INNOVATION IN THE SYNTHESIS OF COMPLEX PHARMACEUTICAL COMPOUNDS

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Modern pharmaceuticals are increasingly complex.[1] Todays clinical candidates often contain challenging stereochemistry, difficult molecular architectures and uncommon heterocyclic frameworks, wherein the disposition of ring heteroatoms produces unexpected reactivity patterns. Developing safe, scalable and innovative approaches to these molecules, in the context of increasingly short development timelines, requires an approach focused on creative chemical solutions – those that have significant impact to efficiency, greenness and cost – so called 'disruptive innovations'.[2]

This presentation will cover the synthetic strategies, and chemical solutions, developed to overcome the challenges posed by some of the complex molecules within the Bristol-Myers Squibb portfolio. Our strategy for inventing *de novo* synthetic strategies has led to the discovery of several new synthetic methods, such as an approach to the regioselective synthesis of 1,4-disubstituted imidazoles,[3] the direct imidation of arenes[4] and the regioselective C2-halogenation of nitrogen containing heterocycles[5] – work across several recent programs will be described in detail.

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