

Bankhead-Coley Cancer Research Program

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*Medicinal Chemistry
University of Florida*

*2010 Program
Research Project Grant
(5-year project)*

Project Title: Chemistry and Biology of Apratoxins

Project Summary: Natural products show outstanding potential as starting points in drug discovery, especially in the quest for anticancer drugs. Over half of the currently approved anticancer drugs are derived from natural products but are directed against a small number of targets in the cancer cell. The objectives of the proposed research are the validation of a new mechanism of drug action for anticancer therapy and the assessment of the therapeutic potential of a class of marine natural products termed apratoxins, which act via this unexplored mechanism. Our preliminary data indicate that apratoxins deplete cancer cells of several receptors and other proteins that are overexpressed or overactive in cancers. Apratoxins interfere with the synthesis of these cancer-associated molecules, and we are testing the possibility that inhibition of their synthesis may be exploited for anticancer drug development. This research will characterize the mode of action, structure-activity relationship, and anticancer drug potential of the apratoxins and, more generally, this mechanism, and identify targets for rational combination therapy.