CALIFORNIA STATE SCIENCE FAIR
2016 PROJECT SUMMARY

Name(s)

Ashima Kundu

Project Number

36849

Project Title

The Effect of Different Temperatures on the Chemotaxis of Physarum polycephalum toward Food in a Maze

Abstract

Objectives/Goals

The purpose of this experiment is to determine the effect of different temperatures on the chemotaxis of Physarum polycephalum towards food in a maze and its success rate in solving the maze.

Methods/Materials

Petri dishes, non-nutrient agar, sterilized oatmeal flakes, and Physarum polycephalum culture. Placed Physarum polycephalum in a petri dish with a plastic maze and sterilized oatmeal flakes at specific points inside at 0, 20, and 40 degrees Celsius after covering the petri dishes with aluminum foil for 60 hours and measured their growth and success rate in solving the maze.

Results

The most success in solving the maze was demonstrated by the Physarum polycephalum in the 20 degrees Celsius group. The 0 and 40 degrees Celsius groups showed no significant growth.

Conclusions/Discussion

The success rate in solving the maze at 20 degrees Celsius at the end of 60 hours was 83.33 percent. The success rate in solving the maze at 0 and 40 degrees Celsius was 0 percent.

From the results it was inferred that the ideal temperature range for the growth of the Physarum polycephalum somewhere close to 20 degrees Celsius, and that Physarum polycephalum cannot perform the vital function of finding food in temperature 20 degrees Celsius above and below its ideal temperature.

Summary Statement

I found the most ideal temperature for the success of Physarum polycephalum in solving a maze, guided by food sources.

Help Received

None. I performed and researched the experiment on my own.