

270-ISMS-PL01 Recent Developments in Strategies and Tactics Towards Complex Secondary Metabolites Including Human-Derived Natural Products

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Prof. Carreira's (ETH Zurich) research program focuses on the asymmetric synthesis of biologically active, stereochemically complex, natural products. His research group has synthesized many bioactive natural product, relying on novel synthetic strategies. Additionally, he designed and synthesized novel building blocks for medicinal chemistry use and developed new catalytic methods. The talk will include discussion and analysis of recent natural product targets that have been synthesized. Studies of natural products present in humans highlight new opportunities for the study of human biology and the discovery of new therapies. Some of the work is highlighted in the abstract below.

Oxidized phospholipids (OxPLs) have gathered a lot of attention as highly potent regulators of various physiological functions in higher organisms. Among of them, the epoxyisoprostanes, such as EI and EC are particularly interesting, because their phosphatidylcholine-bound derivatives have been shown to play a pivotal role in the early development of atherosclerosis and other inflammatory conditions.

We have developed a novel synthetic strategy involving the rapid construction of a cyclopentenone core by means of a stereoselective C-H insertion reaction by using Rh catalyst¹⁾. Furthermore, during SAR study of EC, they identified the lactone derivative which showed the most potent anti-inflammatory activity among of them²⁾. The lecture includes an SAR study of EC and other discussions.

1) Synthesis of Epoxyisoprostanes: Effects in Reducing Secretion of Pro-inflammatory Cytokines IL-6 and IL-12 *Angew. Chem. Int. Ed.* **2013**, *52*, 5382.

2) Discovery of a Highly Potent Anti-inflammatory Epoxyisoprostane-Derived Lactone. *J. Am. Chem. Soc.* **2014**, *136*, 17382.

