

Phototaxis suppression

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Abstract

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Guidelines

To suppress both positive and negative phototactic behavior, we use an aversive stimulus. We place a filter paper wetted with either a 0.15M quinine/water solution (gustatory stimulus) or an 0.1 mixture (v/v) of benzaldehyde/paraffin oil (olfactory stimulus) in the preferred tube, i.e., the transparent or the opaque tube, depending on the flight status of the flies and hence their phototaxis (positive or negative, respectively).

Protocol

Step 1.

To ensure that you only use photopositive/photonegative flies for this experiment, do a preselection by running a regular, single-trial phototaxis experiment without aversive stimulus and collect only the flies in either the bright or the dark tube.

Step 2.

After placing the filter paper in the appropriate tube and with the elevator down, load the selected flies (around 50) into the entrance tube and give them 10 minutes for dark adaption.

 **DURATION**

00:10:00

Bright/dark tube choice

Step 3.

Shift the elevator all the way up, tap the flies into the elevator and move it to the middle position (between the entrance tube and the dark tube).

Bright/dark tube choice

Step 4.

Bring the T-maze back into the vertical position and put the elevator with the flies all the way down.

Bright/dark tube choice

Step 5.

Now let the flies choose between the bright tube and the dark tube for 30 seconds.

 **DURATION**

00:00:30

Bright/dark tube choice

Step 6.

Tap all the flies into the tube which doesn't contain the aversive stimulus (The elevator is still down).

🕒 DURATION

00:00:15

Bright/dark tube choice

Step 7.

Take this tube and put all the flies in the entrance tube again (with a funnel).

Bright/dark tube choice

Step 8.

Let them calm down for 15 seconds.

🕒 DURATION

00:00:15

Step 9.

Repeat the "Bright/dark tube choice" section (steps 3 through 8).

📌 NOTES

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With quinine we perform 8 trials and with benzaldehyde we perform 5 trials.

Step 10.

Switch the tube which contains the aversive stimulus with a tube without any filter paper and repeat the "Bright/dark tube choice" section (steps 3 through 8).

Step 11.

Put the elevator up and count the flies in the entrance tube, the transparent tube and the opaque tube after anesthetizing them.