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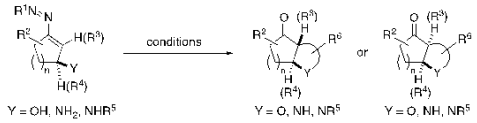
Stereocontrolled synthesis of chiral *N*- and *O*-heterocycles

Nitrogen heterocycles are among the most important structural motifs found in natural products, drugs and related compounds. While many nitrogen-containing natural products contain chiral nitrogen heterocycles, relatively few drugs do despite being chiral themselves. In the latter case, this limitation is due in large part to a lack of reliable, effective and broadly applicable methods for the preparation of such heterocycles. However, as drug development moves away from the use of unsaturated (flat), structurally simple achiral compounds and seeks out more stereochemically sophisticated chiral compounds having higher degrees of saturation, the need for methods for the synthesis of chiral nitrogen/oxygen heterocycles has become increasingly important. In response to this, we have undertaken a research program aimed to the use of dipolar 3-hetero-functionalized azoalkenes for the synthesis of various saturated and partially saturated chiral nitrogen/oxygen heterocycles via novel annulation strategies. In this seminar, we will describe a variety of methods that we have been developed for the preparation of different 3-hetero-functionalized azoalkenes and their use in dipolar coupling reactions leading to a range of chiral nitrogen/oxygen heterocycles.



Biography

Don M Coltart has obtained his Master's degree from the University of Manitoba under the supervision of Professor James L Charlton and then joined the research group of Professor Derrick L J Clive at the University of Alberta where he obtained his PhD. His Post-doctoral work was conducted at the Memorial Sloan-Kettering Cancer Center as NSERC, AHFMR, and CRI Scholar under the supervision of Professor Samuel J Danishefsky. He began his independent career at Duke University in 2004 and moved to the University of Houston in 2012 where he is an Associate Professor. His research group studies the development of methods for asymmetric carbon–carbon bond formation, the application of those methods to the total synthesis of structurally complex biologically active natural products and the study of those compounds in biological systems.

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