

Chemistry 501 Seminar

Thursday, February 2, 2012

3:45 p.m. Buehler 415

Seminar Webcast

Refreshments in Buehler 412 at 3:30 p.m.



Dr. Richmond Sarpong

Hosted by Dr. Shawn Campagna

“Strategies and Tactics Inspired by Complex Natural Products”



Introduction

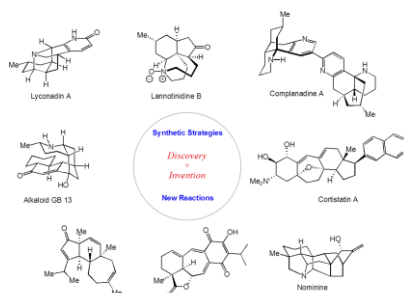
Central to our research interests is the total synthesis of natural products with a keen eye toward the development of new synthetic methods and strategies. In concert with this general program, we look to nature to inspire our choice of synthetic targets (natural products) and some of our strategies (e.g., bio-mimetic approaches) to natural product synthesis. The compounds that we synthesize in our laboratory may ultimately become important as tools to study biological systems or provide a starting point for the development of therapeutics.

The challenge of a total synthesis provides a unique opportunity to test the limits of synthetic methodology and to invent new reactions. The formation of carbon-carbon bonds (C-C bonds) is of fundamental importance to synthetic organic chemistry. Our group seeks to address some of the current limitations in synthetic organic chemistry by defining new directions for C-C bond formation and then validating our methodology in the arena of complex molecule synthesis. In this regard, we are interested in (A) C-C bond forming processes that are coupled with the energetically 'downhill' events of strain release and aromatization to provide new strategies to access natural product motifs, (B) the generation of metal vinylidenes under mild reaction conditions as a new entry into C-H functionalization and (C) novel access to reactive intermediates such as metallo-carbenoids and radicals. Ultimately, we anticipate that our interests will evolve, depending on a student's interest or fascinating new transformations that we encounter.

Among the natural products currently of interest in our group are the teleocidin B family of indole alkaloids (potent protein kinase C tumor promoters), the cyathane diterpenoids scabronine A and erinacine E (active stimulants of nerve growth factor biosynthesis) and the trichothecane sesquiterpenoids verrucarin A and saratoxin H which are mycotoxins that also possess cytotoxic properties.

Abstract

Despite the growing belief that “we can synthesize any organic molecule we want,” there still remains a need to *develop new strategies and methods* to make organic synthesis more efficient. Natural products provide intricate problems that challenge us to make advances in this regard. Several themes, and their application to the synthesis of the icetexane diterpenoids, the cortistatin steroidal alkaloids, C-19 norditerpenoid alkaloids and several *Lycopodium* alkaloids, will be discussed.



Website: <http://chem.berkeley.edu/faculty/sarpong/index.php>