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Feb 25, 2022

Filming Daphnia Swimming in 2D Protocol V.2

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This is a protocol used to record Daphnia individuals swimming (swimming speed, acceleration, time spent moving).

Laura Lopez, Meghan Duffy 2022. Filming Daphnia Swimming in 2D Protocol.
protocols.io
<https://protocols.io/view/filming-daphnia-swimming-in-2d-protocol-b5neq5be>
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Filming *Daphnia* Swimming in 2D Protocol- Duffy Lab

LK Lopez 11/11/2020

Materials:

1. Panasonic handy-cam (x1)
2. Camera tripod (x1)
3. Lightbox/pad (x1)
4. SD card (x1)
5. Plastic petri dishes (diameter 9 mm)

6. Glass pipettes and bulbs (at least 1)
7. 500 mL beaker (x2)
8. Filtered Indiana lake water (400 mL at least- put into one of the 500 mL beakers)
9. Stopwatch (e.g. on phone)
10. *Daphnia*
11. 10 mL micropipette
12. Tape
13. Pen/marker

Methods for Filming *Daphnia*: to record individual swimming (swimming speed, acceleration, time spent moving).



1. Use a quiet room that can be darkened.
2. Set up the equipment so that the daphnia are backlit on the lightbox and the camera is positioned directly above the petri dish (petri dish placed on top of lightbox).
3. It is important that the camera is in the same position above the petri dish each time filming is conducted for one experiment. Mark where the tripod legs are on the ground with tape and do the same to mark where the petri dish will sit (using the marker) when you have a position that works.
4. Turn the lightbox on, turn the lights in the room off.
5. Fill the petri dish with 15 mL of filtered lake water using the micropipette. The depth will be 5 mm. This prevents the daphnia from moving vertically.
6. Take an individual daphnia from one of the beakers and Place it in the petri dish, taking care not to add much more water.
7. Place a tape label next to the petri dish, visible in the camera view with the age of the animal recorded and the replicate number e.g. 3 days rep 1, 3 days rep 2 etc. If you can record the video number and track it back to the replicated and treatment later you do not need to do this.
8. Leave it for 1 minute to adjust to the surroundings.
9. Film it for 4 minutes.
10. Tip the daphnia with the pipette into the empty 500 mL beaker. You do not need it any longer. Flush out the petri dish with a small volume of filtered lake water and then refill with 15 mL of the water.
11. Repeat the procedure until all the animals have been filmed.
12. Take the SD card and upload the videos onto the laptop- label the video file with the age and replicate number of the animal.