curricuLAB® PHYWE

Brine Shrimp

Biology	Microscopy / Cell Biology	Basics of Microscopy & Work Technology
Biology	Microscopy / Cell Biology	Humans & Animals
Biology	Animal Physiology / Zoology	Invertebrates
Nature & technology	From the very small & the very big	
Nature & technology	Plants & animals	

Difficulty level	Group size	Preparation time	Execution time
easy	1	10 minutes	30 minutes

This content can also be found online at:

http://localhost:1337/c/61275649870bca000351f82c

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Teacher information

Application

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Artemia (100x)

There is a genus of very small crustaceans that live in salt lakes. These animals feed on other small organisms such as algae and bacteria. The brine shrimp lay eggs that develop into larvae. Within a few weeks, these mature into young crabs. When salt ponds dry up, most of the inhabitants die. But what happens to the eggs?

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Other teacher information (1/5)

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Prior knowledge

Students should have a good background knowledge of brine shrimp and be familiar with their lifestyle, breeding and structure. They should also be familiar with the use of a microscope.

Scientific Principle

Students grow brine shrimp and view them under the microscope. In the process, they become further familiar with their appearance and locomotion.

Other teacher information (2/5)

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Learning objective

Students should realize that they are able to grow brine shrimp from desiccated eggs.

Tasks

Have students bring brine shrimp eggs to development and examine the shrimp under the microscope.

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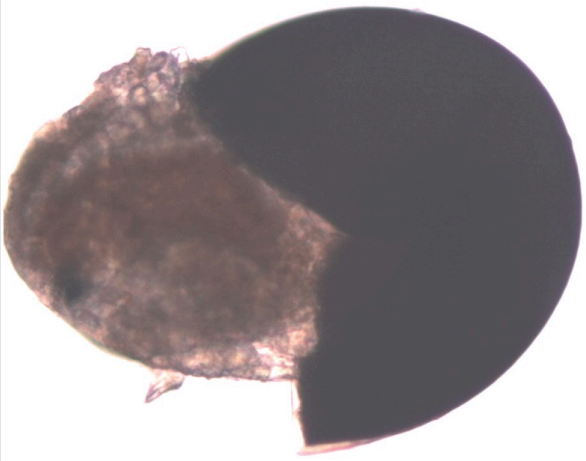
Other teacher information (3/5)

Notes on material procurement

Brine shrimp eggs (eggs of Artemia salima) and Artemia salt enriched with phytoplankton can be obtained from pet shops or via the Internet from an aquaristic mail order company.



The larvae (nauplii) hatch after about two days.

Other teacher information (4/5)

Information about Artemia

The brine shrimp (Artemia salima), like the water flea (Daphmia pulex) and the gill-foot (Triops spec.), belongs to the class Crustacea and the order Amostraca. Brine shrimps are typical inhabitants of inland salt lakes, e.g. salt lakes in potash mines. Due to a lack of competition, they occur there in large quantities, so that the permanent eggs form thick layers at the surface and can be skimmed off.

Notes on implementation

The indicated amounts of salt and water (6 g and 200 ml, respectively) are intended as a quantity for a group of students. If you want to observe Artemial larvae for several weeks, you should add a larger amount of the solution (25 to 35 g per 1 litre of water) to an aquarium and ensure easy aeration (e.g. with a bubbling stone). The optimal temperature is 20 to 30°C. The adult organisms will only be obtained after several weeks and with aeration. Tip: All beakers of the student experiments are transferred to a common, aerated container after 3 days.

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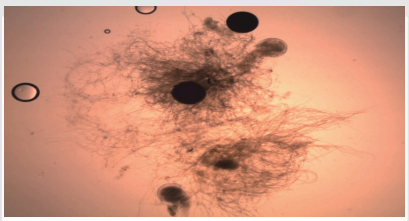
Other teacher information (5/5)

Further notes and suggestions

1. **Live colouring of artemia larvae:** Live staining with neutral red (experiment 2.3) can be carried out as an additional experiment.
2. **Brine shrimps as fish food:** Live brine shrimp are offered in the aquarium trade as food for young aquarium fish. For this we fish off small quantities and rinse carefully with tap water. In fresh water the animals are then still viable for a few hours and can be eaten during this time.
3. **Water fungi examination**: Brine shrimp can die due to bacterial and viral infestation or lack of aeration. Water fungi then settle in the water tank, which are also very interesting objects to observe under the microscope.

Artemia (100x)



Water mushroom 40x

Safety instructions

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- Working with microscopes for too long can lead to physical discomfort (fatigue, headache, nausea), especially when students are untrained.
- Microscopes are sensitive. During transport and handling, care should be taken to ensure that everything is done carefully and without rushing.
- The general instructions for safe experimentation in science lessons to be applied to this experiment.

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Student Information

Motivation

Artemia (100x)

There is a genus of very small crustaceans that live in salt lakes. These animals feed on other small organisms such as algae and bacteria. The brine shrimp lay eggs that develop into larvae. Within a few weeks, these mature into young crabs. When salt ponds dry up, most of the inhabitants die. But what happens to the eggs?

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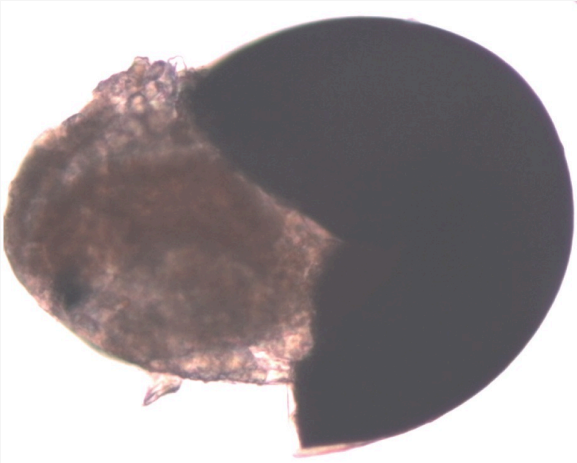
Tasks



The larvae (nauplii) hatch after about two days.

Investigate whether crabs can develop from the dried eggs. Examine them under the microscope.

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Equipment

Position	Material	Item No.	Quantity
1	PHYWE Binocular student microscope, 1000x, mechanical stage	MIC-129A	1
2	Microscopic slides, 50 pcs	64691-00	1
3	Cover glasses 18x18 mm, 50 pcs	64685-00	1
4	Graduated cylinder 100 ml, PP transparent	36629-01	1
5	Beaker, 100 ml, plastic (PP)	36011-01	1
6	Weighing dishes, square shape, 84 x 84 x 24 mm, 500 pcs.	45019-50	1

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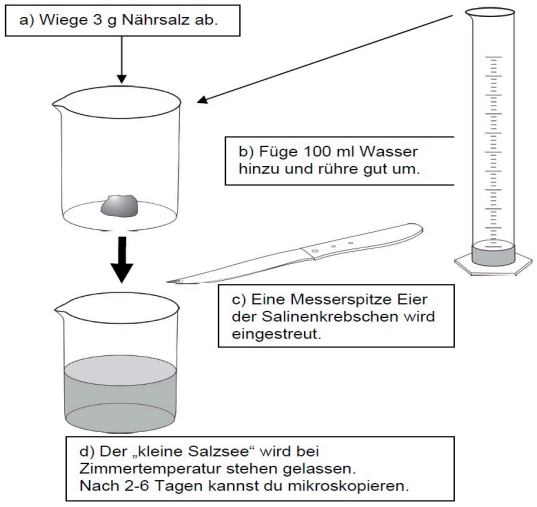
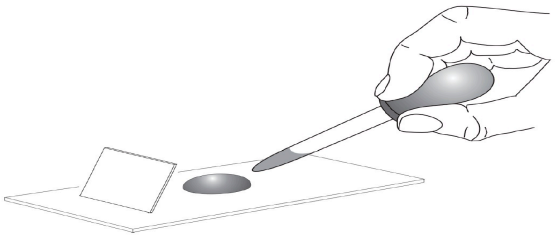
Procedure

Prepare nutrient solution



Microscopic examination

- Examine a water sample at lowest and medium magnification.
- Microscope on different days to follow the development of brine shrimp.



Report

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Task 1

Move the words to the right place.

The brine shrimp (Artemia salima), like the water flea (Daphmia pulex) and the gill-foot (Triops spec.), belongs to the class _____ (Crustacea) and the order gill-foot crabs (Amostraca). Saltmarsh crabs are typical inhabitants of _____, e.g. salt lakes in potash mines. Due to a lack of competition, they occur there in large quantities, so that the _____ form thick layers at the surface and can be skimmed off.

inland salt lakes

permanent eggs

crustaceans

Check

Task 2

To prepare the nutrient solution, add 30 g of nutrient salt to 100 ml of water and mix well.

○ True ○ Incorrect

Check

Brine shrimp live in salt lakes. When these dry out, the dried eggs survive and the crayfish hatch when they find optimal living conditions again.

○ True ○ Incorrect

Check

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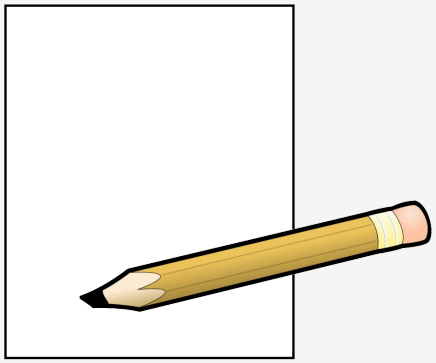
Task 3

Draw one and label it a brine shrimp.



Slide	Score / Total
Slide 15: Brine Shrimp	0/3
Slide 16: Multiple tasks	0/2
Total	**0 / 5**

Solutions Repeat

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