

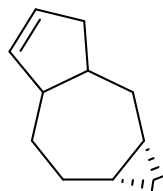
Enantioselective Total Synthesis of ()-Euphorikanin A

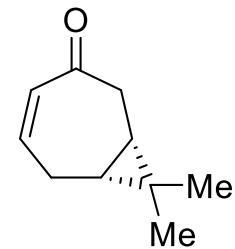
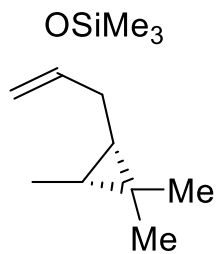
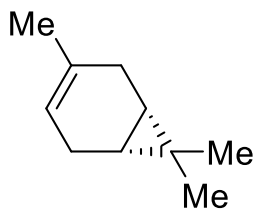
Moritz J. Classen, Markus N. A. Böcker, Remo Roth, Willi M. Amberg,
and Erick M. Carreira* *J. Am. Chem. Soc.* 2021, 143, 8261-8265.

- “ First total synthesis of (+)-euphorikanin A, an ingenane-derived natural product
 - “ Isolated in 2016 and identified as a novel diterpenoid from the roots of *Euphorbia kansui*, commonly known as kansui
 - “ Extracts of the root have been widely used in traditional Chinese medicine. (+)-euphorikanin A has been shown to exhibit cytotoxicity against two human tumor cell lines (NCI-446 and HeLa)
 - “ Features an unprecedented 5/6/7/3-fused tetracyclic skeleton
 - “ Prepared in 19 steps from (+)-3-carene
 - “ Key step is an SmI₂-mediated ketyl-enoate cyclization cascade
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Ricky Alvarado
November 16th, 2021

Retrosynthesis

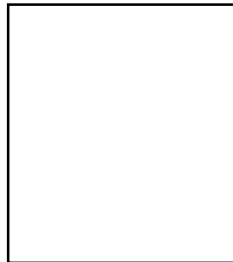
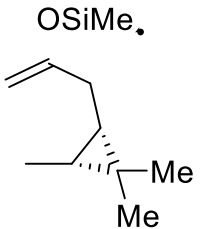




Ozonolysis and formation of silyl ketene acetal



Acid-cyclization and dehydration

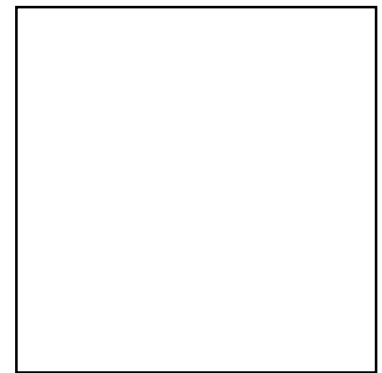
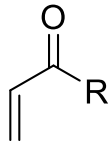


(5) Me_2CuLi
Et

Conjugate addition . Aldol addition

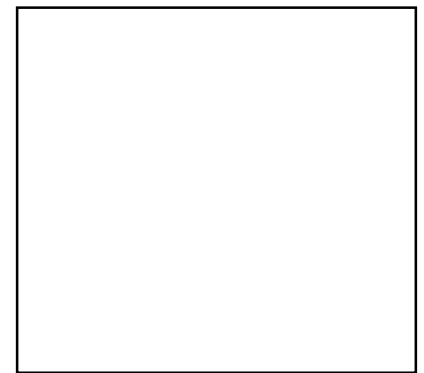
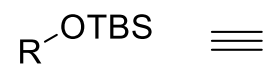
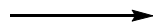
$\text{CuI} + \text{MeLi}$

|



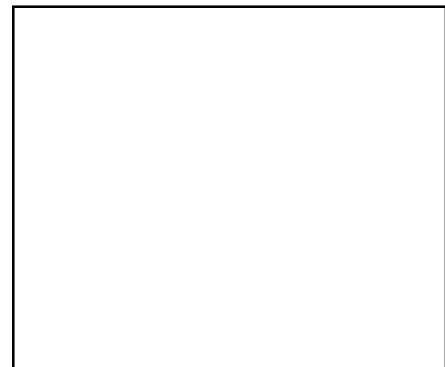
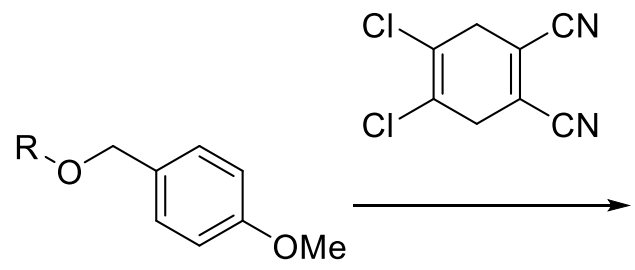
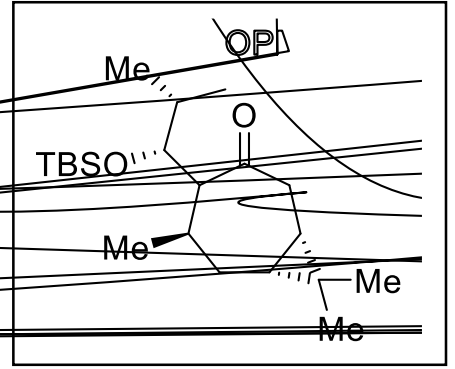
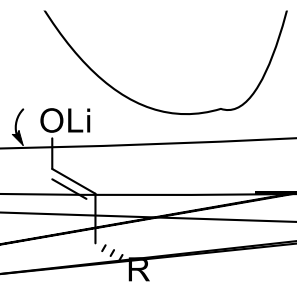
Alcohol protection with TBSOTf

Si



Enolate addition

p-OMe Benzyl Deprotection

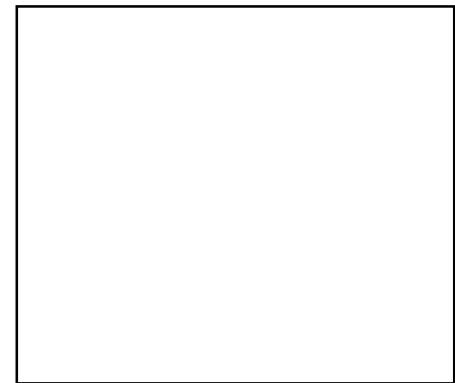
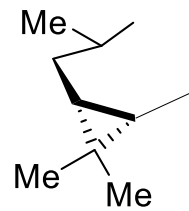


Parikh-Doering Oxidation

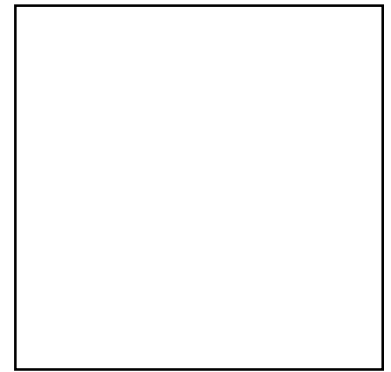




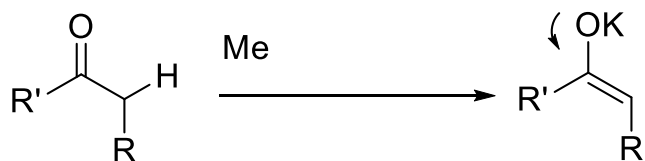
Umpolung Cyclization via Reduction with SmI₂ . Undesired Stereoisomer



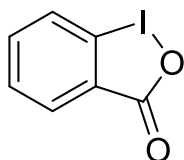
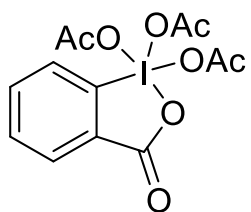
TBS Deprotection



Davis Oxidation . DMP Oxidation



Dess-Martin Oxidation



Metallation . 1,2-addition

