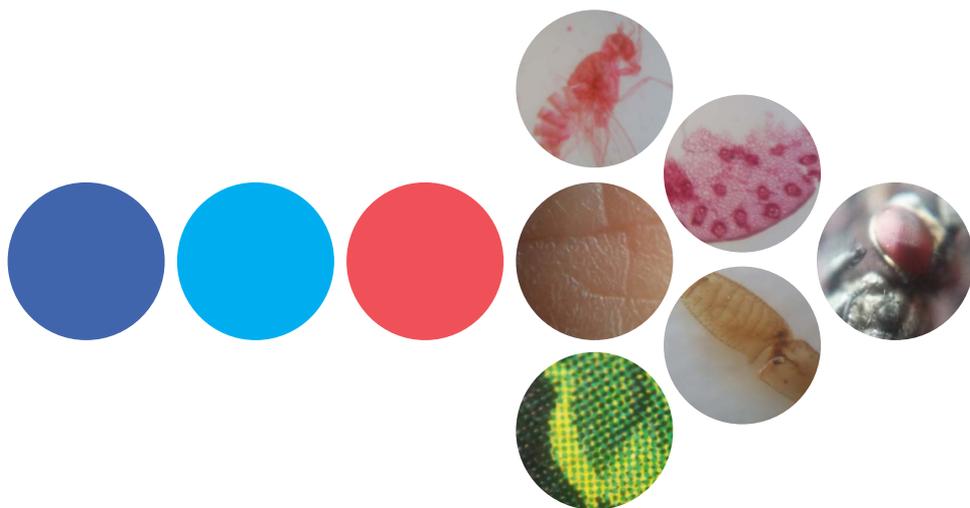




# THE SMARTOSCOPE

TURN YOUR SMARTPHONE  
INTO A MICROSCOPE!



# ●●● WHAT YOU NEED



## A LENS

This is the hardest part of this tutorial!  
Buy a cheap laser pointer from a discount store and open it with pliers to get the lens out.  
[The one used here comes from Maxi-Bazar.](#)

## A HAIRPIN AND A PIECE OF TAPE

Nothing special about that!

## A PIECE OF 9-MM THICK WOOD / PLASTIC

It will be used as a stand for your phone, so you need a 100x50 mm piece (approximately). 9 mm is a standard thickness for plywood, so it should not be too difficult to find.

[The one used here is a piece of skirting board.](#)

## ... AND YOUR SMARTPHONE

[These tests were made using a Samsung A3.](#)

## NOTE

The thickness of the stand depends on the lens you use.

We tried with 2 different lenses, and the 9 mm stand worked well, but if you have any trouble getting a sharp image, you may want to choose a different stand (more info on the next page).

## MEMO: SHOPPING LIST

From the hardware store (or home)

- a 100 x 50 piece of 9 mm wood
- pliers
- a woodsaw

From the discount store (or home)

- a cheap laser pointer
- a hairpin
- tape

# ●●● HOW TO MAKE A SMARTOSCOPE



**1** - Clip the lens between the prongs of the hairpin.

**2** - Tape the hairpin to your phone so that the lens covers exactly the camera of your phone.

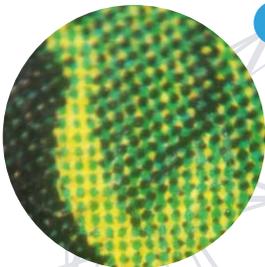


**3** - Open the camera app on your phone.

**You are ready to start exploring!**

## WHAT YOU CAN DO WITH IT

Hold the phone steady in your hand and get close to the object you want to observe. The magnified image will appear on your screen. Adjust your position (by going lower or higher) until the image is sharp.



A piece of printed paper



Skin



A fly

# ●●● GOING FURTHER

You may have noticed that you need a particular distance to get a sharp image. This distance depends on the characteristics of the lens. In this test, the distance needed was 9 mm. This is why the stand for the phone is 9 mm high. If you need a different distance, you will have to choose a stand with the right thickness.

You may also have noticed that it can be difficult to hold the phone steady enough, especially for smaller objects.

So if you want to look at microscope slides, use the stand to make it easier.



**1** - Put the slide next to the stand.

**2** - Put your phone on the stand so that the camera is on top of the sample. If the image is not sharp enough, you can press lightly on your phone or lift it slightly until the image comes into focus.



Stem of corn



Leg of a bee



Drosophila

Any question or feedback on this tutorial?  
We are happy to discuss!

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