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FURSCA 2025

This summer, I tested the bioactivity of Chronic Myeloid Leukemia cells, when they are treated with different concentrations of drugs. Other students in my advisor, Dr. Craig Streu's lab create azo versions of certain drugs, and when they are completed, I take them and test their efficacy. Drugs have different properties at different concentrations, and testing our drugs at different concentrations allows us to see which is the most effective, without causing damage to cells we do not wish to target.

This summer, I tested azo-Ponatinib and azo-Imatinib on leukemia cells, in a dilution series, using 10 different concentrations of each drug, on both a light and dark plate. After incubating, we can then add MTT, which allows us to visualize the number of cells that are still viable after incubating with the drug, by visualizing the color gradient left on the plates. Living cells can reduce the MTT compound, changing the color from yellow to purple. The higher concentrations of drug most frequently have little to no purple, meaning most, if not all the cells have been damaged by the drug we applied to them. In the last well, the dilution contains no drug, and it is also where we most often see the highest number of living cells. After we visualize the color

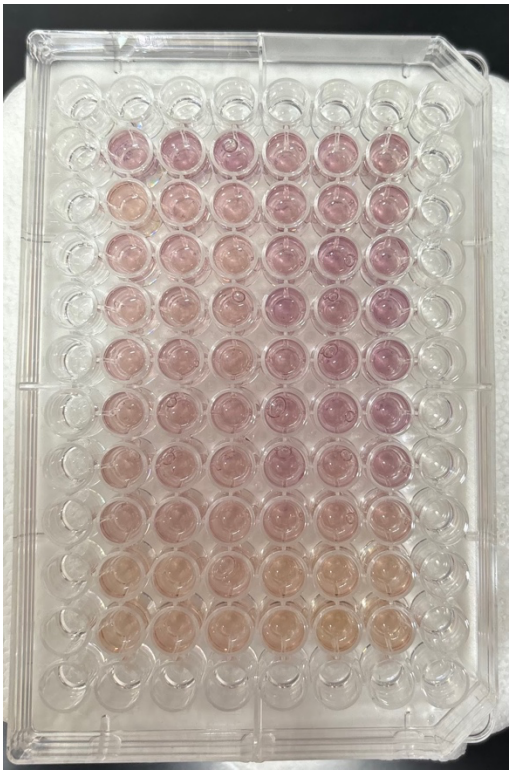
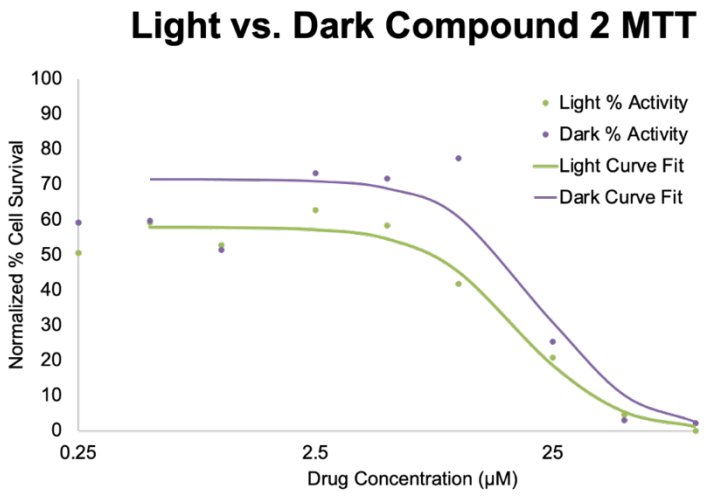


Figure 1: Color gradient allowing us to visualize number of viable cells.

gradient, we use a plate reader, to get numerical data we can then analyze.

Once we have numerical data, we can turn that into a graph depicting our results in a format that is easier to read. In figure 2, we can see that the dark plate, which most frequently contains the inactive version of the drug, has increased cell survival, while the light plate shows lower cell survival rates. With this data, we can confidently say that the active state of the drug is more effective and is also more effective in higher concentrations. However, we can also see that even the inactive form of the drug will damage cells at high concentrations.



During the next school year, I will present these findings at the Elkin R. Isaac Symposium in the spring of 2026. I also intend to present these findings at the American Chemical Society meeting, also in the spring of 2026. I learned countless skills this summer, including aseptic techniques, and cell culture techniques, as in the mast I have primarily focused on the chemistry aspect of Dr. Streu's work. I would like to thank all of the donors that made this project possible, and I am excited to further my work with this project in the fall of 2025.