

James & Esther King Biomedical Research Program

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Chemistry
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2009 Program
New Investigator (3-year project)

Project Title: Studies on Spirastrellolide A to Probe the Significance of PP2A in Tumorigenesis

Project Summary: Despite many years of intensive research, cancer continues to plague our society and affect the lives of an incredible number of Americans. At this stage, many question whether it will ever be possible to find a cure. To increase the likelihood, it is necessary to study novel chemotherapeutics and previously unexplored targets for these agents. Nature is an incredible source of potential leads, with new natural product molecules identified regularly. These new compounds often show promising anti-cancer activity, but are only available from natural sources in extremely small quantities. Synthetic organic chemists bridge the gap between the identification of these compounds and the ability to study them as potential treatments. The research outlined in this grant aims to study the natural product spirastrellolide A. This compound is a potent and selective inhibitor of enzymes involved in cell signaling, which is an important target for chemotherapy. Spirastrellolide A is an extremely complicated molecule and can only be prepared in exceedingly small amounts by the current state-of-the-art organic synthesis methods. The goals of this project are to design efficient new synthetic methods for the synthesis of Spirastrellolide A (which will also be applicable in the synthesis of many other chemotherapeutics), to prepare the compound, and to study its biological activity. The long-term objective is to find simplified analogues to be used as pharmaceuticals.