T-maze (light vs dark)

Björn Brembs

Abstract

This is the protocol we are using to assess the Light/Dark preference in flies.

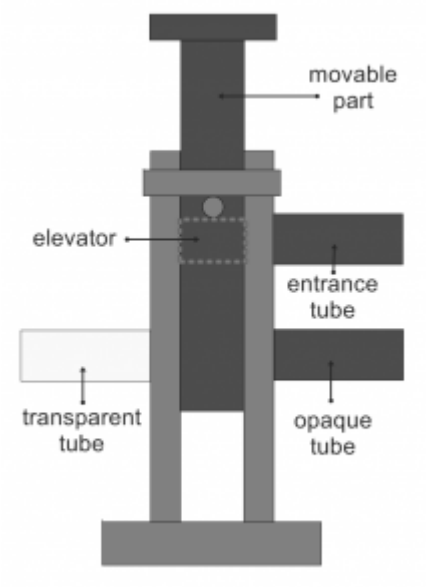
Citation: Björn Brembs T-maze (light vs dark). **protocols.io**
dx.doi.org/10.17504/protocols.io.c8azsd
Published: 28 Jul 2015

Guidelines

The Choice Index is calculated using the formula:

CI=((#FL×1)+(#FD×-1)+(#FE×0))/(#FT)

where #FL, #FD, #FE, and #FT mean the number of flies in the transparent tube, the opaque tube, the number of flies that remained in the elevator, and the total number of flies, respectively. A *CI* of 1 mean all the flies chose the light, while an index of -1 mean a negative phototaxis and 0 meant no choice. In each experiment a CI is calculated for the wingless flies and other for the intact flies.



Before start

The light source should be homogenous above the T-Maze.

Protocol

Preparation

Step 1.

24h before the experiment, anesthetize 3-6 d old flies under CO_2, and clip $^2/_3$ from both wings to half of them.

Preparation

Step 2.

In the same vial, place around 30 flies with clipped wings and another 30 intact flies. Let them recover from anaesthesia until experiment begins.

NOTES

Björn Brembs 20 Jul 2015

The number of flies you can test at the same time depends on the size of your T-Maze. We have noticed that there is an overcrowding effect on the results.

Experiment

Step 3.

Place the flies in the entrance tube (see figure) and let them adapt for 10 min.

DURATION

00:10:00

Experiment

Step 4.

Turn on the light source.

Experiment

Step 5.

Transfer the flies to the elevator by gently tapping the apparatus, and pull the movable part down in order to close it. Flies are kept in the elevator for 30 sec.

DURATION

00:00:30

NOTES

Björn Brembs 20 Jul 2015

Be careful not to face the elevator to the transparent and the opaque tubes.

Experiment

Step 6.

Pull down the movable part, so that the elevator is placed between the transparent and the opaque tubes. Allow the flies to choose between dark and light for 30 sec.

DURATION

00:00:30

Experiment

Step 7.

Close all tubes by pulling up the movable part, in order to lock the flies in the tube they have selected.

Experiment

Step 8.

Count the number of flies with and without wings in each tube.

Experiment

Step 9.

Calculate the Choice Index (see Guidelines for formula).