CALIFORNIA STATE SCIENCE FAIR
2013 PROJECT SUMMARY

Name(s)
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Project Number
S2202

Project Title
Planarians: Handedness after Regeneration

Abstract

Objectives/Goals
I want to know if a planarian that regenerated from the piece of another will have the same handedness as that original.

Methods/Materials
20 planarians were flipped onto their back using a clean plastic spoon and then observed to see whether they rolled to the left or right to get back onto their underbelly. After each was tested at least 10 times and the results were recorded they were assigned "right-handed" or "left-handed" based off what happened at least 70% of the time. Any less and they were "ambidextrous" instead. After being labeled, each got a number assigned that was written on the lid of their petri dish. After all were tested, they were cut in half using a surgical knife and a microscope slide on ice to put the worm on, and the two halves were placed into separate petri dishes with the worm#s designated number, handedness, and the letter "h" or "t" for if the piece was a head or tail written on the lid, each with 30 ml of water, 1/3rd changed daily using a syringe starting 2 days after being cut. In some cases the mouths fell out as well but being much smaller, were easy to identify. They also weren#t identified as separate pieces until later. Besides having their water changed, they were fed a pea-sized piece of hard-boiled egg yolk once a week. After two weeks-time given for complete regeneration, each new worm was tested 10 times and the results for each individual recorded. #20 brown planarians #surgical knife #spring water #microscope slide #40 petri dishes #hard-boiled egg yolk #permanent marker #ice #plastic spoon

Results
Of the 20 planarians, 60% were lefties, 20% were ambidextrous, and 20% were righties. Of the ones that regenerated from a piece (64 total), approximately 90% had the same handedness as the original, half of the remaining 10% had been mouths that became unresponsive after a few trials and all the pieces had come from a planarian whose handedness represented 70% of what occurred during the testing.

Conclusions/Discussion
From the data, it is seen that should the planarian have come from the piece from another, then it will have the same handedness as the one it came from even if it didn#t regenerate from the part with head. This indicates that the attribute is most likely genetic though I don#t have equipment to find out if it is for sure.

Summary Statement
My project is about finding out if handedness is something a planarian retains after asexual reproduction (regeneration).

Help Received
Parents helped with photos, acquiring materials, and cooking eggs.