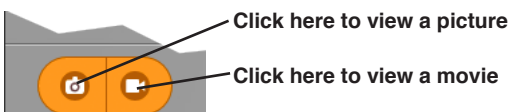
Phylum, Digestive, Respiratory, Reproductive, Nervous, Circulatory, Skeletal, and Excretory Systems

Click on the system here

Compare the features of the selected system of the four invertebrates

Using the Media Window

Look for the media icons in the lower corner of each dissection screen to flash. Click any flashing icon to see a media window that includes pictures or movies of the indicated invertebrate part.

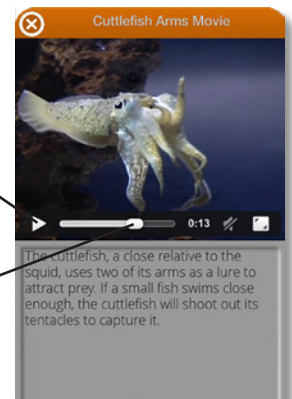


Click here to view a picture

Click here to view a movie

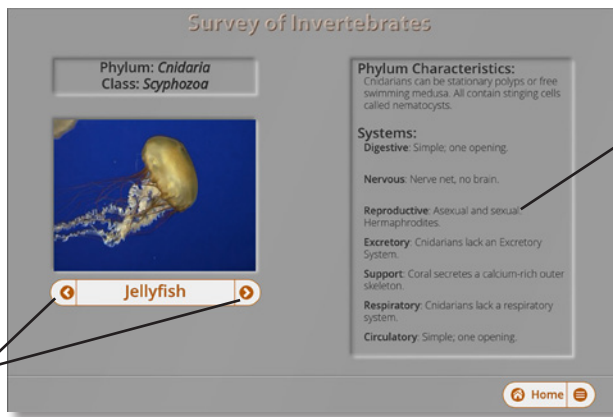
Click here to start or stop a movie

Drag this slider to advance or rewind a movie



The cuttlefish, a close relative to the squid, uses two of its arms as a lure to attract prey. If a small fish swims close enough, the cuttlefish will shoot out its tentacles to capture it.

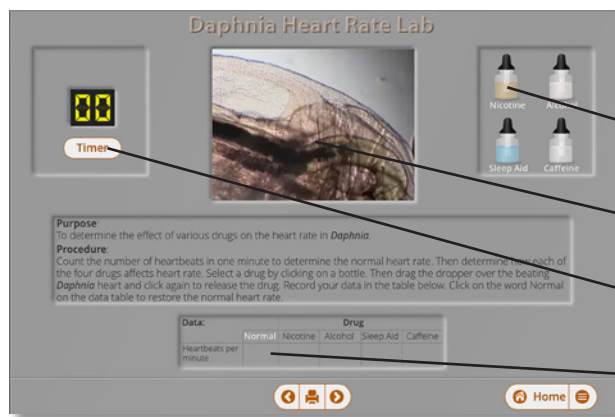
SURVEY OF COMMON INVERTEBRATES



Cycle through the different groups of invertebrates

View the characteristics of the phylum and systems of the selected invertebrate

DOING THE MINILABS



Gathering Data

Click here to pick up the indicated substance

Click the eyedropper here to deposit a substance

Click here to start and stop the timer

Type your findings in these fields

Drawing Conclusions

Drag these sliders to graph the correct data values

The data you gathered on the previous screen appears here

Complete your analysis by answering these questions

Print your lab report here

