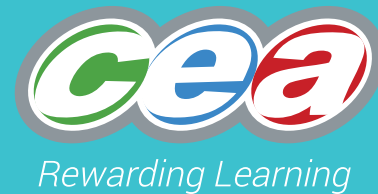


GCSE



CCEA GCSE TEACHER GUIDANCE

Biology Practical Manual

Unit 3: Practical Skills

- 1.1 Carry out practical work to make a temporary slide and use a light microscope to examine and identify the structures of a typical plant and animal cell.

Practical 1.1

Carry out practical work to make a temporary slide and use a light microscope to examine and identify the structures of a typical plant and animal cell.

Introduction: Teacher may give a diagram of microscope and get pupils to label what they remember using their recall knowledge from KS3 using this worksheet:

<http://blog.microscopeworld.com/2015/10/labeling-parts-of-microscope.html>

Teacher to outline in simple detail the function of each component to include the purpose of aperture control, Fine and course focus, and mirror. Teacher should also demonstrate how to direct from a secondary source onto sample from a lamp if the microscope does not have built in light

For animal cell viewing it may well be more convenient to view a range of prepared animal cells such as blood smears.

For plant cell viewing teacher may demonstrate how to remove the epidermal cells from a piece of pre-peeled and sliced onion. Onion provides a convenient source of epidermal cells. Teacher may show the stages in the preparation of a temporary mount using iodine stain, then allow pupils to carry out this simple procedure in pairs or small groups.

Apparatus:

- glass slides
- cover slips
- iodine stain
- onion (cut into roughly 1cm x 1cm pieces)
- absorbent paper (filter paper strips are ideal)
- forceps
- laboratory microscope with light source

Risk Assessment:

By having onion pre-peeled and cut the blades will not be needed.

Forceps or pointed seekers might be needed to separate the epidermis from the onion sample, so be careful whilst handling these.

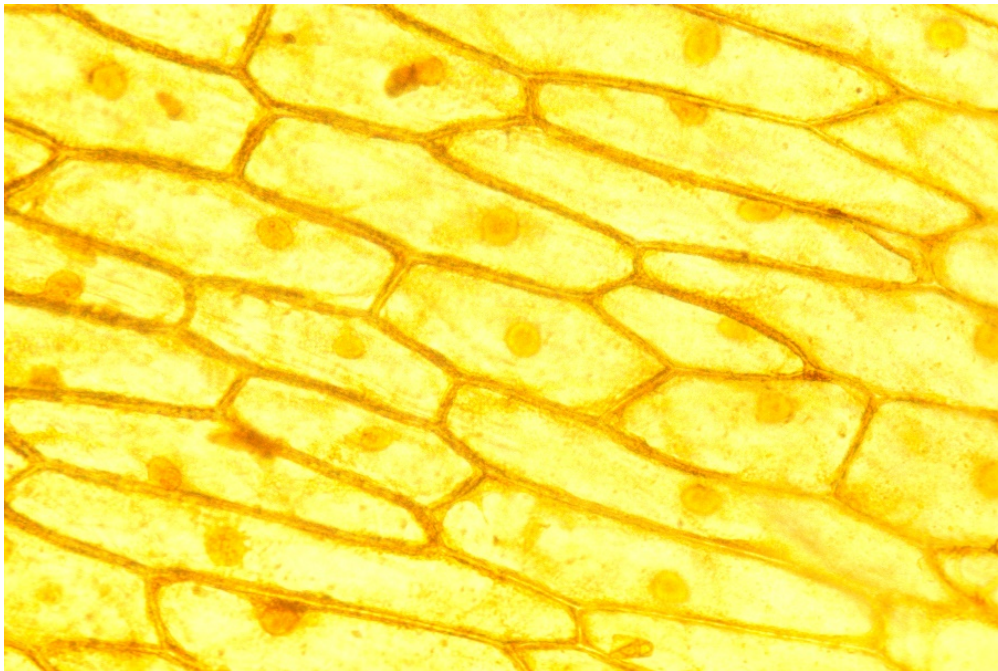
Method: (watch video from additional resources listed below)

- 1 Start with onion which has been peeled and pre-cut into 1cm x 1cm pieces to save time.
- 2 Peel off the epidermis from the concave side with forceps.
- 3 Flatten epidermis down onto glass slide.
- 4 Add a few drops (ONLY) of iodine stain.
- 5 Place cover slip on top.
- 6 Use strip of filter paper to draw stain over the epidermis sample.
- 7 Examine sample under magnification up to the capability of the microscope used (care should be taken when focussing at higher magnification NOT to bring the objective lens too close to sample to prevent damage to objective lens).

Results:

The image found in the field of view of the microscope should look like that shown below. Can you label the **cell wall** and the **cell nucleus** on this image?

© Kevin & Betty Collins, Visuals Unlimited / Science Photo Library



Onion cells with visible nuclei, iodine stain. LM X400/C005/2466

1. Why is iodine stain used?
2. What material is the iodine likely to stain?
3. What structures, usually found in plant cells, might be missing from these onion epidermis cells and why?

Additional information sources:

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Image of Light Microscope

<http://blog.microscopeworld.com/2015/10/labeling-parts-of-microscope.html> (pupil worksheet for microscope labelling)

This clip shows stages of an onion epidermis temporary mount:

www.youtube.com/watch?v=XKPdnE6BGew

Onion cells with visible nuclei, iodine stain. LM X400

www.sciencephoto.com/media/116520/view