

Oscillating contraction of protoplasmic veins of Physarum polycephalum

Kent Kevin P. Tabiliran, Jae Lord Dexter. Filipinas and Mark Nolan P. Confesor **Department of Physics and Complex Systems Group, PRISM** MSU – Iligan Institute of Technology, Bonifacio Avenue, Tibanga, 9200 Iligan City, Philippines

*marknolan.confesor@g.msuiit.edu.ph

-ABSTRACT

The slime mold, *Physarum polycephalum*, is a model organism for non-centralized biological organisms used to examine motility, life cycle, differentiation, and other aspects of cell biology. In this study, we examine and quantify the *Physarum*'s vein contractions via video microscopy and image morphology analysis. It has been observed that the *Physarum polycephalum's* protoplasmic veins exhibit a rhythmic oscillation over time. Moreover, the oscillation causes streaming direction of granules to change with some time lag.



polycephalum's **Examine** Quantify and Physarum protoplasmic vein contraction

□ Show the relationship between *Physarum polycephalum*'s protoplasmic streaming and vein contractions under controlled conditions

METHODOLOGY

Experimental Setup



Contraction-Flow Vs Time Graph

Cross Correlation

PRISM







Vein Contraction



t = 0	t = 75	t = 110	t = 140	t = 175	t = 230	t = 320	t = 355
time (seconds)							

SUMMARY

We were able to examine the protoplasmic vein contraction of *Physarum polycephalum* via video microscopy and quantify protoplasmic vein contraction using image morphology analysis.

We observe rhythmic oscillation over time for both the vein contraction and streaming.

ACKNOWLEDGEMENT

□ The authors would like to extend its gratitude to **DOST PCIEERD** for providing equipment.

□ JLDF would like to thank **DOST ASTHRDP** and **DOST SEI**

