

Bankhead-Coley Cancer Research Program

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*Drug Discovery
H. Lee Moffitt Cancer Center & Research Institute*

*2010 Program
New Investigator Research
(3-year project)*

Project Title: Chemical and Biological Studies of Marine-Derived Non-Ribosomal Peptides

Project Summary: Over the last 25 years, nearly 75 percent of anticancer therapeutics approved by the FDA have been derived from natural products or are considered natural product mimics. Although the pharmaceutical industry largely abandoned natural product screening with the advent of combinatorial chemistry (the synthesis of large numbers of distinct molecules), a new pipeline of marine-derived anticancer agents has renewed interest in natural, product-based drug discovery. Synthetic organic chemistry acts as a bridge between the discovery of new chemical entities and their development into useful therapeutics. The invention of efficient methods to access scarce compounds is vital for the optimization of potency, selectivity, and pharmacological properties of anticancer leads. The aims of this project are to synthesize and investigate the biological profiles of bisebromoamide and lucentamycin A, two marine-derived peptides (short chains of amino acids) that exhibit potent anticancer activity and feature structural subunits unprecedented in the natural product literature. We will complete the first chemical synthesis of each compound to provide material for further biological studies. Our long-term objective is to develop analogues (synthetic compounds that have high chemical similarity to natural compounds) of promising peptide natural products for use as novel anticancer agents.