2009-2010 POCC Lecture Series

February 25, 2010 at 8:00 PM

Prof. David Gin

Memorial Sloan-Kettering Cancer Center

"Synthesis of Vaccine Adjuvants and Bioactive Alkaloids"

Carolyn Hoff Lynch Lecture Hall
Chemistry Building, University of Pennsylvania

The Philadelphia Organic Chemist's Club

POCClub.org

David Gin received his BSc in Chemistry at the University of British Columbia in 1989, where he performed summer undergraduate research under the direction of Prof. Tom Money. In 1989, he began his graduate studies in synthetic chemistry at the California Institute of Technology under the direction of Prof. Andrew Myers. After taking his PhD in 1994, he held a two-year NSERC postdoctoral appointment at Harvard under the guidance of Prof. E. J. Corey. Gin began his independent academic career in 1996 at the University of Illinois at Urbana-Champaign, where he remained for 10 years in the Chemistry Department, establishing a research program in natural product synthesis and reaction methodology development. In 2006, he moved his laboratory to the Memorial Sloan-Kettering Cancer Center, where he is currently Member and Tri-Institutional Professor. Gin's research program focuses on the chemical synthesis of complex carbohydrates and bioactive alkaloids. Specific areas of his research program include the development of glycosylation reactions for the synthesis of novel adjuvants for cancer and infectious disease vaccines, as well as the development of hetero-annulation reactions for the synthesis of anti-tumor and anti-viral alkaloids.

Abstract:

(I) QS-21, natural product saponin, is currently the most promising adjuvant for immune response potentiation and dose-sparing in several experimental vaccine therapies. Melanoma, breast cancer, small cell lung cancer, prostate cancer, HIV-1, and malaria are among the numerous maladies targeted in several recent and ongoing vaccine clinical trials using QS-21 as a critical adjuvant for immune response augmentation. Recent synthetic efforts directed at the chemical synthesis and evaluation of adjuvant active QS-saponins will be described.

(II) The genera of *Aconitum* have long been recognized as rich sources of biologically active diterpene natural products. In particular, several members of the C19-diterpene family of aconitine alkaloids are potent modulators of voltage-dependent sodium ion channel activity. Synthetic efforts directed toward this class of natural products will be described.