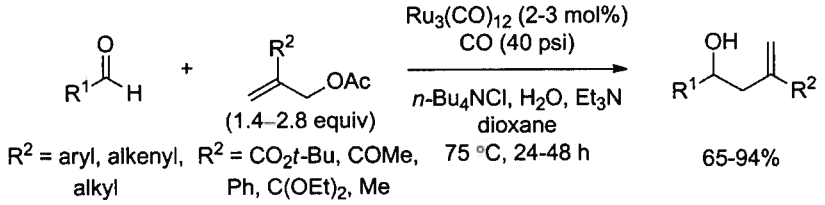
Catalytic, Nucleophilic Allylation of Aldehydes with 2-Substituted Allyl Acetates: CO as a Stoichiometric Reductant

Zachery Matesich and Scott E. Denmark

Among the methods to form carbon-carbon bonds, the allylation of carbonyl compounds has great utility on account of its general scope and the formulation of a homoallylic alcohol product, a synthetically versatile subunit. However, many of the current methods rely on the stoichiometric use of metal reagents or additives. To address this limitation, we have recently developed an allylation method that is catalytic in ruthenium and generates the homoallylic alcohol product with carbon dioxide and acetic acid being the only stoichiometric byproducts. Herein is reported a further extension of this methodology that investigates the electronic and steric effects of 2-substituted allyl acetates on the reaction scope.



Repositioning HIV Protease Inhibitors as Anti-Virulence Drugs

Tucker Maxson and Douglas A. Mitchell

Repositioning old drugs as anti-virulence therapies is a novel strategy for rapidly producing drugs that circumvent traditional antibiotic resistance. One approach is to inhibit the production of crucial toxins, providing a means of directly reducing the virulence of a pathogen. The production of streptolysin S (SLS), a cytolytic toxin produced by *S. pyogenes*, was found to be inhibited by the HIV protease inhibitor nelfinavir. Initial lead development has yielded more potent derivatives of nelfinavir and allowed for the synthesis of a probe for use in target identification. The production of a related toxin in *L. monocytogenes* is also inhibited, indicating the potential of nelfinavir to be used against similar pathogens. Mouse models of infection to determine the *in vivo* efficacy are underway and will inform on the potential use of nelfinavir as an anti-virulence drug in humans.