

OFFICIAL ABSTRACT and CERTIFICATION

Effects of Dopamine on Regeneration Rates of Planaria

Pratham Patel

Saginaw Arts and Sciences Academy, Saginaw, Michigan, USA

Neurodegenerative diseases impact millions of people's lives every year and billions of dollars go into research to find the cure for these diseases. Neurodegenerative diseases occur when neurons in the brain degenerate. The most common form of a neurodegenerative disease Parkinson's disease which has affected over 10 million people worldwide. By using planaria, a flatworm with the ability to regenerate lost body parts, as a model for the human brain, cures for neurodegenerative diseases can be researched. In this experiment the neurotransmitter being studied is dopamine for it has been extracted from planaria during regeneration. This suggests that dopamine plays a vital role in regeneration of the planaria.

In this experiment 20 planaria pieces (10 planaria cut into 2 parts) were put into 5 different environments: 30 ml of spring water, 2 ng of ropinirole per 30 ml of spring water, 0.5 ng of ropinirole per 30 ml of spring water, 10 ng of promethazine per 30 ml of spring water, and 3 ng of promethazine per 30 ml of spring water. The results showed that the planaria in high ropinirole concentration environment had an average daily growth rate of 1mm per day and the low ropinirole concentration environment had an average daily growth rate of 0.9 mm per day. The planaria in the control environment had an average daily growth rate of 0.7 mm per day. The planaria kept in the high promethazine concentration

Category

Pick one only — mark an "X" in box at right

- Animal Sciences
- Behavioral & Social Sciences
- Biochemistry
- Biomedical & Health Sciences
- Biomedical Engineering
- Cellular & Molecular Biology
- Chemistry
- Computational Biology & Bioinformatics
- Earth & Environmental Sciences
- Embedded Systems
- Energy: Sustainable Materials and Design
- Engineering Mechanics
- Environmental Engineering
- Materials Science
- Mathematics
- Microbiology
- Physics & Astronomy
- Plant Sciences
- Robotics & Intelligent Machines
- Systems Software
- Translational Medical Sciences

1. As a part of this research project, the student directly handled, manipulated, or interacted with (check ALL that apply):
  - human participants
  - potentially hazardous biological agents
  - vertebrate animals
  - microorganisms
  - rDNA
  - tissue
2. I/we worked or used equipment in a regulated research institution or industrial setting:  Yes  No
3. This project is a continuation of previous research.  Yes  No
4. My display board includes non-published photographs/visual depictions of humans (other than myself):  Yes  No
5. This abstract describes only procedures performed by me/us, reflects my/our own independent research, and represents one year's work only.  Yes  No
6. I/we hereby certify that the abstract and responses to the above statements are correct and properly reflect my/our own work.  Yes  No

*This stamp or embossed seal attests that this project is in compliance with all federal and state laws and regulations and that all appropriate reviews and approvals have been obtained including the final clearance by the Scientific Review Committee.*

