

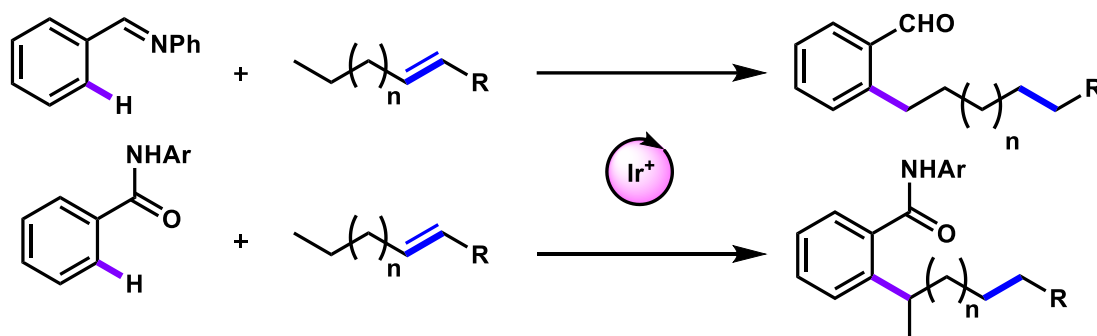
## Regioselective Distal C–C Bond Formations via Ir-Catalyzed C–H Activation along with Chain-Walking

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**Keywords:** C–H Activation, Chain-Walking, Cationic Iridium Catalyst, Regioselective, C–C Bond Formation

Chain walking strategy is a powerful tool to move alkene to a new position away from the original position. Consecutive isomerization of double bonds along a hydrocarbon chain allows the introduction of a remote functional group which is generally difficult to achieve. Since the pioneering work of the palladium-catalyzed cycloisomerization of 1,*n*-dienes published by Kochi and Kakiuchi,<sup>1</sup> many groups have utilized chain-walking strategy in organic synthesis.<sup>2,3</sup> On the other hand, one of the most widely studied methods to connect two molecule is C–H activation. In 1993, Murai *et al.* published the insertion of alkene to a  $sp^2$  C–H bond using a ruthenium catalyst.<sup>4</sup> Yet, these two strategies did not meet until 2017.<sup>5</sup> To the best of our knowledge, there are only two reports on the cooperative strategy of C–H bond activation and chain-walking.<sup>5,6</sup>

We herein report a regioselective remote C–C bond formation via  $sp^2$  C–H activation along with chain-walking enabled by a cationic iridium catalyst. The choice of the directing group can greatly determine the mode of addition of the alkene to the product. When an imino group was used as a directing group, linear products can be exclusively obtained.<sup>7</sup> On the other hand, when a carbamoyl group was used, high branched/linear ratio, i.e., >20:1, was realized. The fine-tuning of ligand for iridium catalyst can control the presented regioselectivity.



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