

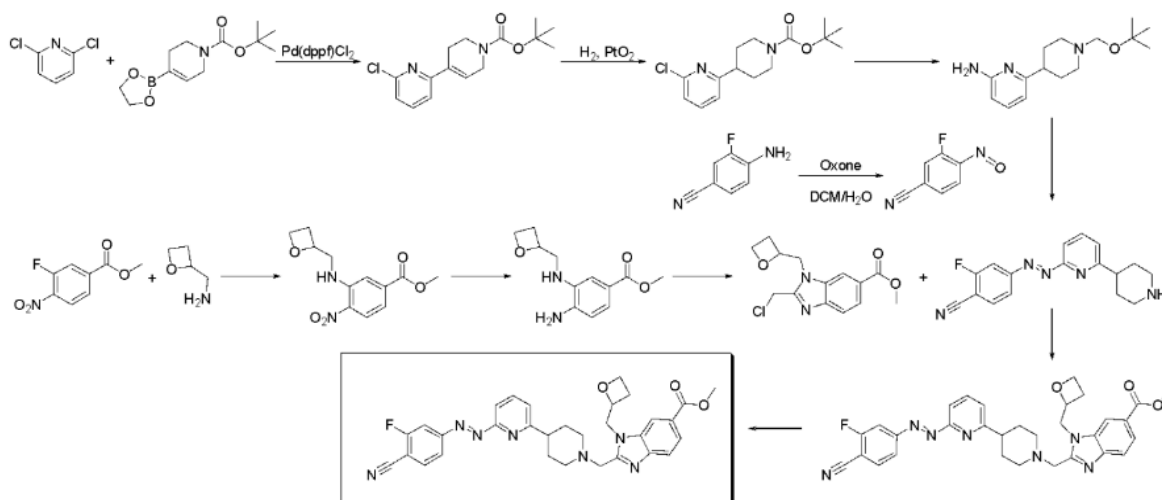
Ernest Njoroge

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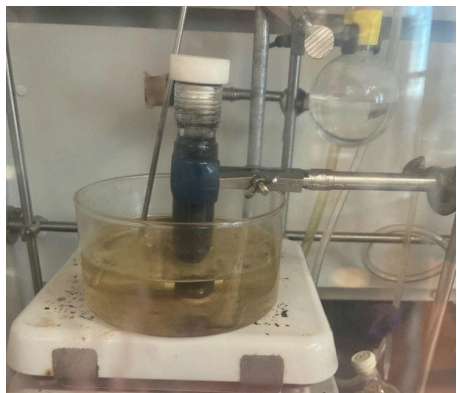
## SUMMER FURSCA REPORT

My name is Ernest Njoroge, I am a rising junior at Albion College. Thanks to FURSCA I was able to participate in research this summer. I was working on synthesizing azo danuglipron, a medication for diabetes. Pfizer manufactures the medication danuglipron, which is used to treat type 2 diabetes. Azo is a photoswitchable nitrogen double bond. Thus, by incorporating this azo bond into the diabetes medication danuglipron, we could create azo danuglipron, a drug that is photoswitchable—that is, it would change its structure when exposed to UV light, either activating or deactivating the medication based on the patient.

Did I complete the synthesis of azo danuglipron? No, I did not and this is because the synthesis of a drug is a long process. The synthesis is 10 steps and over the summer we did the first step, repeating it over and over, to synthesize as much of our compound as possible needed for the next step.



Above are the synthesis steps we are taking toward the complete synthesis of the drug and we have more steps as we can see, to get through. The results of this project are primarily focused on the completion of the first step of the synthesis process;



This was the first step that we were doing, trying to get as much of the compound as possible needed for the next step. We take the compounds we are reacting together, put them in a reaction flask that retains pressure, and heat the compounds overnight in an oil bath. At this time we would also record the temperature and time to figure out what are the ideal conditions that generate the most yield. This is crucial because if the conditions are not ideal, your reaction will not synthesize the compound you want but instead another.

Yes, I will be continuing the research once school opens. My goal is to synthesize this drug, do biological testing, and publish a paper before I finish my undergraduate. When school opens for the Fall Semester I will continue with the synthesis and try to take down as many of the synthesis steps as possible, hopefully all the steps.

The synthesis of this drug is really important to me because publishing a paper is something I have always wanted and this is the perfect opportunity for me to do so. It also relates to what I want to do in the future which is to become a research physician. I plan to present my findings at the next Elkin Isaac Symposium and share them with an even bigger audience. I would also love to publish a detailed account of the project in a relevant scientific journal, contributing to the body of knowledge in pharmaceutical chemistry.

This experience has made a big difference in my life. I acquired troubleshooting skills which I can apply in almost any situation to help me, i have also become more patient since this is a process that requires that, it has also made me relentless and has shown me how to work smarter rather than harder. I was also able to learn some hands-on skills which are crucial when looking for jobs and applying to schools.

I would like to extend my deepest gratitude to FURSCA, the generous donors who funded my research, and Dr. Craig Streu for enabling me to pursue this project over the summer. Your assistance has been crucial in giving me the tools and guidance I need to start this important academic path. Having the chance to work on real research projects has been life-changing for me and I sincerely appreciate it!

