

## NOVARTIS LECTURE

**Brian Stoltz**

### **Complex Natural Products as a Driving Force for Discovery in Organic Chemistry**

Our laboratory is deeply interested in the discovery and development of new reaction methodology *en route* to the chemical synthesis of complex bioactive molecules. Over the course of the past thirteen years, research in our group at the California Institute of Technology has been initiated in the general area of synthetic chemistry, with a focus on the development of new strategies for the preparation of complex molecules, including natural products that possess interesting structural, biological, and physical properties. Concurrent to this program of target driven synthesis is a strong effort directed toward the development of new techniques and reaction methods, which will be useful for a range of applications. Typically, the complex target structure is used as an inspiration for the discovery of new reactions and technologies that may eventually be regarded as general synthetic methodology. Consequently, this approach provides access to a) novel, medicinally relevant structures, b) a general method for their synthesis, and c) new synthetic methods that will be beneficial for a host of applications.

The Stoltz group has been heavily involved in the synthesis of complex natural products such as the cyanthiwigins, quinocarcin, lemomycin, and the dragmacidins. These naturally occurring molecules possess promising biological properties ranging from activity against antibiotic-resistant bacteria, to antiproliferative, to anti-HIV action. Furthermore, they are structurally novel and are inherently a challenge to the state-of-the-art in synthetic chemistry. In the process of completing the synthesis of these important compounds, we have developed a number of new methods that enabled their access. Much of the group's methodological research has focused on new asymmetric catalytic methods for sterically congested carbon-carbon bond formation and enantioselective synthesis of quaternary carbon centers. These topics will be discussed in the lecture.