Cocaine abuse and addiction is a complex problem involving biological changes in the brain and a user can experience increased chance of heart attack, stroke, and convulsions, combined with a higher likelihood of brain seizures, respiratory failures, and, ultimately death. There are no medications currently available to treat cocaine addiction specifically. Consequently, National Institute on Drug Abuse (NIDA) is aggressively pursuing the identification and testing of new cocaine treatment medications. In this project, we studied the pharmacological approaches for cocaine abuse treatment. Recent research suggests that disulfiram (structure is shown below), a medication used to treat alcohol addiction, is effective in reducing cocaine abuse, especially in conjunction with cognitive behavioral therapy. Phenylpiperazine is the base compound from which a broad series of bioactive products are derived. Many are entactogenic drugs which induce central serotonin release. Based on the structure of disulfiram and phenylpiperazine, the hybrid molecules are designed with potential anti-cocaine activity. The synthesis of the target molecules was carried out by multi-step organic synthesis. These synthetic molecules will be evaluated and screened for their binding affinities with the receptors.