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A Highly Regio- and Stereoselective Cascade Annulation of Enals and Benzodi(enone)s Catalyzed by N-Heterocyclic Carbenes

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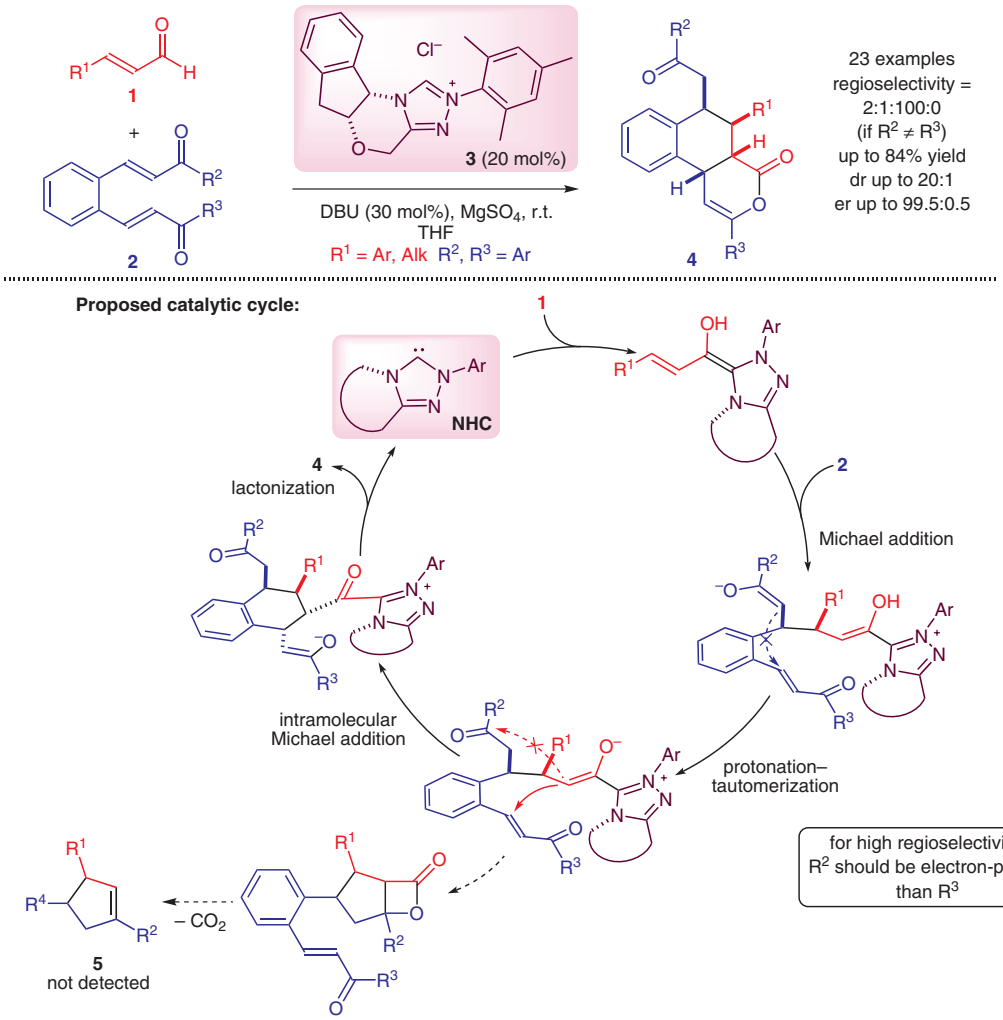
A Cascade Annulation of Enals and Dienones



Significance: The authors describe a highly regio- and stereoselective cascade annulation of enals **1** and benzodi(enone)s **2** catalyzed by chiral NHCs. By controlling the electronic properties of the dienones, regioselective annulations of unsymmetrical dienones could also be achieved. The previously reported cyclopentene derivatives **5** were not detected (see also: V. Nair et al. *J. Am. Chem. Soc*. **2006**, *128*, 8736).

Comment: In 2009, Gravel and Sanchez-Larios reported NHC-promoted Stetter–Michael cascade reactions with aldehydes and benzodi(enone)s to afford racemic indane derivatives (*J. Org. Chem*. **2009**, *74,* 7536). Herein, complex tricyclic acylated enols **4**, which contain four contiguous stereogenic centers, could be rapidly constructed with very high enantioselectivity and diastereoselectivity. Also, it would be valuable to investigate the mechanistic pathway to the products **4**, not cyclopentene derivatives **5**.

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Category
Organo- and Biocatalysis

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cascade reaction
Michael addition
dienones