

D.I.Y Microscope Tutorial

To build this microscope you will need:

A webcam (a €5 one from Amazon.de will do)

Pliers

Access to a laser cutter

A sheet of thick perspex

A small-gauge screwdriver

A soldering iron

A hot glue gun

An adjustable desk lamp

A 'helping hand' (a tool for helping with soldering- also available from Amazon)

Petri dishes/eye dropper

A computer

- First deconstruct the webcam. Use the small-gauge screwdriver to remove the tiny screws, then use the pliers to remove the outer plastic shell of the webcam, leaving the circuit board attached to the main cable. Remove the lens but don't damage it as we will re-attach it later.
- If any of the wires come away from the circuit board, use the soldering iron to solder them back together. Be careful not to damage the circuit board while doing this or the microscope won't work.
- Next use the hot glue gun to glue the lens on backwards, so we can see the sensor facing outwards. Be sure to glue the lens on firmly but not to get any glue on the sensor itself as it will obscure the webcam's field of view.
- Download the .ai or pdf file as a guide for the laser cutter and cut the perspex to size.
- Once this is done, take the pieces and using the hot glue gun, glue them together.
- Take the microscope and insert it into the perspex frame- make sure the lens is facing upwards.
- Deconstruct the Helping Hand so that one of the grips is facing down- the grip will hold the edge of the petri dish so it lies over the microscope lens.
- Position the lamp so that it is shining directly over the petri dish, with the microscope lens underneath it. Some adjustment may be necessary to make sure that the microscope is in focus.
- Plug the webcam into the computer and use an image capturing program (for a mac, Quicktime Player and Photobooth work well) to take pictures of the specimen in the petri dish.