2021-2022 POCC Lecture Series

December 16, 2021, 7:30 PM

Virtual reception to start prior to the seminar at 7 PM

Dr. Martin Eastgate

Bristol Myers Squibb

Innovation in the Synthesis of Complex Pharmaceutical Agents

Virtual Seminar by Zoom (LINK)

The Philadelphia Organic Chemist's Club

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POCC Industrial Award Lecture, Sponsored by PharmaBlock

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Abstract: Modern pharmaceuticals are both increasingly complex and increasingly diverse. Today's clinical candidates often contain challenging stereochemistry, unique molecular architectures, and uncommon heterocyclic frameworks; they range from small molecules to natural products, peptides, oligonucleotides, antibody-drug conjugates and other modalities. Developing safe, scalable and sustainable routes to molecules, in the context of increasingly short development timelines, requires an approach focused on maximizing impact through innovative chemical solutions– so called 'disruptive innovations'. However, increases in molecular complexity bring new challenges to the decision-making process, complicating our ability to identify the synthetic strategies which will produce the most sustainable outcomes. These decisions can be aided by predictive decision-making tools, cognizant of potential environmental impact, and recent advances have begun to establish such methodologies. This presentation will cover the synthetic strategies and chemical innovations developed to address several clinical candidates from the Bristol-Myers Squibb portfolio. Our approach has led to the invention of several new synthetic approaches, new chemical methods, and new concepts in predictive data analytics.

Bio: Martin obtained his bachelor's degree in Chemistry from the University of Surrey, UK (1999), graduating with first class honors. He received his doctoral degree in Organic Chemistry (2002) from the University of Cambridge, UK, working under the direction of Dr. Stuart Warren. His thesis research involved sulfur participation chemistry, specifically the generation of thiiranium ions under basic conditions and their use in pyrrolidine synthesis. Martin then carried out post-doctoral research with Prof. Scott E. Denmark, at the University of Illinois Urbana-Champaign, working on the Lewis-base activation of Lewis-acids and understanding ligand-field theory in hyper-valent silyl cations. In 2005 Martin joined Bristol-Myers Squibb and is currently Executive Director, Head Chemical Research, in Chemical Process Development (CPD). Martin has led multiple teams to develop novel approaches to complex molecular systems, designing commercial approaches to important drug candidates (such as the HIV attachment inhibitor Fostemsavir, BMS-663068). Martin is currently the Chair of the Early Portfolio governance, accountable for CPD development strategy for all small molecule programs and commercial route selection. Martin leads CPDs SM discovery interface, chemistry recruiting, is site-Chair for the BMS Unrestricted-Grant Committee, coordinates academic consulting and the BMS-Scripps academic collaboration – being a JRC member of the collaboration. Additionally, Martin is accountable for CPDs external development activities, including the CDAS-BBRC (BMS-Biocon Research Center in India) where he coordinates the development and delivery of small-molecule compounds for IND-tox/FIH. Martin is a member of the Scientific Advisory Board (SAB) of Asymchem Life Sciences Inc, the Editorial Advisory Board (EAB) for the ACS journal Organic Process Research and Development (OPRD), is on the Board of Directors for Organic Reactions and is a Fellow of the Royal Society of Chemistry (FRSC). Martin has co-authored multiple (>70) peer reviewed publications, is a co-inventor on several (>15) patent applications and has been invited to give more than 90 lectures at conferences and Universities world-wide. Martin has been the recipient of several awards including the GlaxoSmithKline Post-Doctoral Fellowship in Organic Chemistry; was selected as a 2011 ACS Young Investigator; was a 2017 McElvain lecturer at the University of Wisconsin; was the inaugural recipient of the 'Industrial Chemistry Award' from the International Society of Heterocyclic Chemistry, and in 2019 won both the 'Organic Industrial Chemistry Award' from the Royal Society of Chemistry and the 'Ondetti & Cushman Award' from Bristol Myers Squibb R&D.