# ORGANIC SEMINAR

## Exploring the Stereo-Induction of Intramolecular β-Substituted Dipolar [5+2] Cycloadditions


# Denver Hopkins

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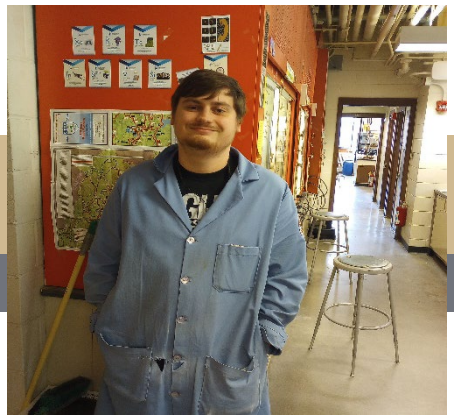


**Abstract:** Drug discovery and design have improved since the discovery of penicillin and has increased the life expectancy across the world for many diseases. However, many of the fully synthetic compounds have been flat and aromatic as the challenges and costs of enantiomeric and diastereomeric synthesis raise the barrier of entry to exploring 3-D chemical space. 7-Membered rings are privileged and difficult to access structures, and therefore not often seen in commercial drugs, making it an attractive target for method development. Targets explored by other groups include resinaferatoxin and ingenol, structures that have been explored for non-opioid pain relief and anti-cancer properties, respectively. One of best diastereoselective synthetic methods to generate 7-membered rings is the dipolar [5+2] cycloaddition. Intramolecular [5+2] forms a 6-5 fused ring system that has the 7-membered core with an additional C-ring. Using the beta position of the C-ring for stereo-induction of the rest of the molecule. Varying the length of the tether and the size of the β-substitution, we are able to control the diastereoselectivity, inducing 3 stereocenters on the 7-membered ring. We envisioned using these oxidized fused ring systems in drug design, and manipulated the products to act as the P2' ligand of HIV protease.


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