Terminal Olefins to Chromans, Isochromans, and Pyrans via Allylic C–H Oxidation

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Oxygenated heterocycles are important synthetic targets due to their broad pharmacological activity. Herin we describe a method for the synthesis of chroman, isochroman, and pyran motifs via a combination of palladium(II) C—H activation and Lewis acid co-catalysis. For the first time, the alcohol motif was shown to be a competent nucleophile under our acidic conditions. Impressively, the reaction proceeds in good yields under simple uniform conditions irrespective to the electronic nature of the alcohol. Mechanistic insights suggest that the reaction proceeds via initial C—H activation followed by inner-sphere reductive elimination of the palladium complex.