

**Are certain  
behaviours hard-  
wired in *our*  
*growing brain?***

# OUR GROWING BRAIN

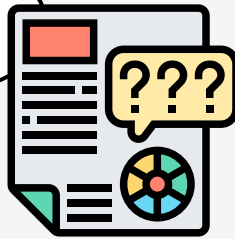
This investigation explores maggot behavioural rules using choice choobs

**Aim:** To investigate the effect of light on maggot behaviour.

Caterpillars will pupate and become a beautiful butterfly - we are familiar with this life cycle. But did you know that the (slightly less beautiful) maggot is involved in a similar lifecycle: a maggot will pupate and become a blowfly. The blowfly will lay their eggs inside or on dead bodies, resulting in the development of new larva (maggots), and so the cycle continues.



Consider the maggot life cycle. Hypothesise what habitat conditions a maggot will prefer.



Powerpoint: Association for Study of Animal Behaviour

Before moving on to the next section, think how you might be able to test your hypothesis.

## Materials

- 20 Maggots
- Cardboard tube
- Lamp
- Clamp stand
- black paper
- scissors
- Sellotape
- rubber bung

## Overview of Method

You will design and carry out a controlled experiment to test the hypothesis that maggot will move away from light. This will involve the construction of a choice choob.

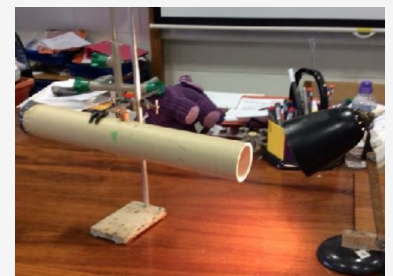
## Scientific ethics

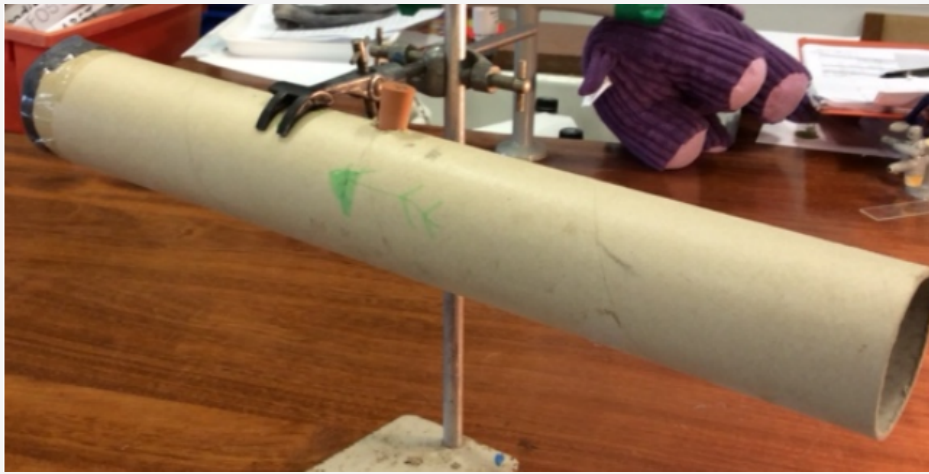
In animal studies, it is important to consider the "3Rs":

- Replacement - can the aim be addressed without using animals.
- Reduction - use the minimum number of animals possible to obtain a reliable, reproducible result.
- Refinement - the experiment must be refined to minimise any possible harm that could come to the animals involved in the study.

1

Build a choice choob using a cardboard tube, e.g. the inside of an old kitchen roll. Cut a small hole in the middle of the tube so maggots can be added. Insert a rubber bung into this hole. Position the choob in a clamp stand, sealing one end with black paper. Place the lamp at the open end of the tube.

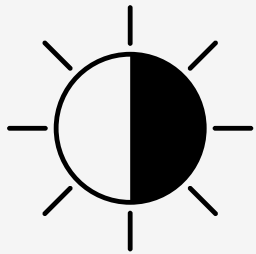




A choice choob is a cardboard tube with a hole cut half-way along to allow for the maggots to be added. The rubber bung prevents light entering.

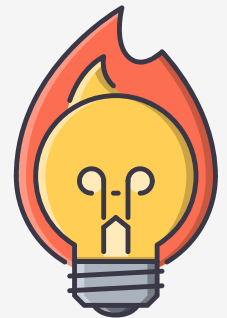
*Image from Association for the Study of Animal Behaviour.*

**2** Add 20 maggots to the choice choob through the insertion hole. Replace the rubber bung to prevent light entering the tube and wait 10 minutes.



**3** After ten minutes, look inside the choice choob. Determine the number of maggots that moved to the light or the dark end of the choice choob? Did any stay in the middle?

**4** Can you explain the results? Is there an alternative explanation? Were all other variables controlled in the experiment? Could you modify the design of the choice choob to minimise the impact of these other "confounding variables / constant factors"?



# RESULTS



Construct a table and appropriate graph of your results. A digital template is provided [here](#). Example data is included opposite. How does your data compare? The digital file will automatically generate a bar chart of your data - this is the correct type of graph to use because the independent variable (position in choice choob) was **categorical** (not a number).

Position in Choice Choob	Number of Maggots	Percentage of maggots
Light end	0	0
Middle of tube	2	10
Dark end	18	90

