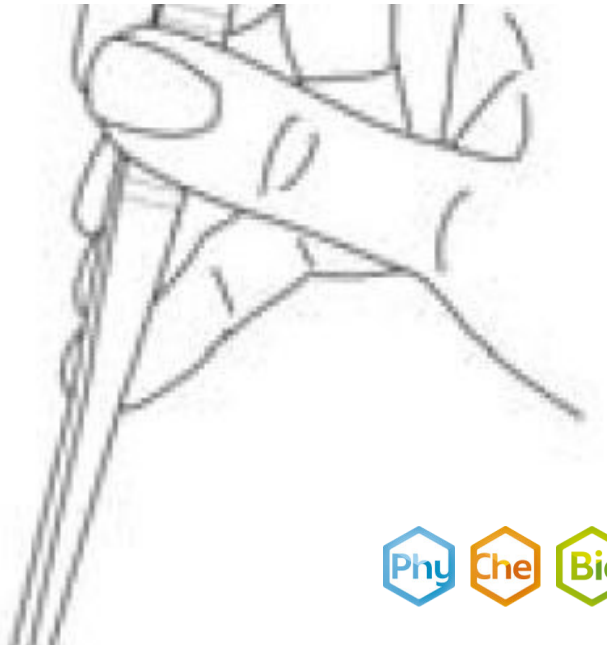
Production of microscopic fresh preparations



Biology | Microscopy / Cell Biology | Basics of Microscopy & Work Technology

Nature & technology | From the very small & the very big

Difficulty level	Group size	Preparation time	Execution time
hard	1	10 minutes	10 minutes

This content can also be found online at:

http://localhost:1337/c/5f50890137ffe20003f10126

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Teacher information

Application

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The preparation of simple biological objects is a central subject-specific method of teaching biology and a way for students to gain knowledge. For microscopy, this means first examining material that is as fresh as possible without pre-treatment, then in a second step trying out staining techniques and the like (according to instructions or in creative experiments), and then producing permanent preparations when sufficient basic experience in handling the material is available. Permanent preparations that can be purchased are to be used if the production with the students is too difficult, if the material conditions are not given or if the time required for production is disproportionately high.

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Other teacher information (1/3)

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Prior knowledge

In order to be able to view small objects under a microscope, they must be converted into a preparation. To do this, the microscopic sample is placed in a drop of clear liquid (water is easiest) and covered with a cover glass.

Scientific principle

Fresh material is transformed into a preparation without pre-treatment and examined under the microscope. Care should be taken to ensure that no air pockets are visible under the microscope.

Other teacher information (2/3)

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Learning objective

The students learn to prepare a microscopic fresh preparation. The given steps should be followed exactly in order to achieve the best possible result.

Tasks

1. Preparation

2. Making the preparation

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Other teacher information (3/3)

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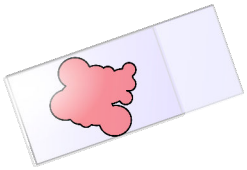
Cleanliness



Microscope slide

At the beginning the students often cannot recognize dirt particles correctly and often think that they are the objects they are looking for. Cleanliness of the accessories and the microscope are therefore important.

Slides and cover glasses are cleaned in a detergent solution immediately after use and polished with a lint-free cloth. It is also possible to store the slides in methylated spirits and then remove them individually with tweezers if necessary. The glasses may only be touched at the side edges, as fingerprints would remain on the surface. Before we apply the water drop and the preparation, the slide has to be polished again with a cloth.

Safety instructions

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- Only touch cover glasses from the side, otherwise they will break.
- Risk of splintering! If something breaks, please mop up with care.
- The general instructions for safe experimentation in science lessons apply to this experiment.

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Student Information

Motivation

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Schoolgirl with microscope

In order to be able to depict interesting objects sharply and clearly in the enlarged dimension, you have to follow some simple rules when making them.

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Tasks

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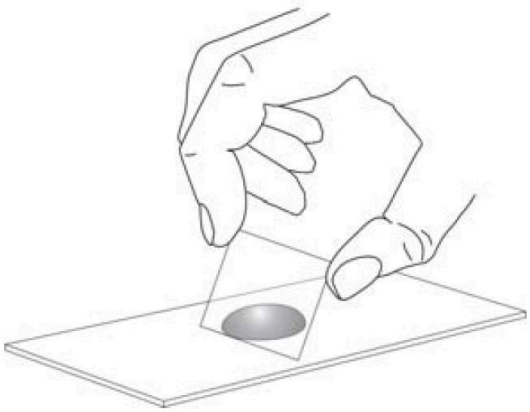

1. Prepare the slide.
2. Prepare the specimen.

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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	Beaker, 100 ml, plastic (PP)	36011-01	1
5	Dropping pipette with bulb, 10pcs	47131-01	1

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Procedure (1/2)

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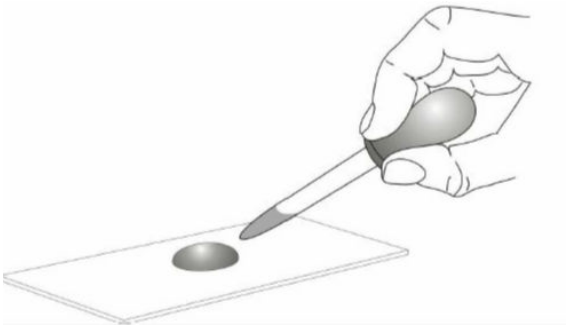


(1) Preparation

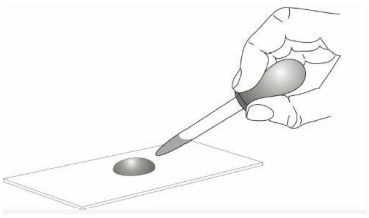
- Clean the slide
- Place the slide on white paper
- Place a drop of water on the slide

Procedure (2/2)

(2) Preparation of the preparation

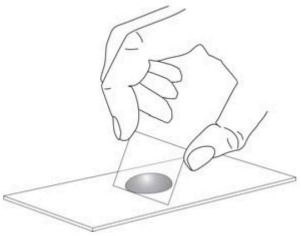
a) The object must be placed in the drop as quickly as possible so that it does not dry out.

b) If you place the cover glass at an angle, no air bubbles are trapped. Air bubbles are not desired.



Add a drop of water

Add the object



Put the cover glass on

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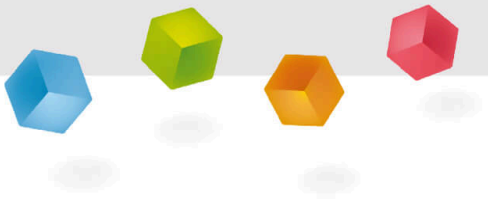

Report

Task 1 + 2

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The object

The object must be placed in the drop as [ ] as possible so that it does not dry out. If the cover glass is placed [ ], no air bubbles are trapped.

Check

Why are air bubbles under the cover glass not desired?

- ☐ Because they impair the view of the object.
- ☐ Because they lift the cover glass.
- ☐ Because they can push the object to the edge.

Check

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Task 3

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Which statement about biological preparations is correct?

- Permanent preparations use water as medium.
- Fresh preparations have an almost unlimited shelf life.
- In fresh preparations it is possible to look at living organisms.
- In permanent preparations it is possible to observe living organisms.

Slide	Score / Total
Slide 14: Multiple tasks	0/4
Slide 15: Biological preparations	0/1

Total amount 0 / 5

Solutions Repeat

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