

## The Effects of Paclitaxel on Cellular Migration and the Cytoskeleton

Ashley Salguero-Gonzalez

Follow this and additional works at: <https://digitalcommons.usm.maine.edu/thinking-matters-symposium>

 Part of the Biology Commons, Cancer Biology Commons, Cell Anatomy Commons, Cell Biology Commons, Chemistry Commons, Medical Cell Biology Commons, Medical Neurobiology Commons, Medical Toxicology Commons, Medicinal and Pharmaceutical Chemistry Commons, Medicinal Chemistry and Pharmaceutics Commons, Nervous System Commons, Neurology Commons, Neuroscience and Neurobiology Commons, Neurosciences Commons, and the Toxicology Commons

Salguero-Gonzalez, Ashley, "The Effects of Paclitaxel on Cellular Migration and the Cytoskeleton" (2022). *Thinking Matters Symposium*. 11.  
[https://digitalcommons.usm.maine.edu/thinking-matters-symposium/2022/poster\\_presentations/11](https://digitalcommons.usm.maine.edu/thinking-matters-symposium/2022/poster_presentations/11)

This Poster Session is brought to you for free and open access by the Student Scholarship at USM Digital Commons. It has been accepted for inclusion in Thinking Matters Symposium by an authorized administrator of USM Digital Commons. For more information, please contact [jessica.c.hovey@maine.edu](mailto:jessica.c.hovey@maine.edu).

University of Southern Maine  
**THINKING MATTERS**  
**April 22, 2022**

02/28/2022 20:36:06

120

Updated on April 1, 2022

**Title:** The Effects of Paclitaxel on Cellular Migration and the Cytoskeleton

**Updated Abstract:** In a clinical setting, some patients are exposed to an anti-cancer chemotherapy agent, paclitaxel. Cancerous cells undergo rapid, continuous cell division without control. Chemotherapy treatments try to slow and stop the uncontrollable cell division cycles and eliminate cancerous cells in the process. Paclitaxel serves as a treatment for some types of cancers, including lung, melanoma, bladder, and esophageal. Because it targets the cytoskeleton, paclitaxel can also influence cell migration. This project utilizes a cellular migration assay and an immunohistochemistry assay to analyze the effects of paclitaxel on the movement of cells and on the cytoskeleton of neuroglia rat cells with glioma.

Cells were grown in culture to a monolayer and were treated with dimethylsulfoxide (DMSO; the paclitaxel solvent) as the control and with 0.4  $\mu$ M paclitaxel. Removal of a small strip of cells in the middle of the culture induced the remaining cells to migrate across to fill the gap. Cultures were observed and analyzed to establish if the cells either did not migrate, or migrated more slowly across to fill in the scratched gap. Imaging with the microscope allowed us to measure and quantify the migration of cells for a duration of 48 hours. The migration assay provided insights into how cellular movement can be disrupted.

Because one target of these compounds is the cytoskeleton, we also conducted immunohistochemistry on exposed cultures. Cells were fixed and stained with phalloidin to label the actin structures and DAPI to stain the nuclei. Fiji was used to detect morphological changes of nuclei to have a better understanding between structure and function. Images taken using fluorescence microscopy helped us analyze the effects of the chemotherapy agent on the organization, localization, and levels of expression of actin at a cellular level.

**Project involved interaction with:** Neuroglia Rat C6 Glioma Cells

**Keywords:** Cancer, Cellular Movement, Cytoskeleton

**Discipline(s):** Biological Sciences

**Presentation Type:** Poster Presentation and Oral Presentation

**Permission to Publish on Digital Commons:** No

**Presentation setup needs:** I will submit a powerpoint presentation to share it on the projector.

**Primary Institution:** University of Southern Maine

**Undergraduate or Graduate:** Undergraduate

**Primary Mentor Name, Degree:** Douglas Currie, Ph.D. douglas.currie@maine.edu

**Primary Author Name:** Ashley Salguero-Gonzalez ashley.salguero@maine.edu

**Secondary Author Name:** N/A

**Additional Mentor or Author Names and Email:** N/A

[Comments/Questions](#): Is there going to be a laptop available to share the powerpoint presentation or should we provide one?