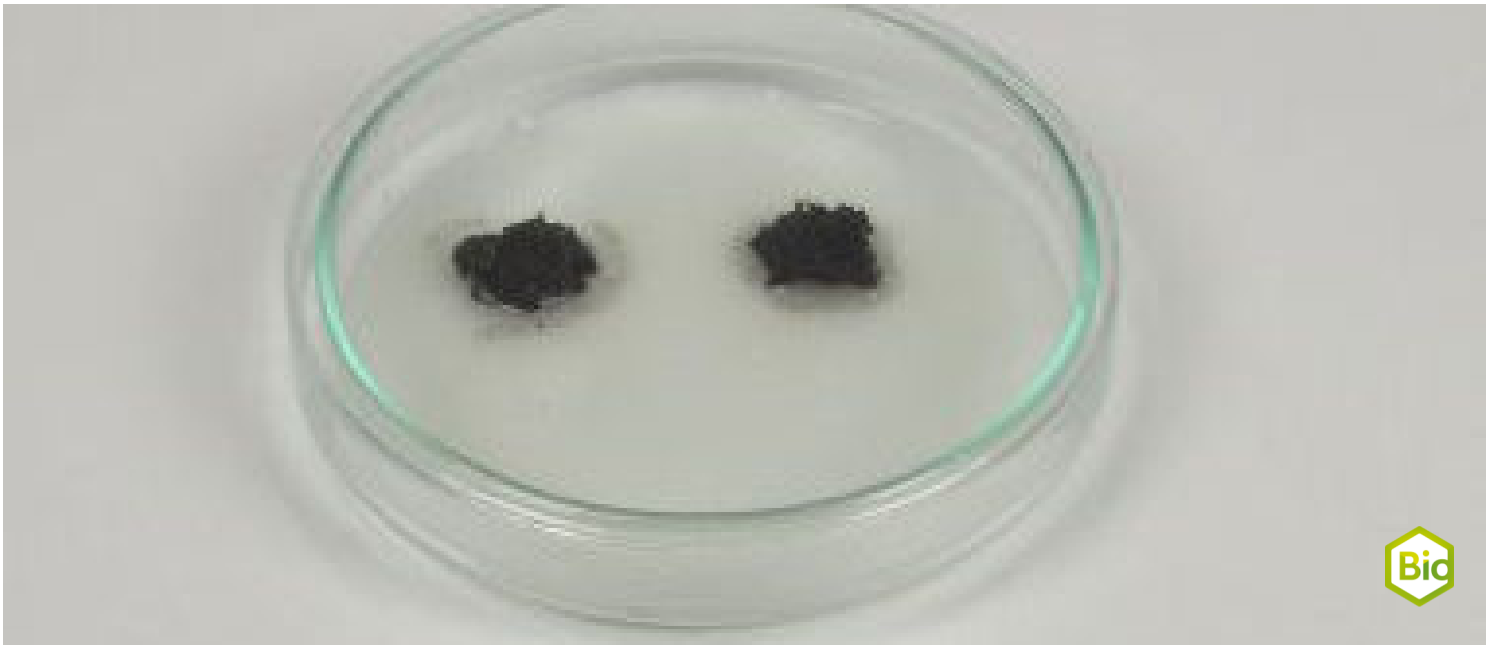
The behavior of algae to light



Biology | Human Physiology | Hearing & Seeing

Difficulty level	Group size	Preparation time	Execution time
medium	2	10 minutes	30 minutes

This content can also be found online at:

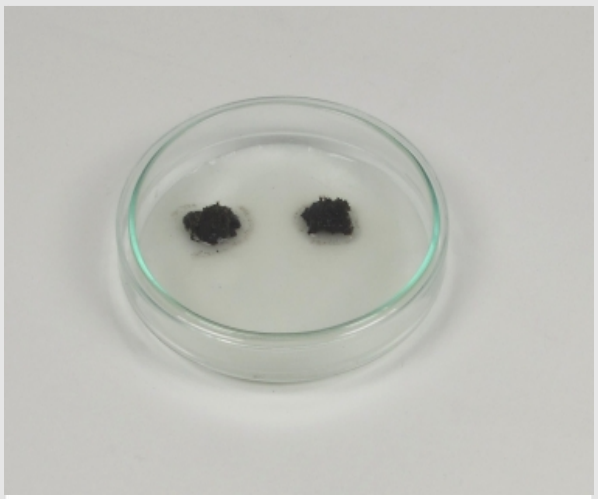
http://localhost:1337/c/6137592014c1280003f19f3e

PHYWE

Teacher information

Application

PHYWE



Experiment setup

Most living things react to light stimuli. Their recognizable responses are changes in position or location. They can be directed in different ways: Some creatures turn towards the light, others flee from the light.

PHYWE

Robert-Bosch-Breite 10
37079 Göttingen

Tel.: 0551 604 - 0
Fax: 0551 604 - 107

info@phywe.de
www.phywe.de

Other teacher information (1/2)

PHYWE

Prior knowledge

Students should be familiar with the differences between plants and algae. It is also useful if they know that there are creatures that turn towards the light and others that turn away.

Scientific Principle

The vibrating algae studied in this experiment, *Oscillatoria sp.*, are a genus of cyanobacteria. The species is distributed worldwide, they are found in freshwater, usually in shallow waters or shore zones on mud, stone or sand. Usually they can also be found in aquariums (fresh and salt water).

Other teacher information (2/2)

PHYWE

Learning objective

The students should recognize that vibrating algae (*Oscillatoria spec.*) towards the light.

Tasks

The students are asked to study the behaviour of the oscillating alga (*Oscillatoria sp.*) to investigate the light.

PHYWE

Robert-Bosch-Breite 10
37079 Göttingen

Tel.: 0551 604 - 0
Fax: 0551 604 - 107

info@phywe.de
www.phywe.de

Safety instructions

PHYWE

- The general instructions for safe experimentation in science lessons apply to this experiment.
- For the H- and P-phrases please refer to the corresponding safety data sheets.

PHYWE

Student Information

PHYWE

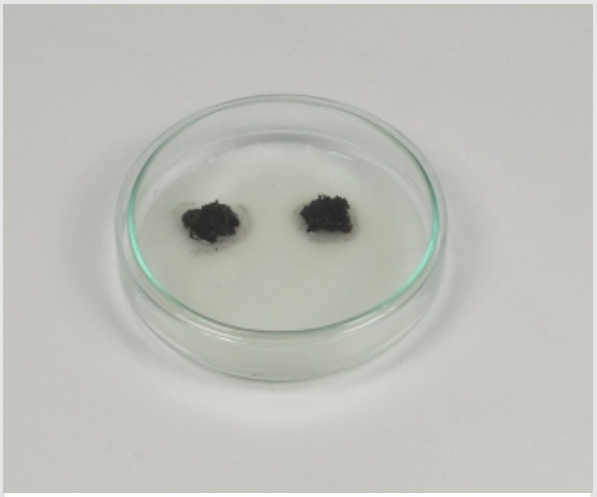
Robert-Bosch-Breite 10
37079 Göttingen

Tel.: 0551 604 - 0
Fax: 0551 604 - 107

info@phywe.de
www.phywe.de

Motivation

PHYWE



Experiment setup

Most living things react to light stimuli. Their recognizable responses are changes in position or location. They can be directed in different ways: Some creatures turn towards the light, others flee from the light.

Tasks

Experiment setup

How do algae react to light?

Examine the behavior of the oscillating alga (*Oscillatoria sp.*) to the light.

PHYWE

Robert-Bosch-Breite 10
37079 Göttingen

Tel.: 0551 604 - 0
Fax: 0551 604 - 107

info@phywe.de
www.phywe.de

Equipment

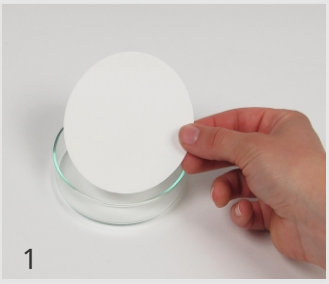
Position	Material	Item No.	Quantity
1	Circular filter,d 90 mm,100 pcs	32977-03	1
2	Tweezers,straight,pointed,120mm	64607-00	1
3	Dissecting needle, pointed	64620-00	1
4	Scissors,straight,pointed,l 110mm	64623-00	1
5	Petri dish, d 100 mm	64705-00	1

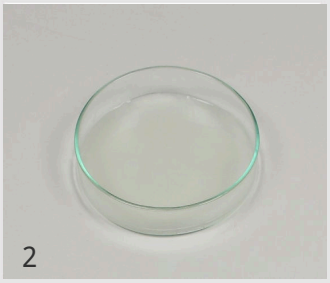
PHYWE
Robert-Bosch-Breite 10
37079 Göttingen
Tel.: 0551 604 - 0
Fax: 0551 604 - 107
info@phywe.de
www.phywe.de

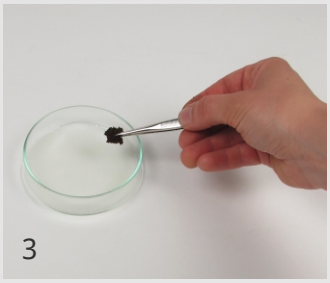
Set-up and procedure - Part 1

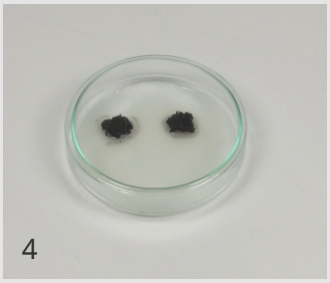
PHYWE

- Place two 90 mm diameter round filters in a 100 mm diameter Petri dish (Fig. 1), smooth them on the bottom of the dish and moisten them very well (Fig. 2).
- Transfer onto the moist filter paper about 2 cm from the edge of the dish and equidistantly from each other two pieces of storage skin of the vibrating alga (*Oscillatoria spec.*) with as thin a layer of soil as possible (Fig. 3) and close the Petri dish with the lid (Fig. 4).


1


2

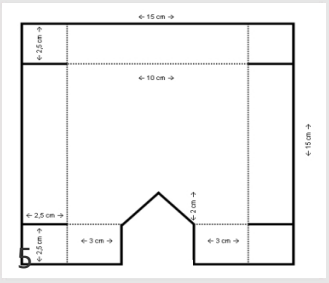

3


4

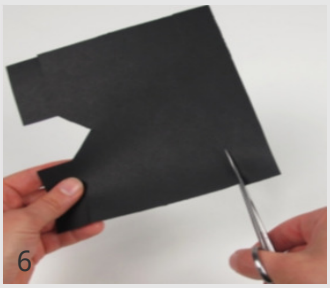
Set-up and procedure - Part 2

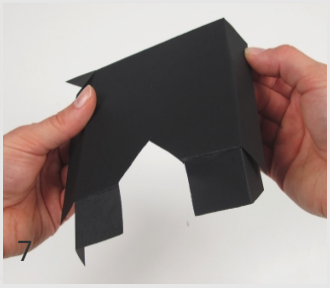
PHYWE

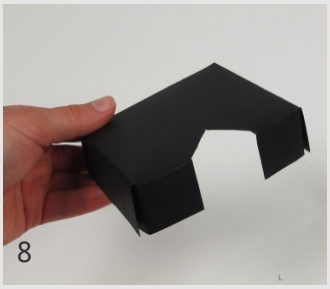
- Cut out a blackout hood from a piece of black cardboard according to Fig. 5 (Fig. 6). Fold it along the dotted lines (Fig. 7) and glue it together (Fig. 8). Use the template with the pattern for this.
- Place the darkening hood over the Petri dish so that the triangular opening faces the algae.
- Place the tray by a bright window so that the opening in the darkening hood gets good light at least some of the time each day.
- Check the location of the vibrating filamentous alga daily for a period of 5 to 7 days.



5


6


7


8

PHYWE

Robert-Bosch-Breite 10
37079 Göttingen

Tel.: 0551 604 - 0
Fax: 0551 604 - 107

info@phywe.de
www.phywe.de

Report

Task 1

How does the position of the algae in the dish change from the beginning to the end of the experiment?

- ○ The algae in the bowl "move" closer to the light or grow towards the small, cut-out light spot.
- ○ The position of the algae in the shell is unchanged.
- ○ The algae in the dish "move" away from the light or grow away from the light spot.

Check

PHYWE
Robert-Bosch-Breite 10
37079 Göttingen
Tel.: 0551 604 - 0
Fax: 0551 604 - 107
info@phywe.de
www.phywe.de

Task 2

PHYWE

How do algae react to light?

- ○ They grow away from the light because the light causes damage.
- ○ They do not need light and do not react to light in any way.
- ○ They turn black and die when they come into contact with light.
- ○ They grow towards the light because they derive a benefit from it. Algae carry out photosynthesis.

Check

Task 3

PHYWE

Choose the correct statements.

- ☐ Algae carry out photosynthesis.
- ☐ Algae have no benefit and are considered merely pests.
- ☐ Algae are found in both fresh and salt water.
- ☐ Algae are among the largest oxygen producers on our planet.

Check

PHYWE

Robert-Bosch-Breite 10
37079 Göttingen

Tel.: 0551 604 - 0
Fax: 0551 604 - 107

info@phywe.de
www.phywe.de

Slide	Score / Total
Slide 13: Location of the algae	0/1
Slide 14: Algae to the light	0/1
Slide 15: Algae	0/3

Total 0 / 5

Solutions Repeat

PHYWE
Robert-Bosch-Breite 10
37079 Göttingen
Tel.: 0551 604 - 0
Fax: 0551 604 - 107
info@phywe.de
www.phywe.de