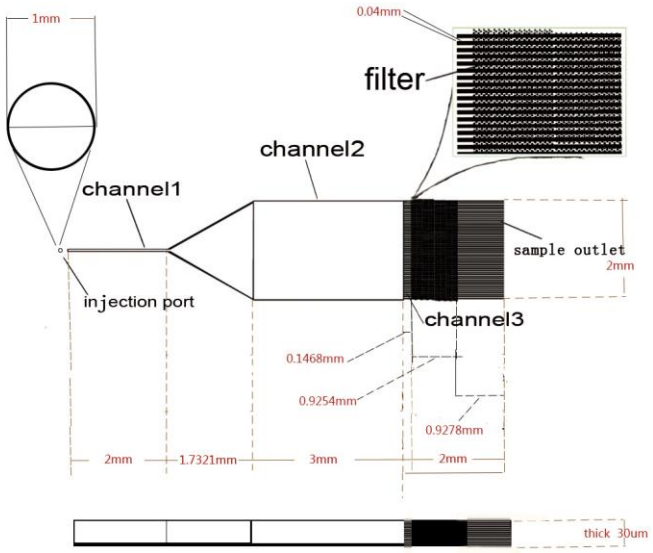
Using Microfluidic Chip for Magnetic Test



Structure of microfluidic chip

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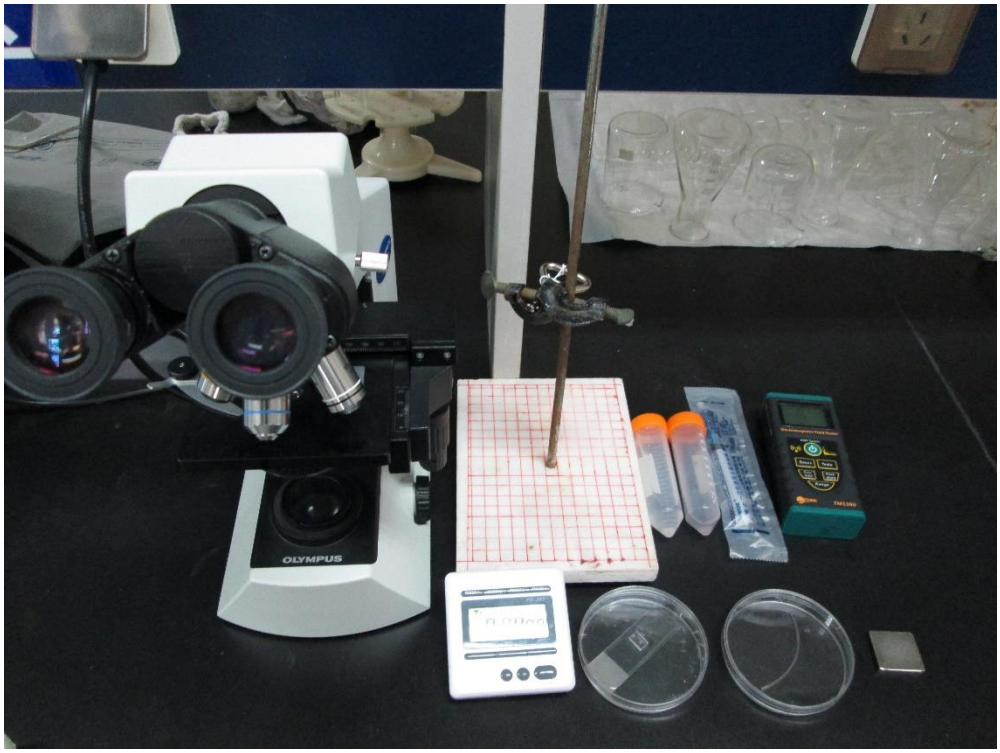
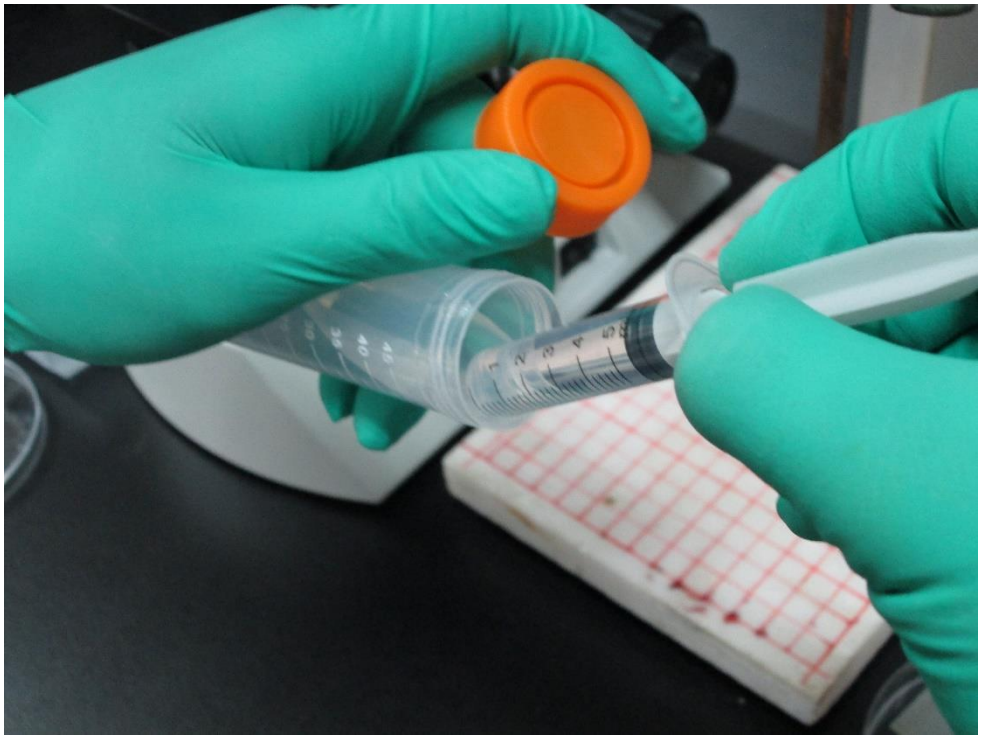
Before Starting

Materials you need to prepare:

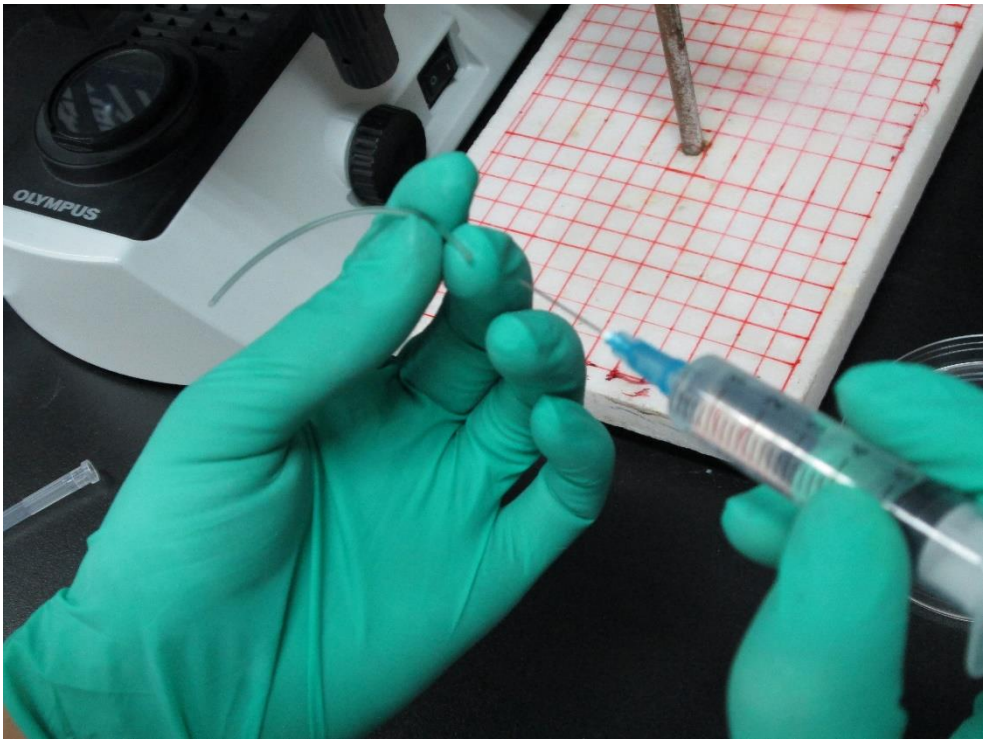
· Sterile water
· Gauss meter
· Syringes
· PEFT capillary
· Magnets
· Steel stand
· Microfluidic chip
· Timer
· Microscope (inverted microscope is recommended)
· Bacterial culture broth



Procedure



1. Wipe the bench with 75% alcohol for disinfection, and use 5ml syringes to get 3ml sterile water. Pump out the air from the syringe.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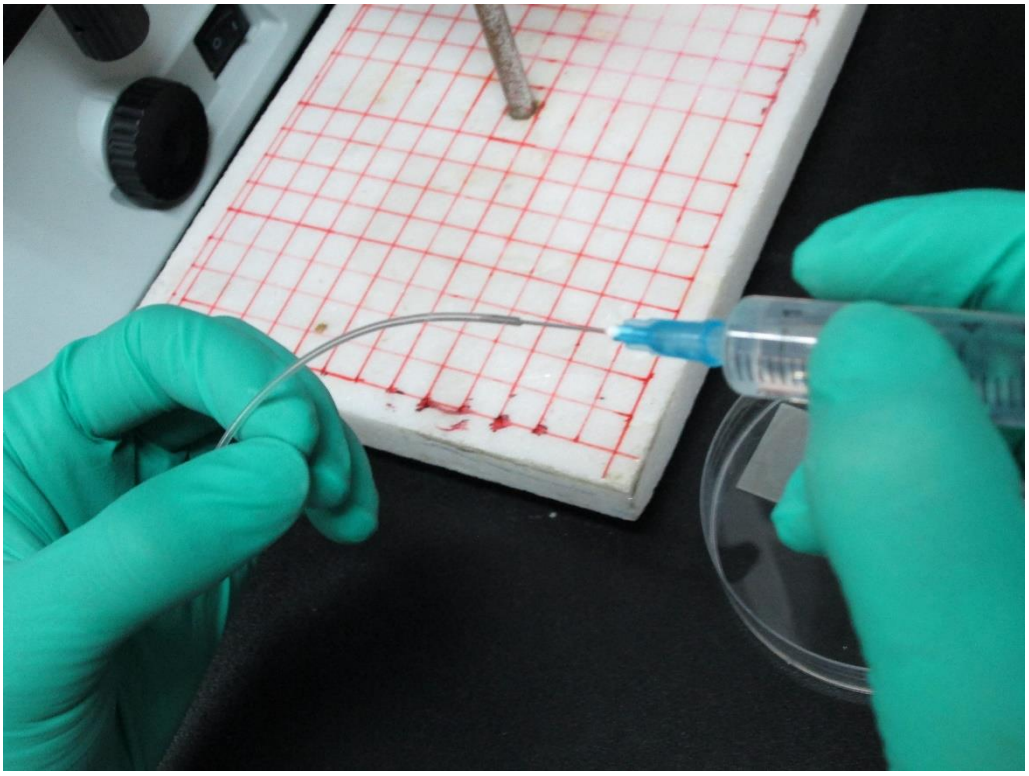
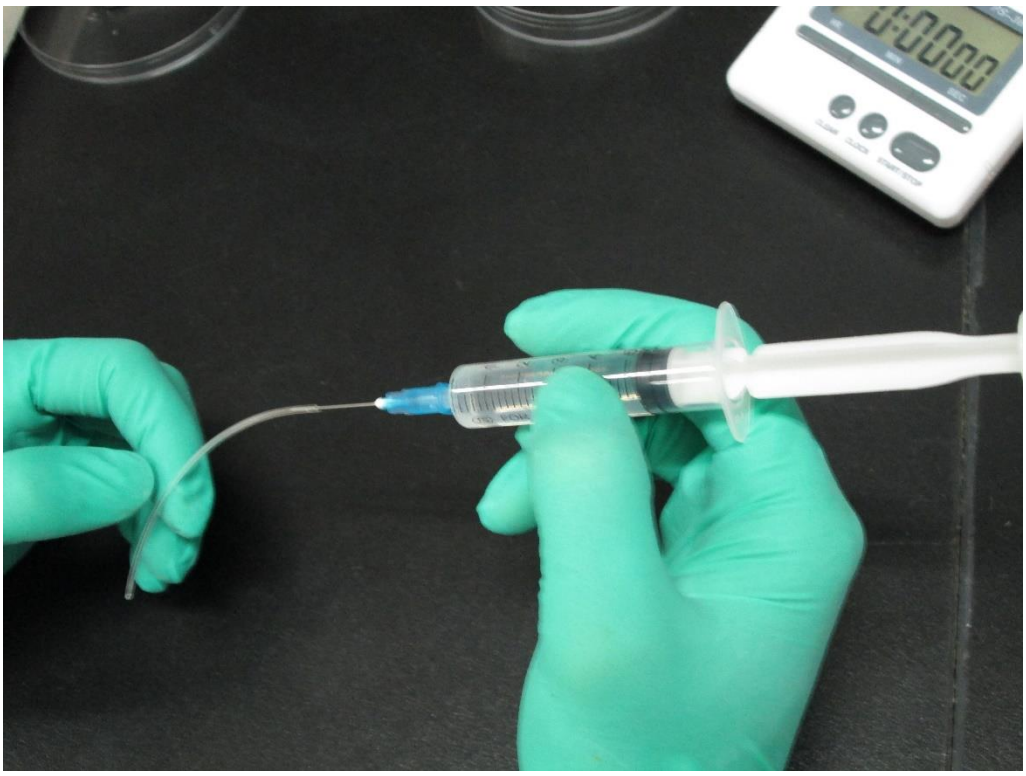
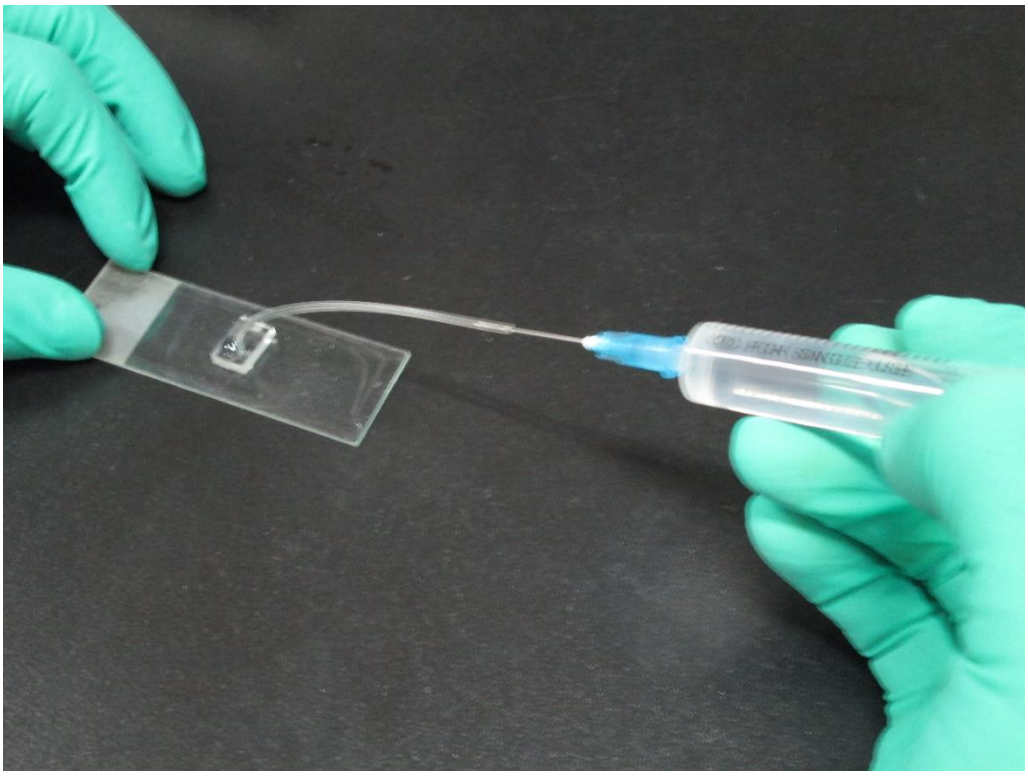
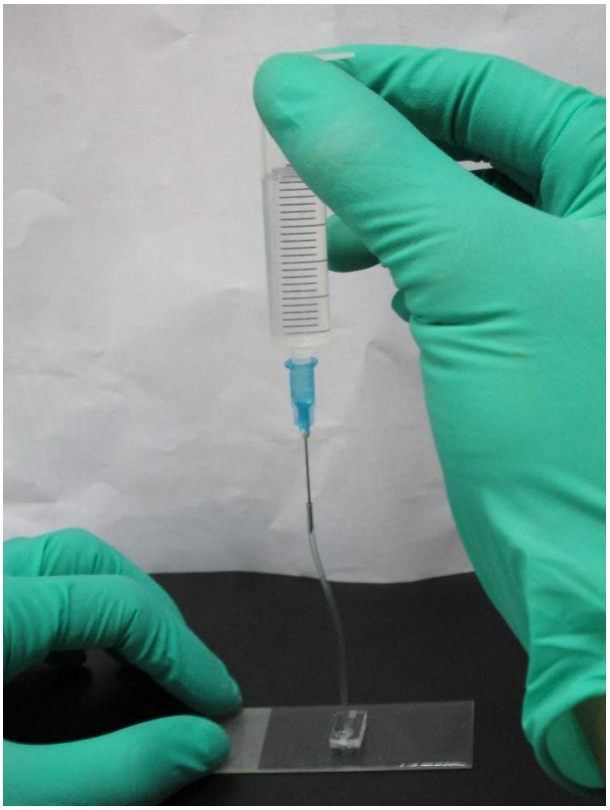


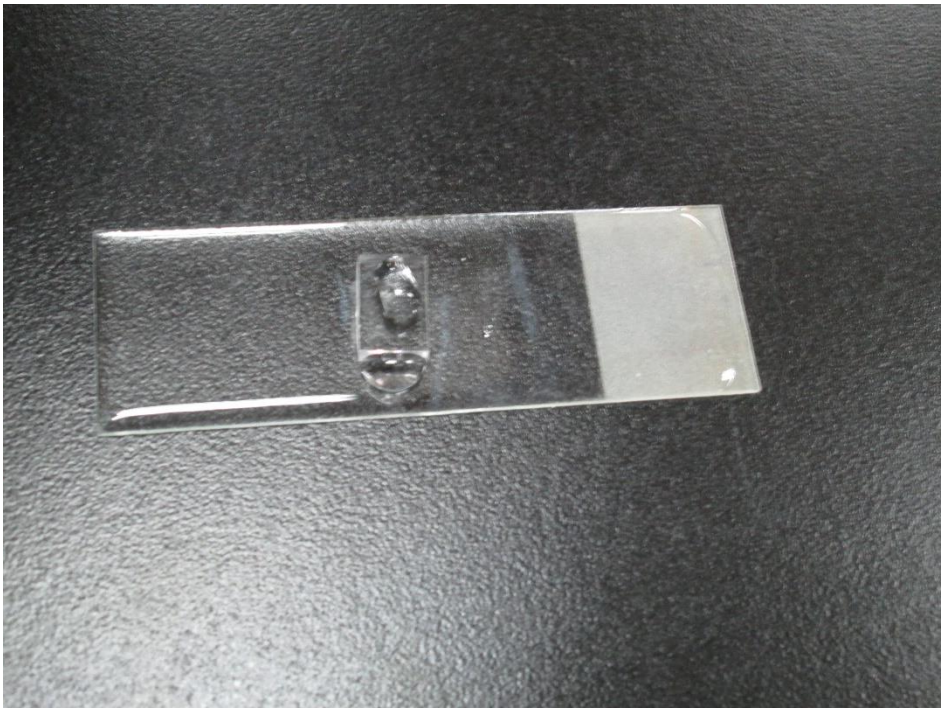


2. Connect the capillary and needle of syringe, keeping good air tightness. If the air tightness is bad, the sample may leak. Clear the air in the capillary by discharging part of liquid.

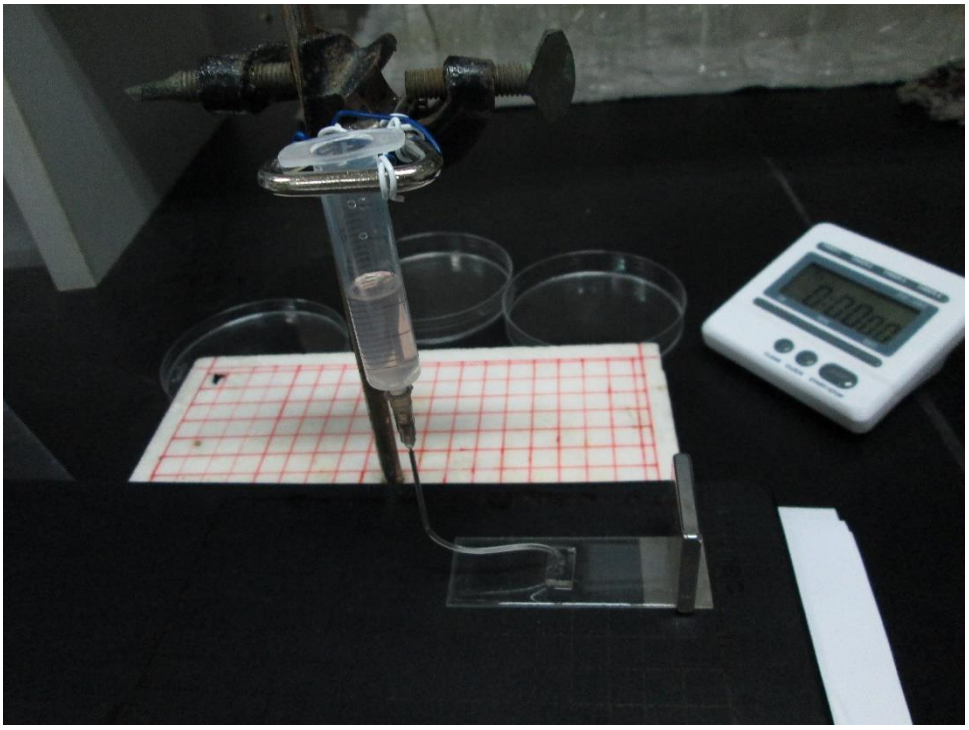


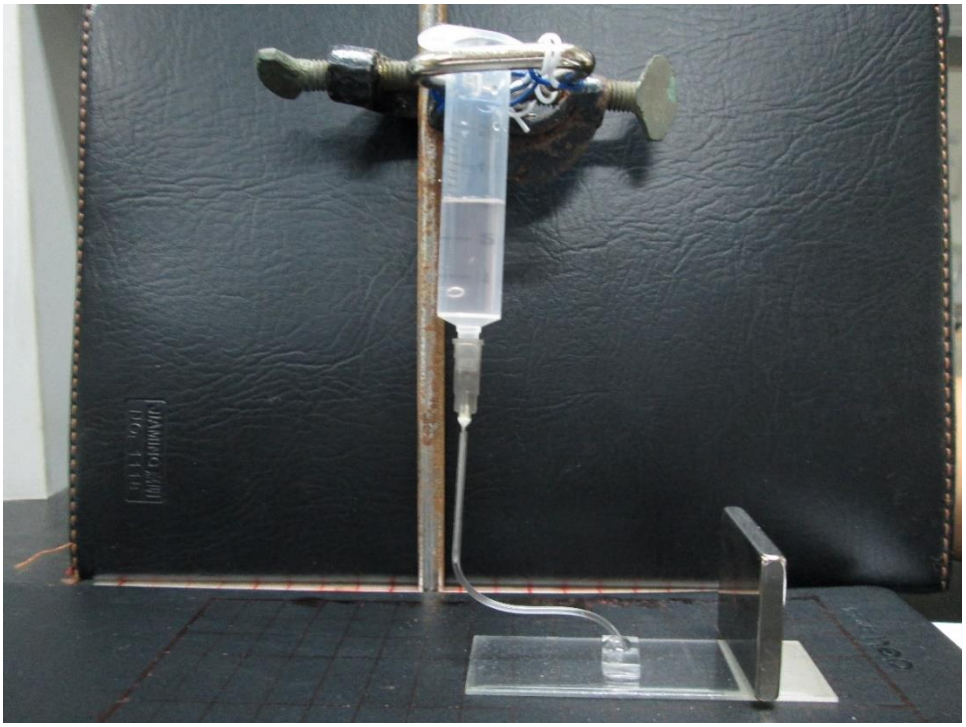


3. Insert the other end of capillary into injection port of microfluidic chip. According to the principle of liquid pressure, drain air from the microfluidic chip by using liquid, causing chip's internal channel to form a vacuum environment.

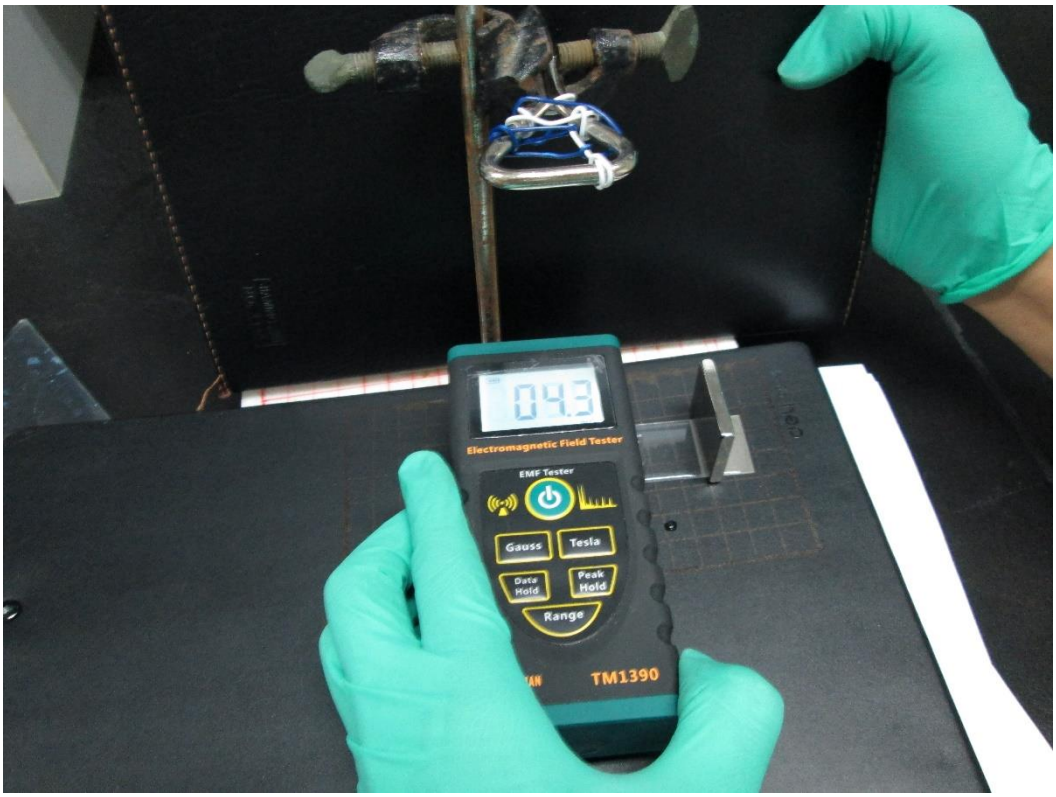


4. Slowly pull out capillary from chip's injection port. Be careful not to remove the water droplets on the injection port, because the water has a seal on the interior of the chip and prevents air from entering the hole.

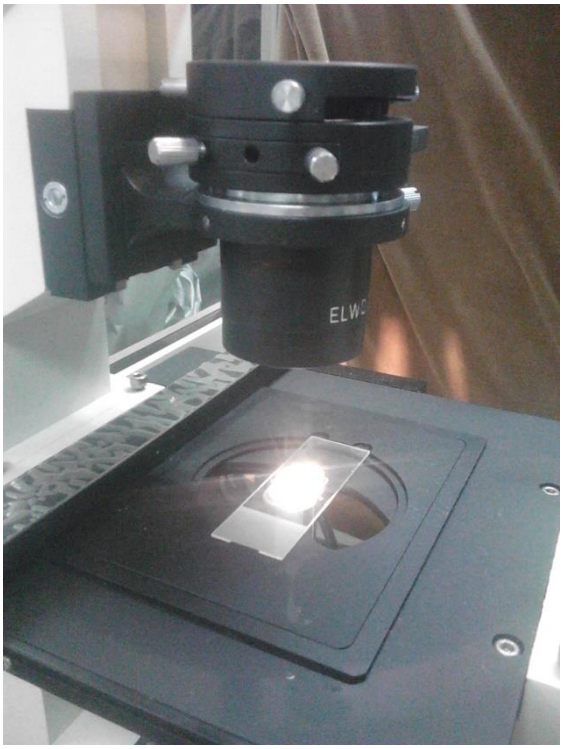




5. Get 4 ml of liquid bacteria culture(bacteria cells cultured for 12-14 h at 37℃) with a new syringe. Drain the air from the syringe. Repeat step 2, fix the syringe on the steel stand (13 cm from the bottom of stand). Make the capillary parallel to the chip, which can make the bacterial liquid slowly flow into the chip. At the same time, put a strong square magnet on the side of the chip in order to apply a magnetic field (perpendicular to channel 2 in the same plane). Locate the magnet and the chip by taking down their positions using a ruler or drawing a grid of parallel lines spaced 1 cm.



6. After 110 min (time may vary according to the case), remove the syringe, and use the Gauss meter to detect the magnetic field. The Gauss meter should be placed on the chip's position.



7. Observe the chip under microscope, magnificated 400X. Count the number of bacteria within each channel.