



## How To Use a Microscope Teaching Ideas

**Learning Objective:** To explore the importance of biological sciences and be able to use a microscope to magnify objects, to see in more detail.

**Success Criteria:**

- To state some careers and scientific developments in the field of biology.
- To use a microscope safely and magnify objects.
- To be able to label the parts of a microscope and explain what they do.

**Context:** The third lesson in the unit Introduction to Science. This lesson introduces biology, examples of careers in biology, a few examples of scientific discoveries in the field of biology and the use of a microscope.

**Resources**

[Lesson Pack](#)

**Materials needed:**

- Microscopes to view specimens.
- Pre-prepared slides.
- Objects to view through the microscope.

### Starter

#### Careers in Biology

Ask the pupils to think of as many careers in the field of biology as they can. They can work in groups then come together as a class to put ideas together. Alternatively, they can work independently and hold up their ideas on whiteboards.

#### Scientific Discoveries

Ask the pupils to think of and discuss important discoveries/technology/ideas/developments in the field of biology. Again, they can work in groups or pairs then come together as a class.

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### Main Activities

#### Microscopes

Discuss the importance of the microscope. What are the smallest objects that the pupils have ever seen images of?

Show the pupils the parts of a microscope and demonstrate how to handle it safely. Alternatively, you can demonstrate using the [Parts of a Microscope Picture Hotspots](#).

#### Parts of a Microscope

Ask the pupils to label the parts of a microscope on the [Activity Sheet](#). Pupils can peer/self assess their answers afterwards.

#### Using the Microscope to Observe Objects

Demonstrate to the pupils how to use a microscope. At this point, you could ask them to copy the steps into their books with instructional diagrams.

Pupils then work in small groups to observe objects or pre-prepared slides through their microscopes. Pupils should draw or describe what they see in the [Microscope Observation](#) sheet provided.

Bring the class together to discuss any findings, such as difficulties with viewing objects/slides, handy tips for using a microscope.

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### Plenary

**Biology Quiz:** Complete the quiz on microscopes. Pupils can hold up their answers on whiteboards.

# Microscope Observation

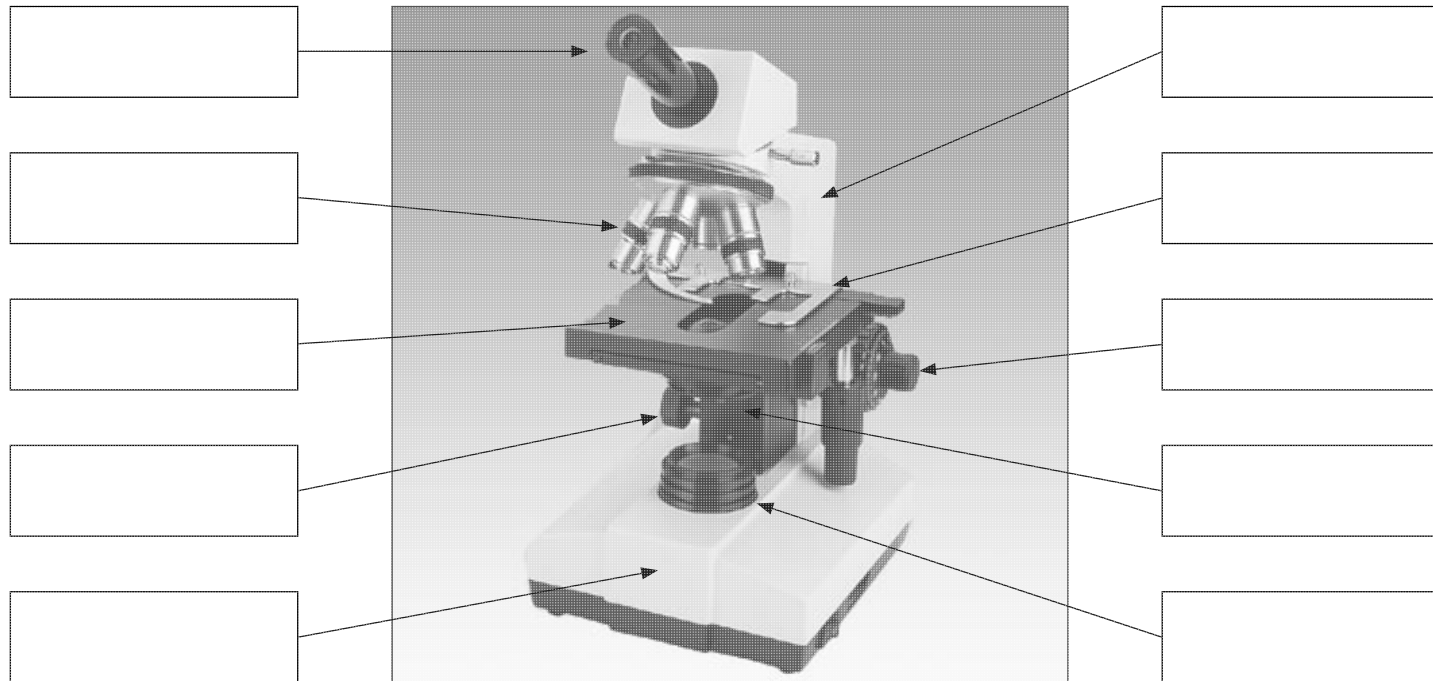
Object	Diagram/Observation

# Microscope Observation

Object	Diagram/Observation

# Parts of a Light Microscope

Cut out the labels and match them to the correct part on the diagram.



stage clips

diaphragm

eyepiece lens

base

objective lens

light source

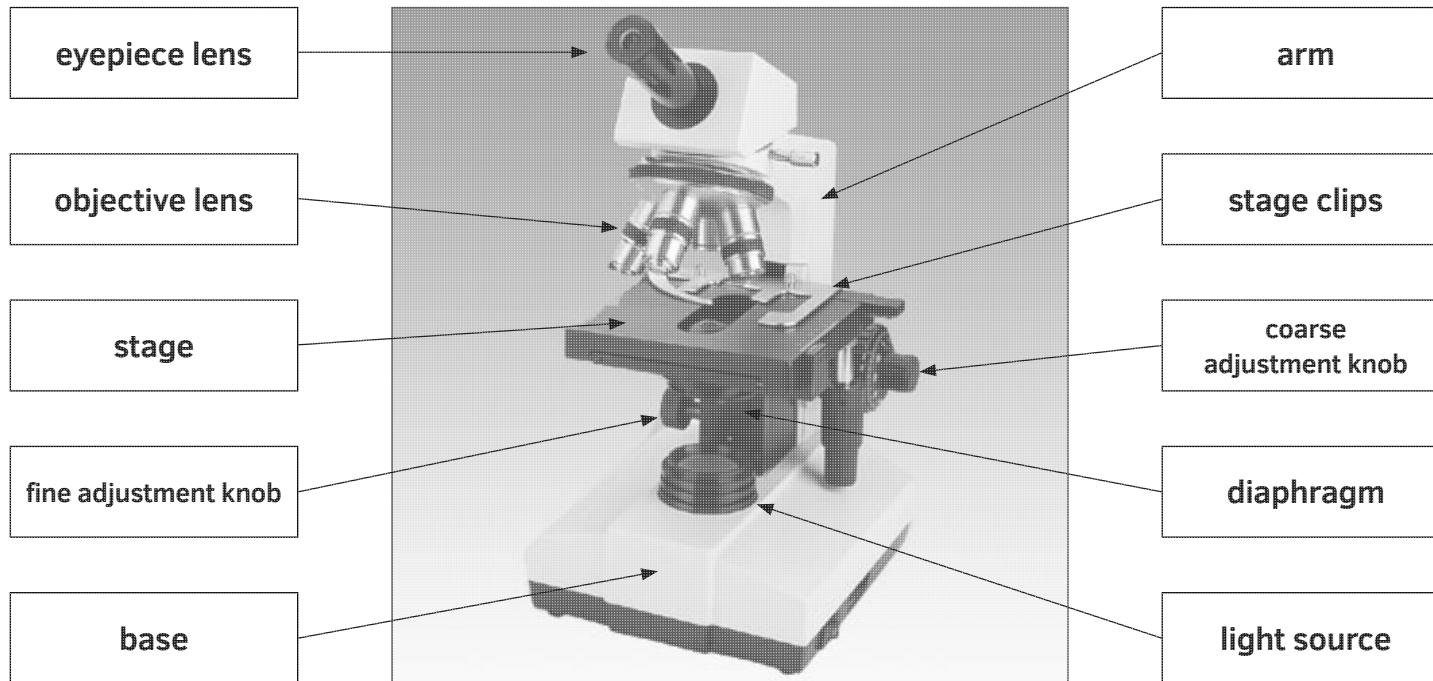
coarse adjustment knob

stage

fine adjustment knob

arm

# Parts of a Light Microscope - Answers



# Parts of a Light Microscope

Cut out the labels and match them to the correct part on the diagram.



stage clips

diaphragm

eyepiece lens

base

objective lens

light source

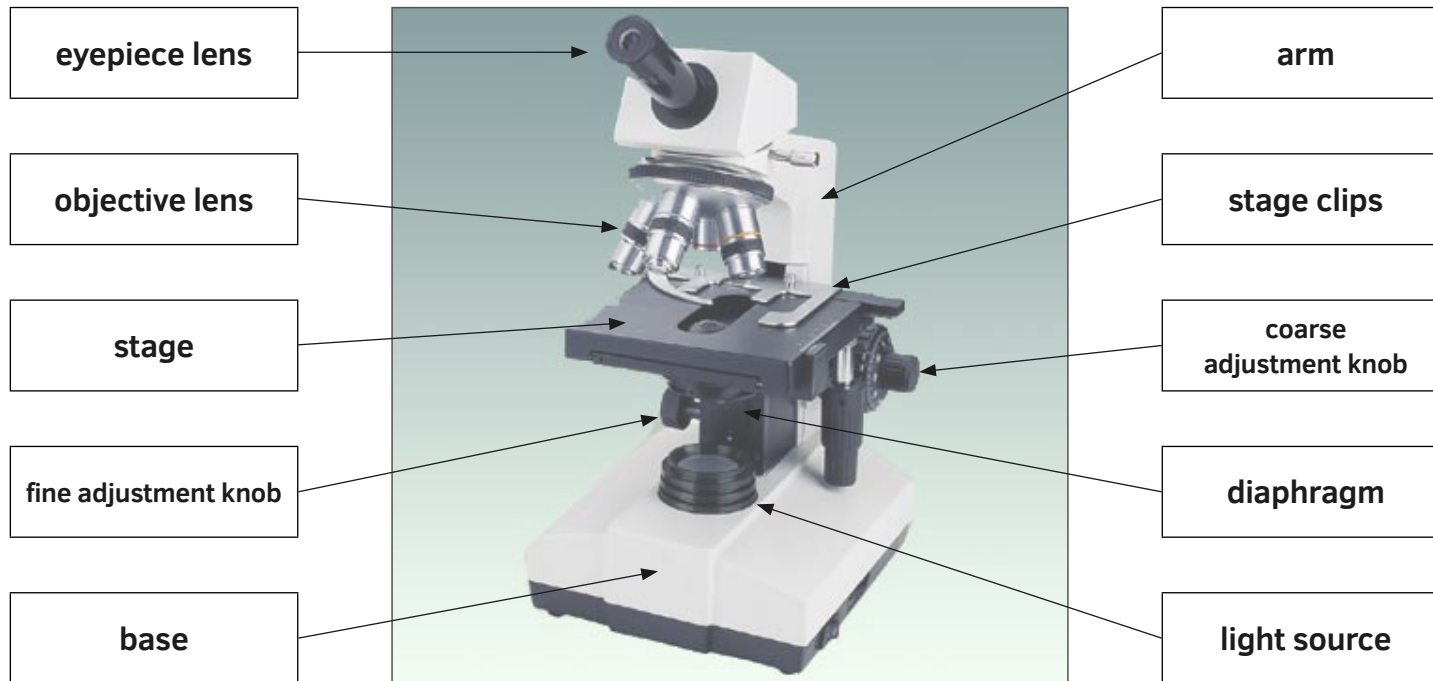
coarse adjustment knob

stage

fine adjustment knob

arm

# Parts of a Light Microscope - Answers









Biology

**The Study of Living Organisms**

## Learning Objective

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## Success Criteria

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# Careers in Biology

What careers in biology can you go into?

Hold up your whiteboards when you have an answer.



nurse

teacher

physiotherapist

doctor

conservation

zoologist

geneticist

dentist

microbiologist

research

marine biologist

# Scientific Discoveries

Can you think of any important discoveries/technology/ideas/developments in the field of biology?

Hold up your whiteboards when you have an answer.

DNA

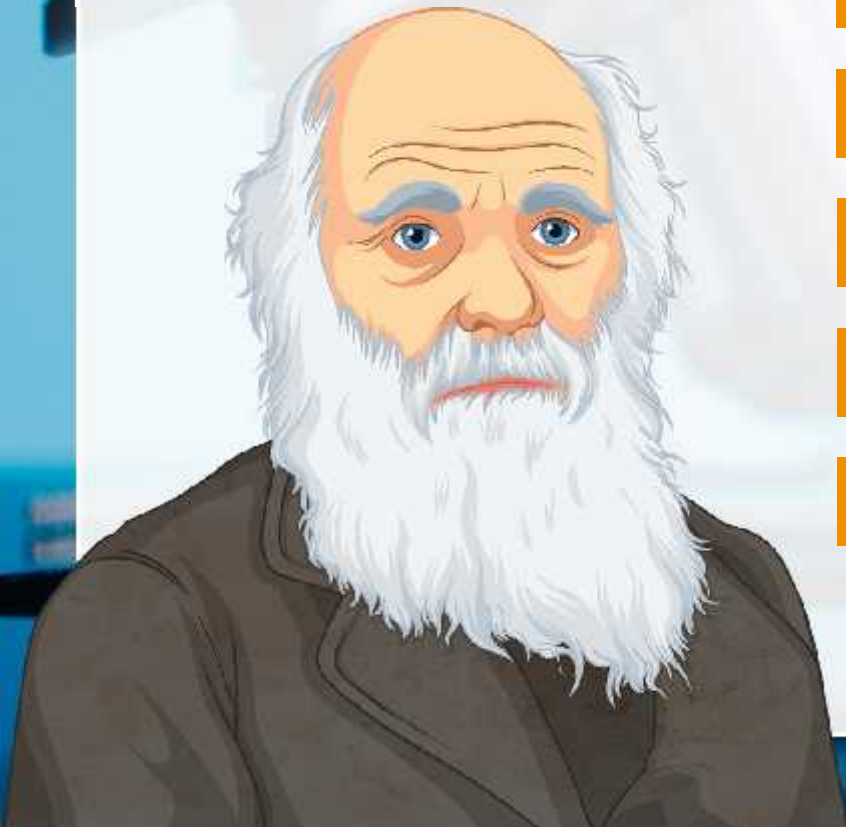
cloning

microscopes (light/electron)

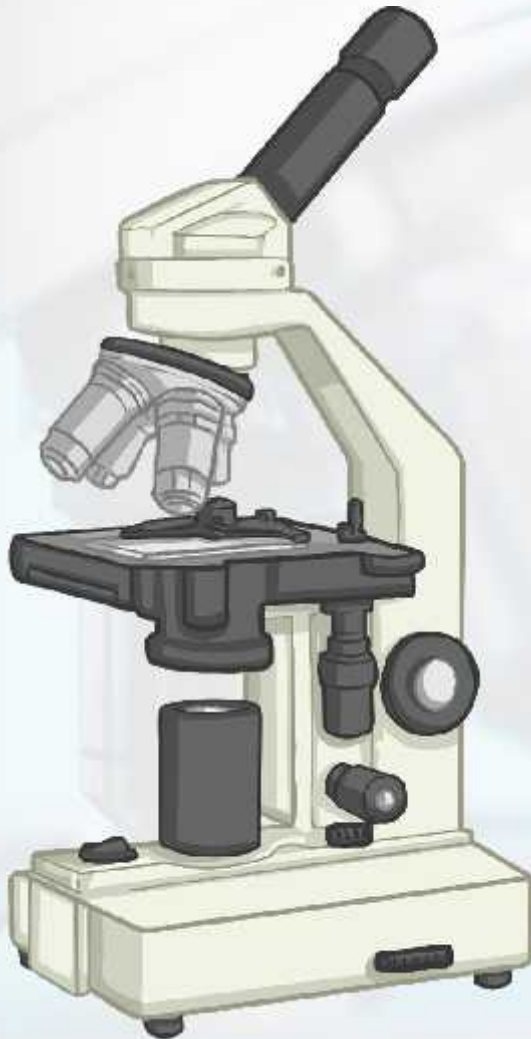
evolution (theory)

antibiotics

medicine



# Microscopes



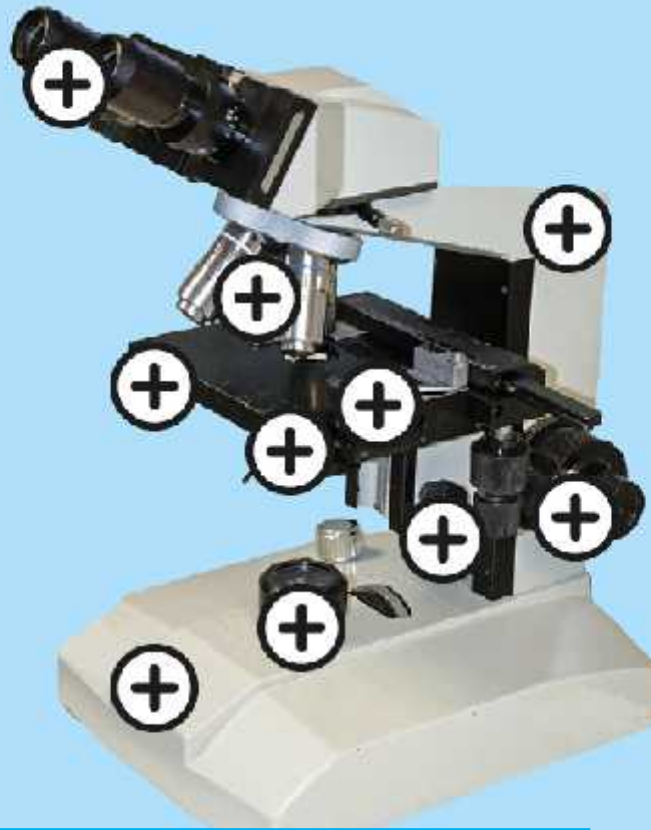
Microscopes have been used for years, to observe objects that are too small to see with the naked eye.

Over time the magnification of microscopes has significantly improved due to developments in technology. We now have microscopes that can examine specimens at an atomic level.

We have made many important scientific discoveries thanks to using microscopes.

Now, let's take a look at the parts of a microscope.

# Parts of a Microscope



Use [Parts of a Microscope Picture Hotspot](#) to see how many parts you can identify.

# Parts of a Microscope

Independently, complete the Parts of a Microscope Activity Sheet.



# How to Use a microscope

1. Plug in the microscope and turn on the light.
2. Place the specimen (the object to observe) on the stage.
3. Turn the magnification to the smallest.
4. Make sure that the specimen is in the centre; fasten with the clips.
5. Look down the microscope.
6. Use the fine focussing wheel to observe the specimen.
7. Increase the magnification.
8. Draw/write down any observations.





# Using the Microscope to Observe Objects

Object	Diagram/Observation

**Top Tip:**

Make sure the light is at its strongest.

**Top Tip:**

Start on the lowest magnification.



# Home Learning

## Task 1

Research the history of the microscope, and how it has been developed over time. Add pictures and diagrams.



## Task 2

Describe the differences between a light microscope and an electron microscope.



# Biology Quiz



**A**

skin cells

**B**

red blood cells

**C**

root hair cells

# Biology Quiz



**A**

light microscope

**B**

electron microscope

**C**

confocal microscope

# Biology Quiz

What lens is closest to the specimen on a microscope?



**A**

eye piece

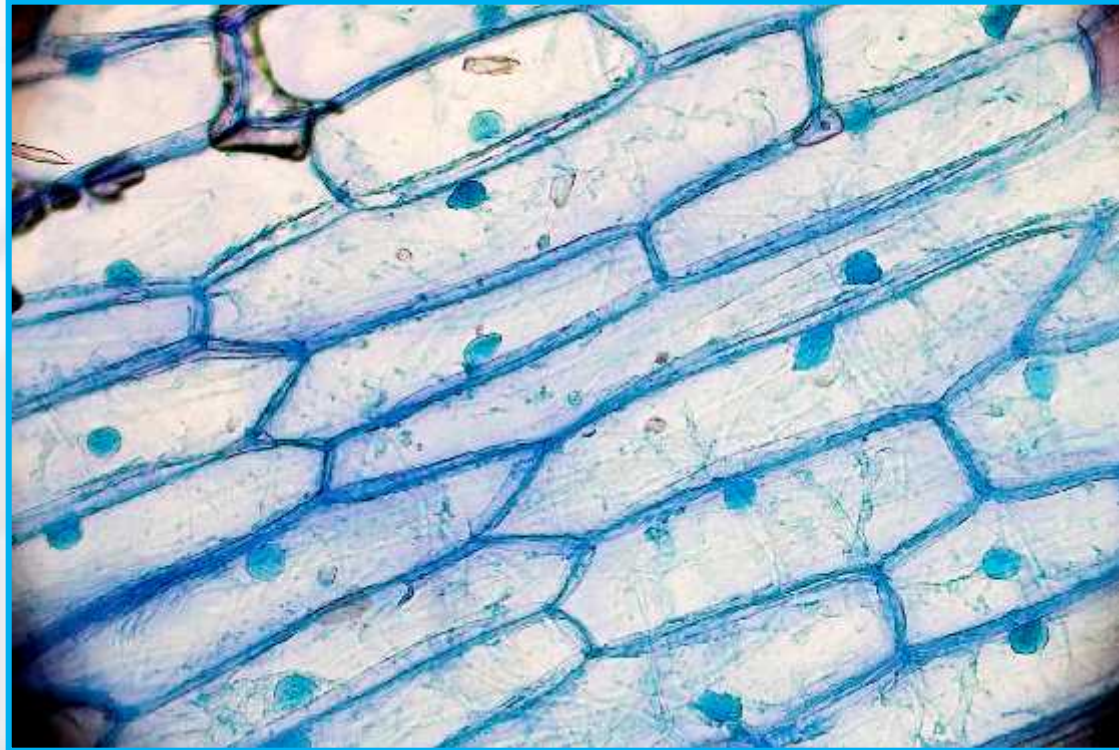
**B**

concave

**C**

objective

# Biology Quiz



**A**

root hair cells

**B**

red blood cells

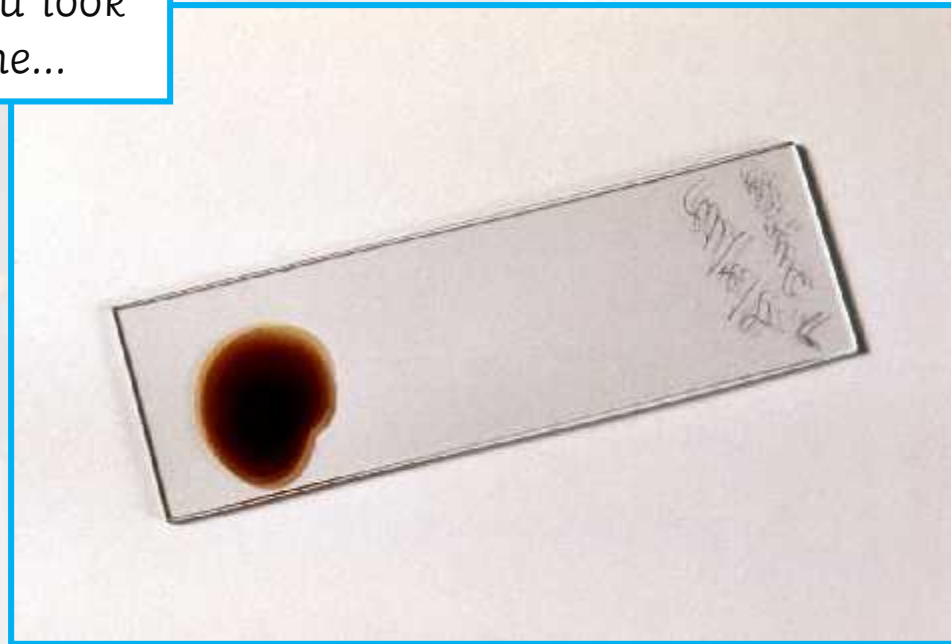
**C**

onion cells

Photo courtesy of kaibara (<https://www.flickr.com/photos/kaibara/3839720754>)

# Biology Quiz

The object you look at is called the...



**A**

slide

**B**

specimen

**C**

special object



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