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Special Seminar

‘From Target-directed Synthesis to Reactivity-driven Methodology: Strategies to Prepare Complex Molecules’

**Thursday
Dec. 18, 2014**

3:30 p.m.

**Seminar Hall
(1315 Chemistry)**



I. A general synthetic strategy for the transtaganolide and basiloidide natural products will be presented. Our approach features an Ireland–Claisen/Diels–Alder cascade reaction that rapidly provides the stereochemically complex core common to all members of the natural product family. The unprecedented oxepinone C-Ring is constructed via palladium-catalyzed annulation of a methoxyacetylide derivative. Finally, enantioselectivity is achieved via a highly asymmetric (–)-sparteine-mediated silylation reaction. The biosynthetic implications of our synthetic efforts will be discussed.

II. The utilization of aryldiazonium cations in chiral anion phase-transfer (CAPT) reactions enables the development of several enantioselective methodologies. Addition reactions of enolate and indole nucleophiles with aryldiazonium/chiral phosphate ion pairs results in enantioselective C–N bond formation. Furthermore, these ion pairs are utilized in Palladium–Heck chemistries to achieve highly enantioselective arylation. The utility of these methods is demonstrated through the preparation of enantioenriched complex molecules including macrocycles, pyrroloindolines, and conformationally-constrained tyrosine analogues.