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Title:	Probing the limits of C–H functionalization methods in the complex synthetic contexts of the indoxamycins and maraviroc (UK-427,857)
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Abstract:	C–H functionalization is a rapidly expanding field of chemistry that has recently begun to play a prominent role in the field of synthetic organic chemistry. As members of the Center for Selective C–H Functionalization (CCHF), our goal is to leverage the methods developed within the CCHF to showcase the power of C–H functionalization through novel approaches to natural products and pharmaceutical compounds. With this in mind, we became quite drawn to the indoxamycin family of natural products, particularly indoxamycin F. Isolated in 2009, we found the unique, bowl-like topology of the 6,5,5-tricyclic indoxamycin core to be an exciting proving ground for showcasing the power of C–H functionalization in a complex synthetic setting. Our approach targeted three key carbon-carbon bonds that could be formed using methods developed within the CCHF. Ultimately, we were able to forge the six-membered ring of the indoxamycins through utilizing two C–H functionalizations, enabling a rapid synthesis of a benzo-fused indoxamycin core. Additionally, the intriguing chemical structure of Pfizer's marketed HIV entry inhibitor, maraviroc (UK-427,857), provided another opportunity to showcase the power of C–H functionalization in a pharmaceutical context. Our approach took advantage of a simple –SO <sub>2</sub> – group to act as both a traceless directing group for C–H amination and an activating group. This strategy resulted in a successful, four-step synthesis of maraviroc from cheap and commercially available 3-phenyl-1-propanol.
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