Efforts Towards the Synthesis of Unnatural $\beta$- and $\gamma$- Amino Acids
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During the summer of 2013, I participated in research for Dr. Carolyn Anderson. The project that I took part in was focused on the synthesis of unnatural $\beta$- and $\gamma$- amino acids. This project involves a wide range of chemical reactions and avenues of analysis, so my efforts were focused on the production of $O$-propargyloxypyridines, which can be seen as the final product of Fig. 1, and as the starting material in Fig. 3. The formation of the starting $O$-propargyloxypyridine of Fig. 3 had been observed last summer, but the final product $O$-propargyloxypyridine from Fig. 1 had not yet been observed. Efforts to synthesize this material in the summer of 2013 ultimately proved fruitless.

Because the $O$-propargyloxypyridine from Fig. 1 was not observed, my focus shifted to the production of a new diprotected amino alcohol starting material, similar to the starting material of Fig. 1. A synthesis was found for the production of a di-Boc protected amine was found in literature. I then attempted the incorporation of this di-protected amine into the amino alcohol shown as the final product of Fig. 2. Efforts to synthesize this new alcohol have proved ambiguous but continued attempts will continue on into the academic year.

Because our lab has shown the production of the starting material for Fig. 3 to be reliable, I then began to attempt the synthesis of the $N$-alkenyl pyridone shown as the product of Fig. 3. This material will hopefully prove to be a precursor for unnatural $\beta$- and $\gamma$- amino acids. Previous work to isolate this compound seemed promising, but spectral analysis was inconclusive and crude yields were difficult to reproduce. This summer I was able to reliably produce this material, and was also able to obtain spectral evidence for the existence of this compound. Our focus has now shifted in the direction of optimization of this reaction, and efforts to optimize as well as exhaustively characterize this material will continue on into the academic year.