ROBINSON ANNULATION

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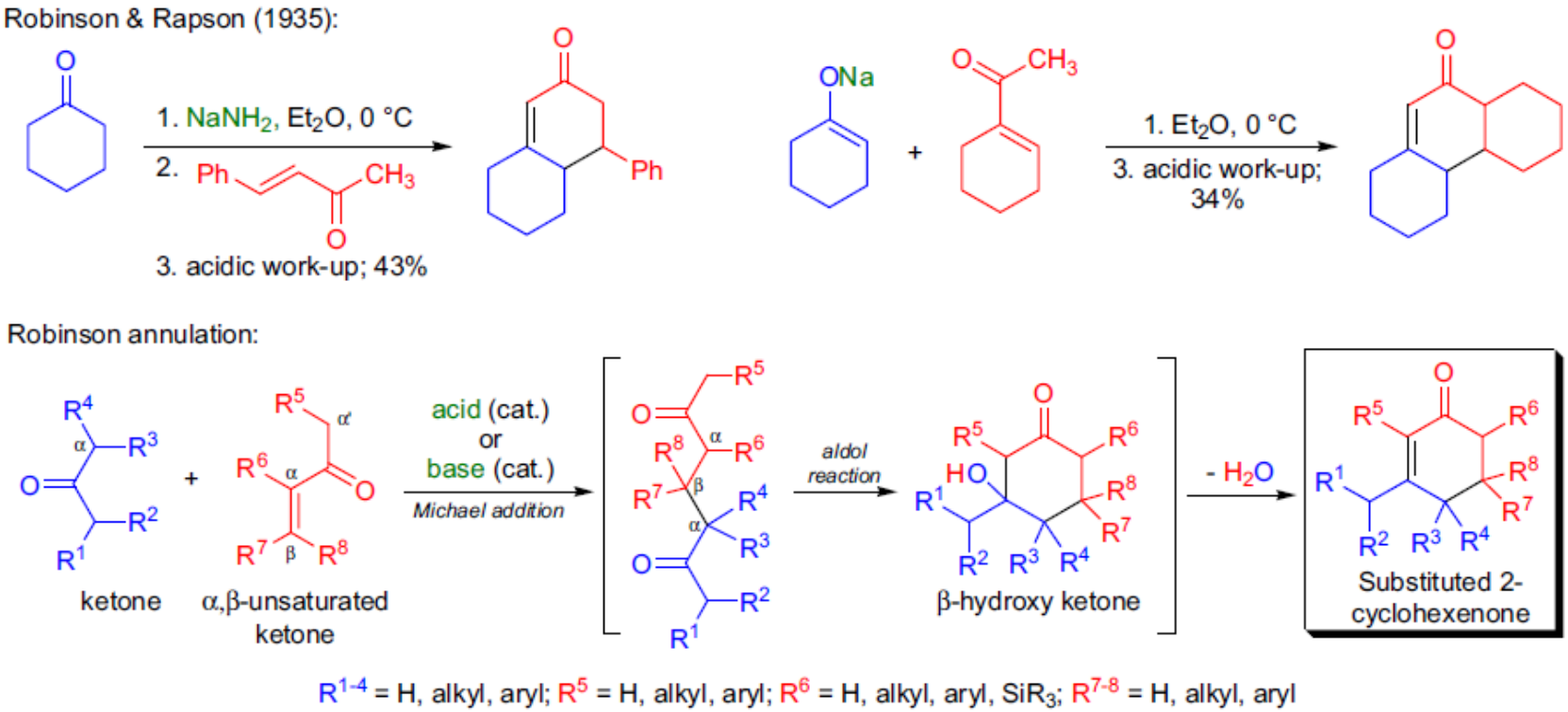
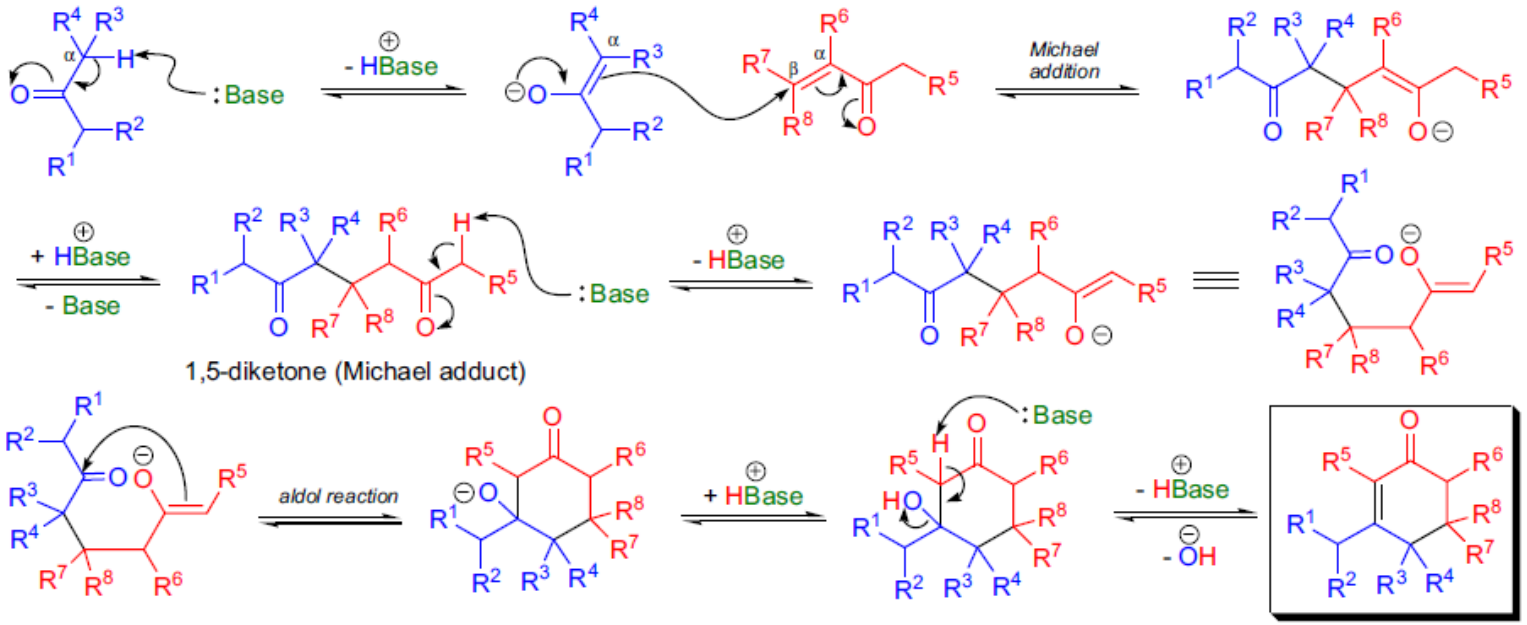
Discovery



R^{1-4} = H, alkyl, aryl; R^5 = H, alkyl, aryl; R^6 = H, alkyl, aryl, SiR_3; R^{7-8} = H, alkyl, aryl

Mechanism

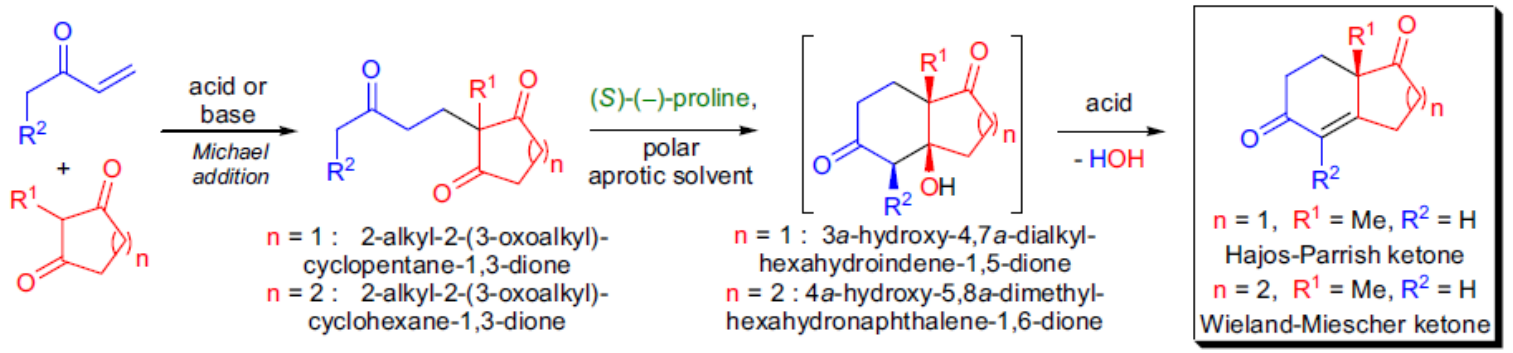

:Base
- HBase
Michael addition
+ HBase
- Base
:Base
- HBase
1,5-diketone (Michael adduct)
aldol reaction
+ HBase
:Base
- HBase
- OH

General features

- Both acid- and base-catalyzed, but predominantly conducted under basic conditions;
- Acyclic enones and cyclic ketones afford bicyclic enones, whereas cyclic enones and cyclic ketones give rise to polycyclic fused enones;
- Methyl vinyl ketone (MVK) and its various derivatives and surrogates are used most often as the enone component;

General features

- The alkylation of an unsymmetrical ketone occurs regioselectively at the most substituted α-position unless severe steric interference dictates otherwise
- The enantioselective version is known as the *Hajos-Parrish reaction*



Synthetic applications