

1. PRF# 56509-ND1

2. Project Title: New Chemistry of Conjugated Cumulated Materials and Their Analogs

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Over the last year, our efforts on the grant have focused on exploring new transformations of conjugated double bonds that result in benzannulation, which we discovered during the previous year. We have sought to apply these new benzannulation transformations to complex molecule synthesis. One such application is outlined below. The realization of this new cascade process has now provided a new entry into secondary metabolites from the delavayi family including delavatine. While this was not our initial intention, it is a fortuitous outcome that greatly enhances the directions of our group's research on natural products. We have completed the synthesis of delavatine and also uncovered an interesting site-selectivity in the cross-coupling of 3,5-dibromopyranones that was discovered during the preparation of substrates for the benzannulation process. The students participating in this project have learned new techniques in chemical synthesis such as cross-coupling chemistry and have also been exposed to computational chemistry through a collaboration with the group of Prof. Peng Liu with whom we have been collaborating on computations to understand the selectivity in the cross-coupling chemistry with 3,5-dibromopyranone. With regard to my career, this PRF has added a rich new direction to our natural product synthesis studies and led to an emerging interest in our laboratory in the chemistry of pyranones and their application in complex molecule synthesis.

