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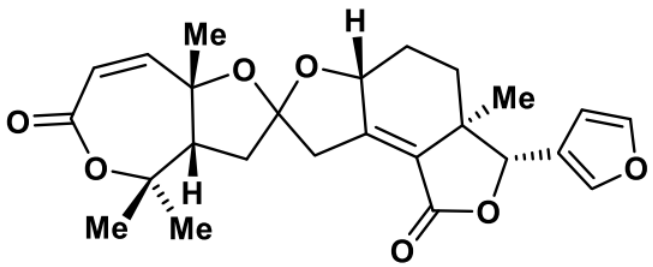
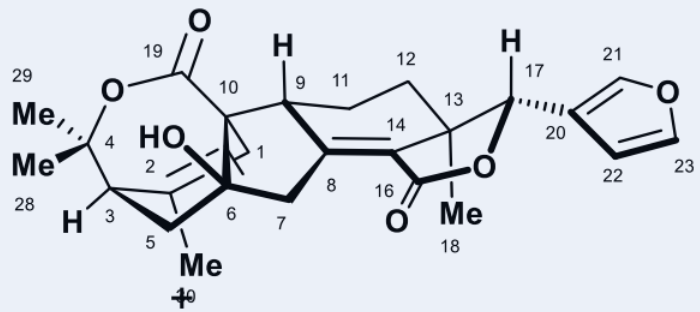
Communication

Total Synthesis of (+)-Haperforin G

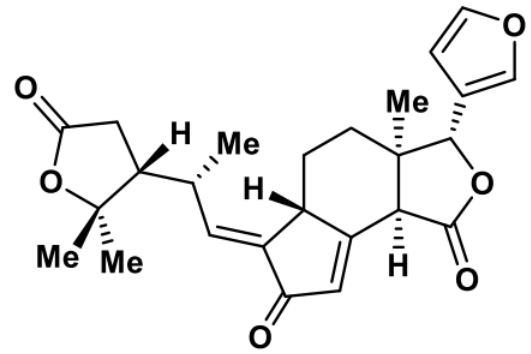
Wei Zhang, Zhenyu Zhang, Jun-Chen Tang, Jin-Teng Che, Hao-Yu Zhang, Jia-Hua Chen,* and Zhen Yang*



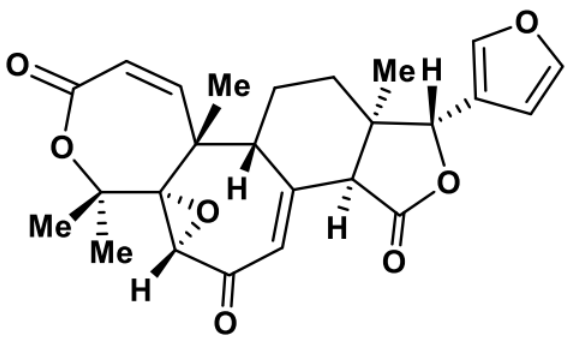
harperspinoids A (**5**)



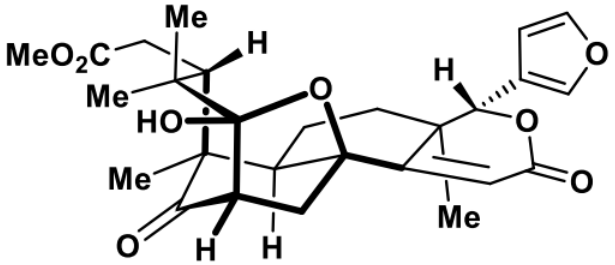
haperforin G (**6**)



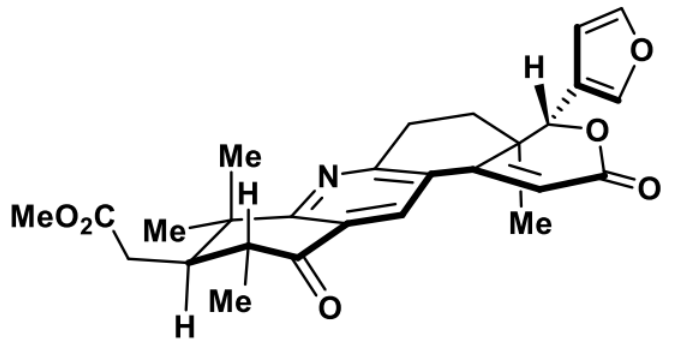
perforanoid A (**3**)



haperforin C2 (**4**)



andirolide N (**1**)



xylogranatopyridine B (**2**)

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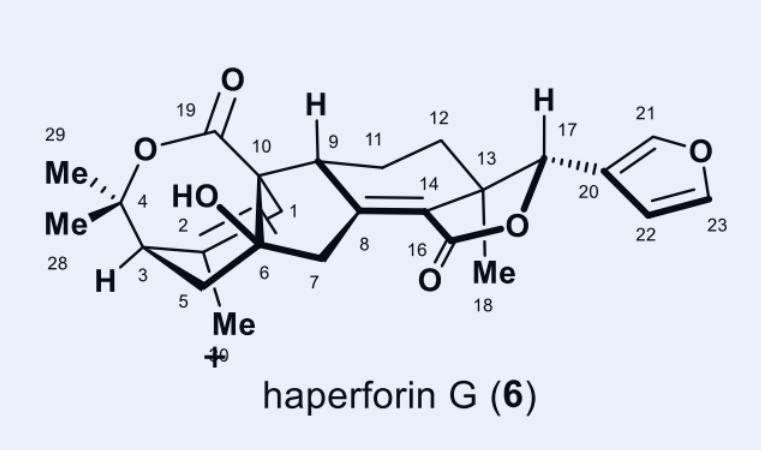


- Isolated in 2001, 37mg isolated from 25 kg of plant material.
- Potent inhibitor of human 11β-hydroxysteroid dehydrogenase type 1 (11β-HSD1)
- Treatment of metabolic disorders, such as Alzheimer's disease, vascular inflammation.

Retrosynthesis

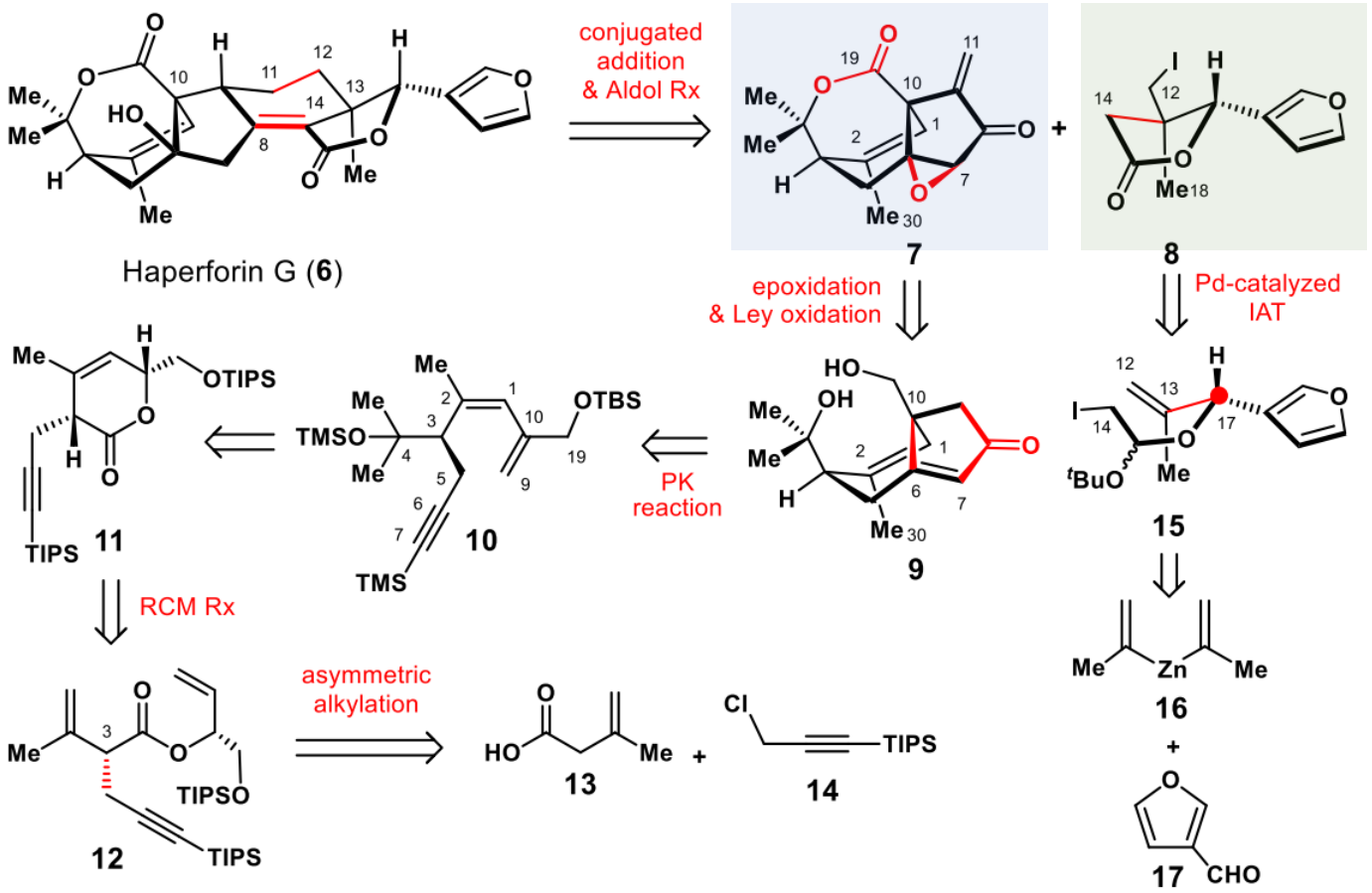
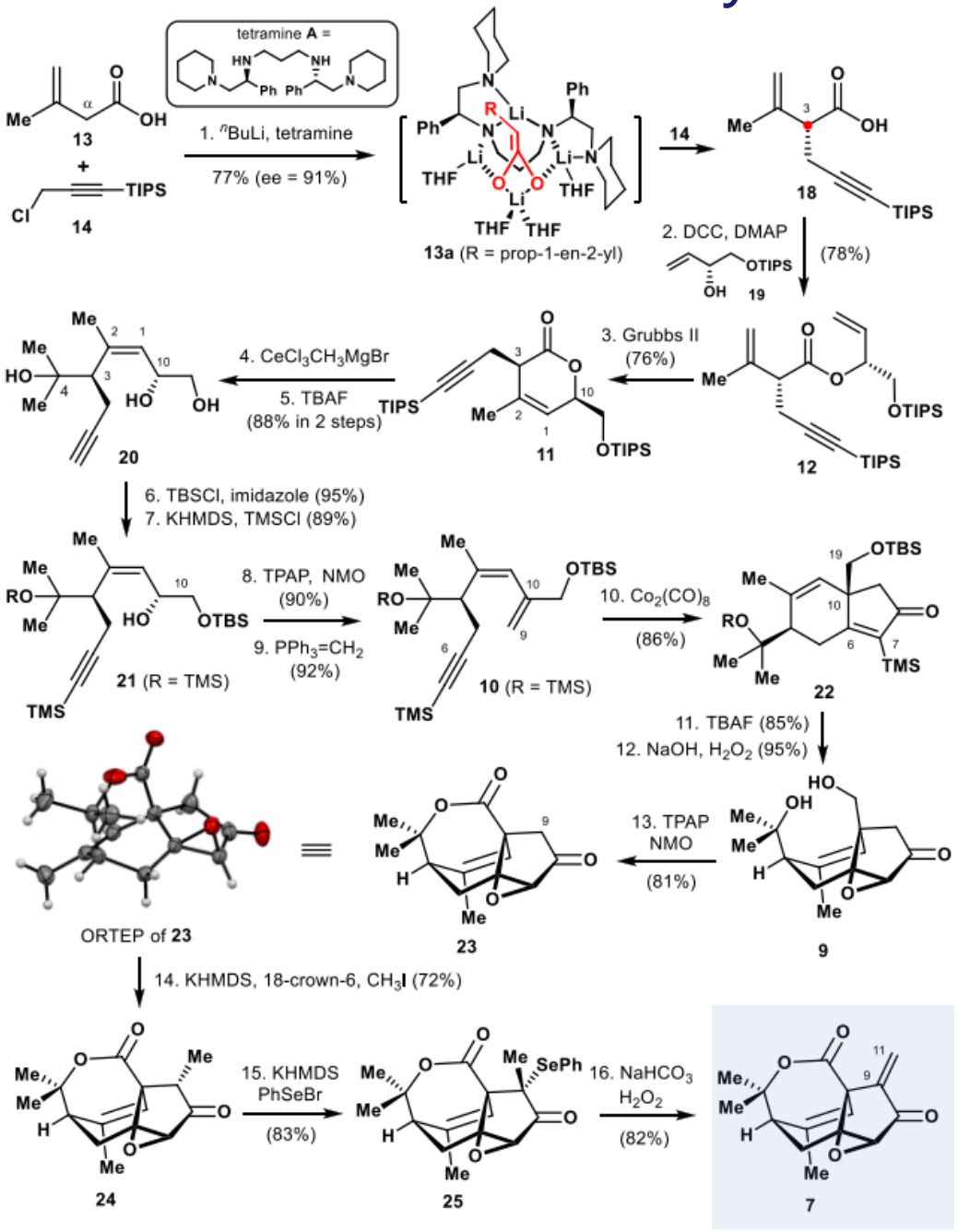
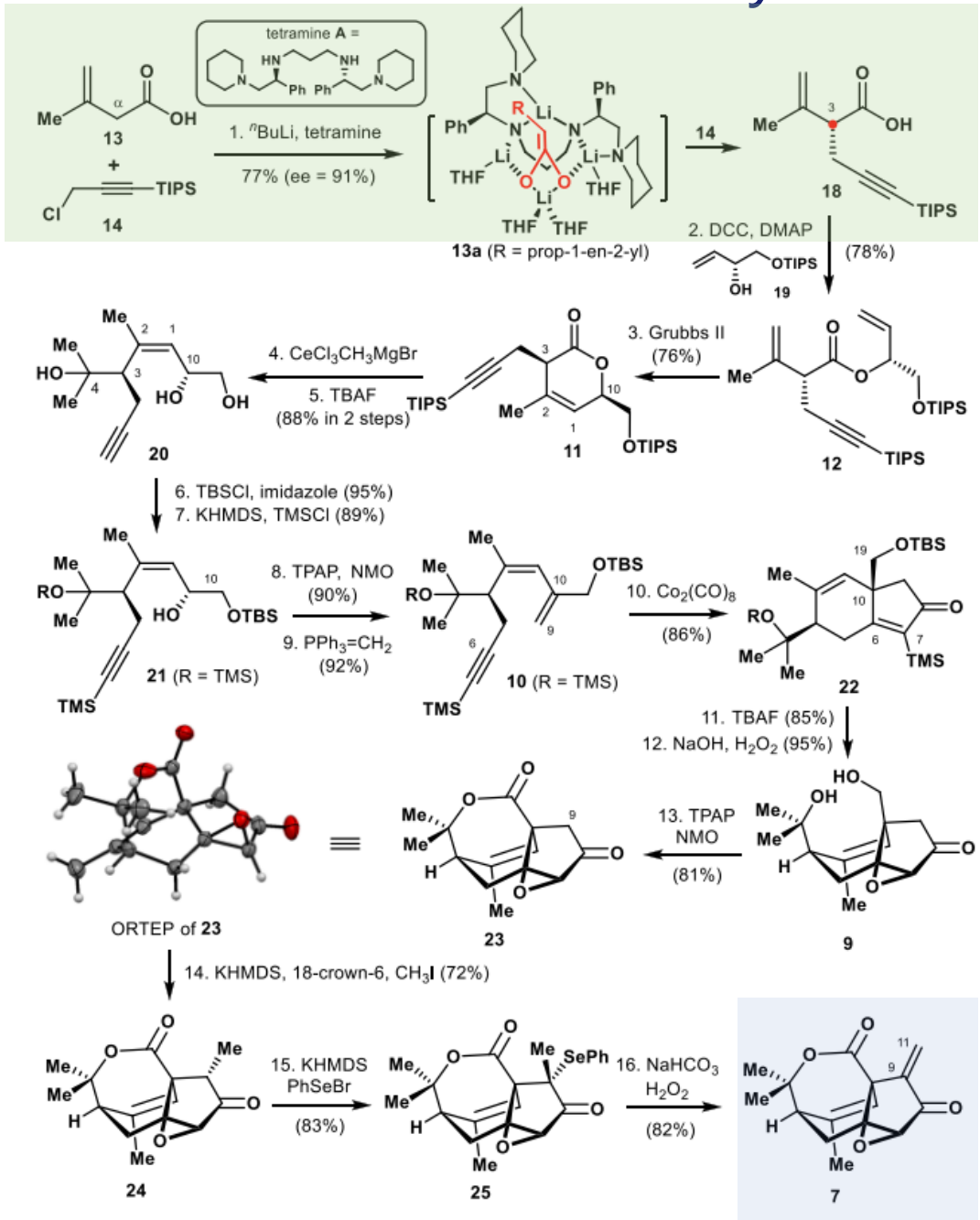


Figure 2. Retrosynthetic analysis of haperforin G.

Synthesis of Enone 7



Synthesis of Enone 7



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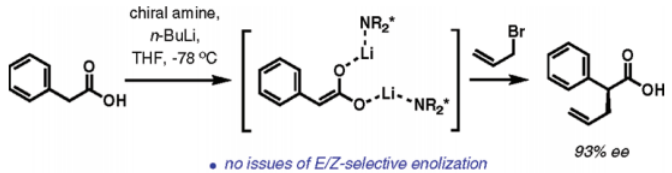
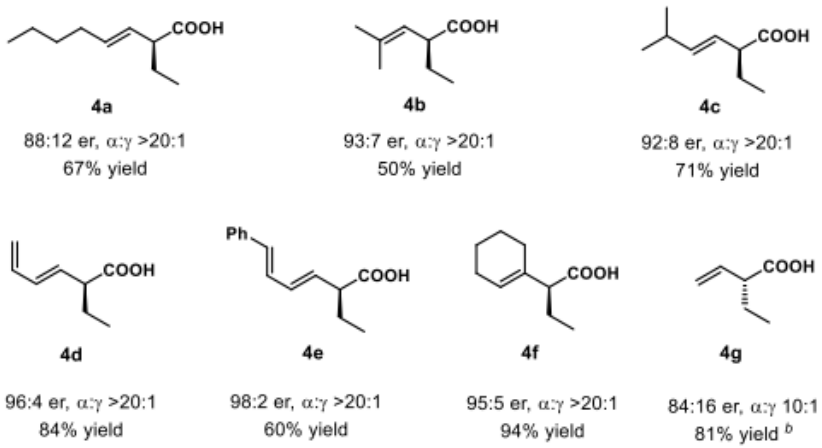
Highly Enantioselective Direct Alkylation of Arylacetic Acids with Chiral Lithium Amides as Traceless Auxiliaries

Craig E. Stivala and Armen Zakarian*



- *no issues of E/Z-selective enolization*
- *high nucleophilicity*
- *chiral aggregate directs alkylation*

Scheme 3. Scope of Aliphatic β,γ-Unsaturated Carboxylic Acids[a]



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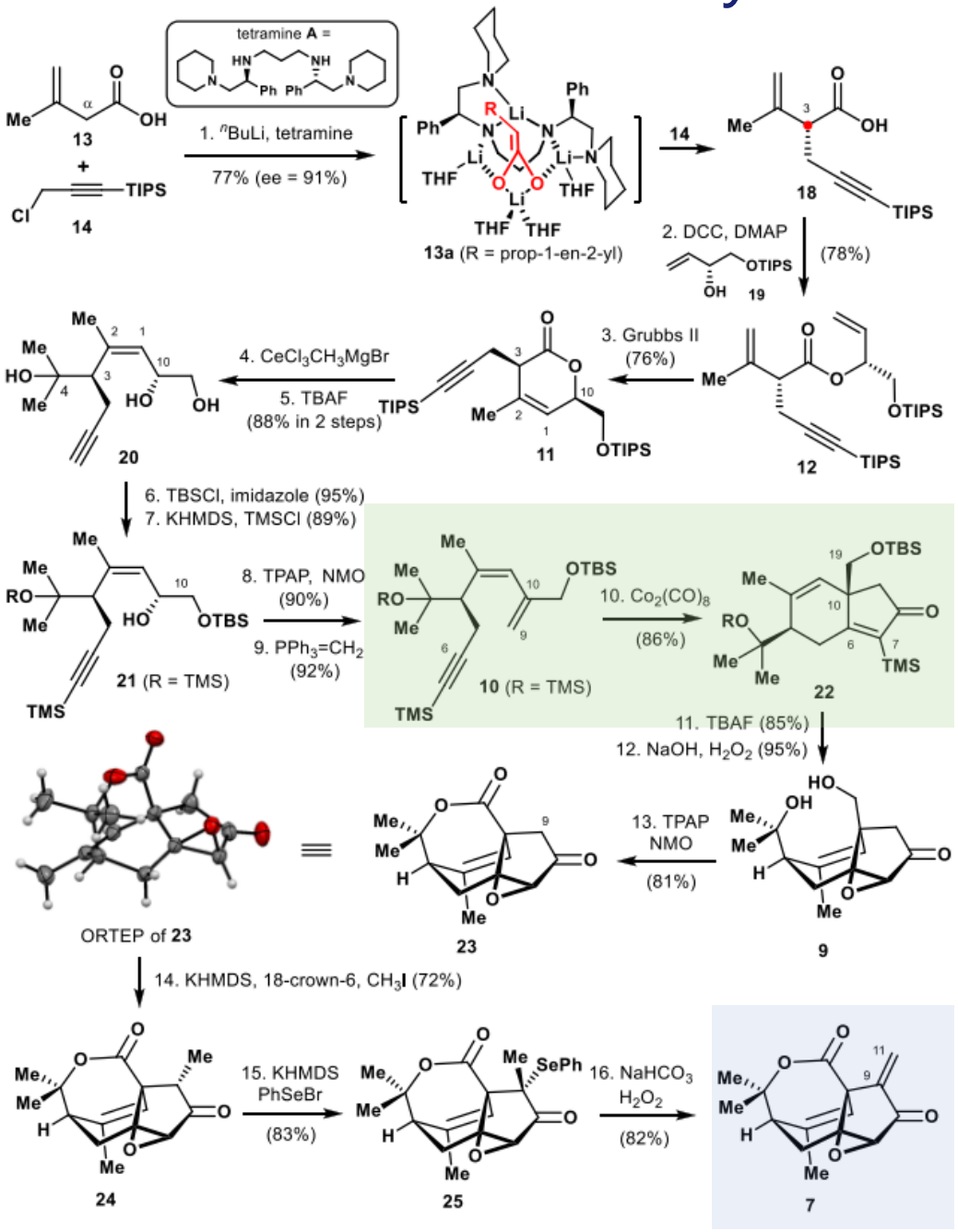
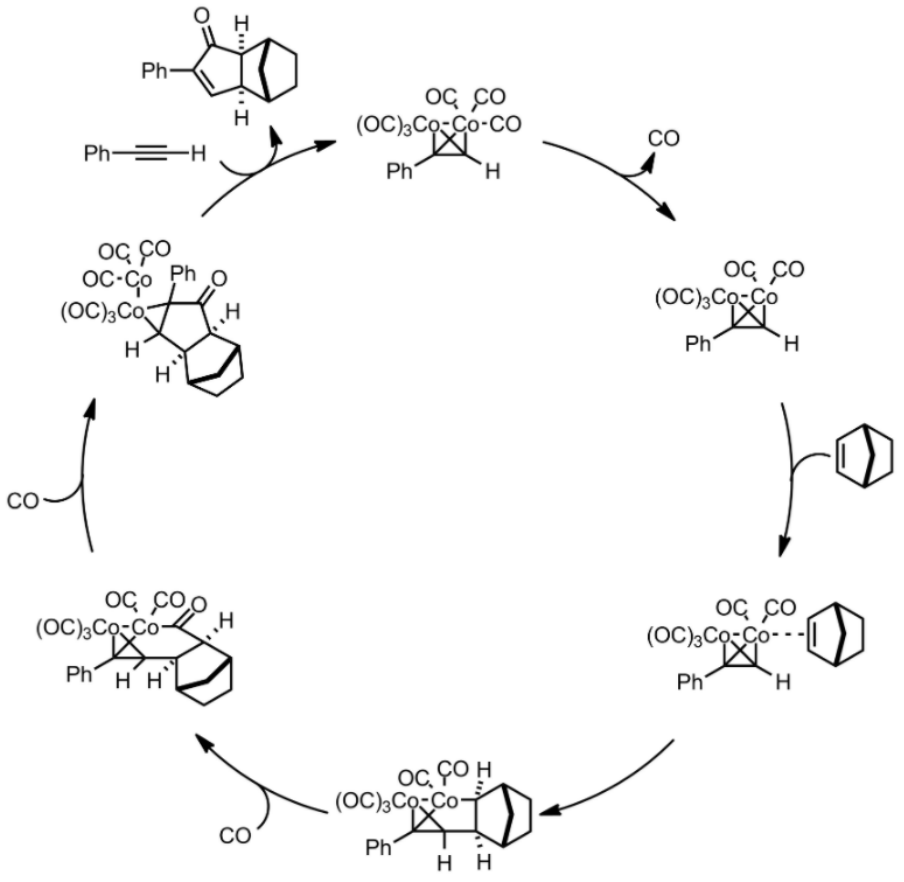
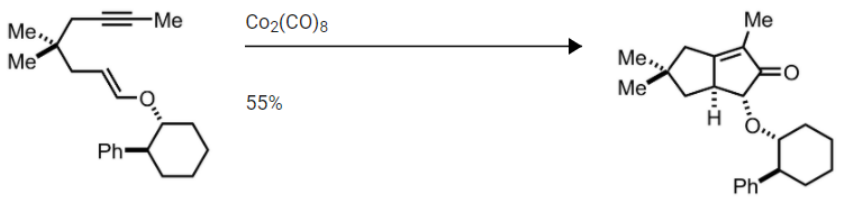
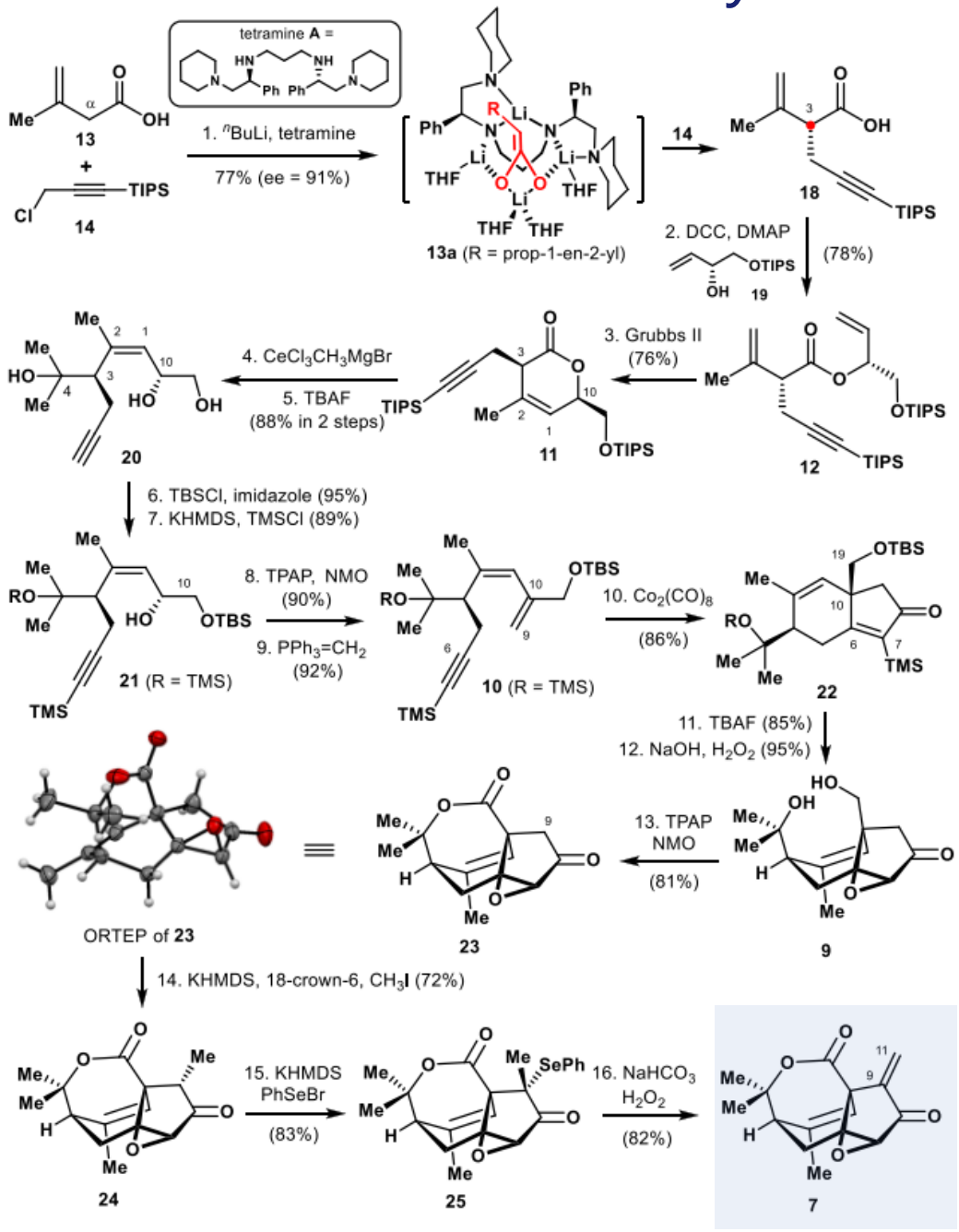


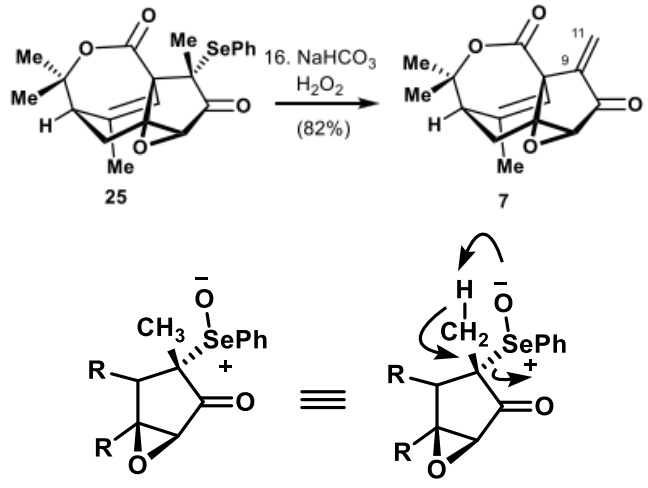
Mechanism of the Pauson-Khand Reaction

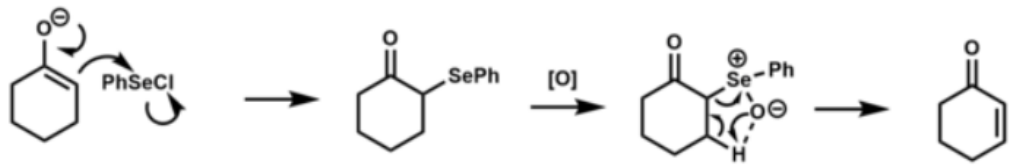




Synthesis of Enone 7

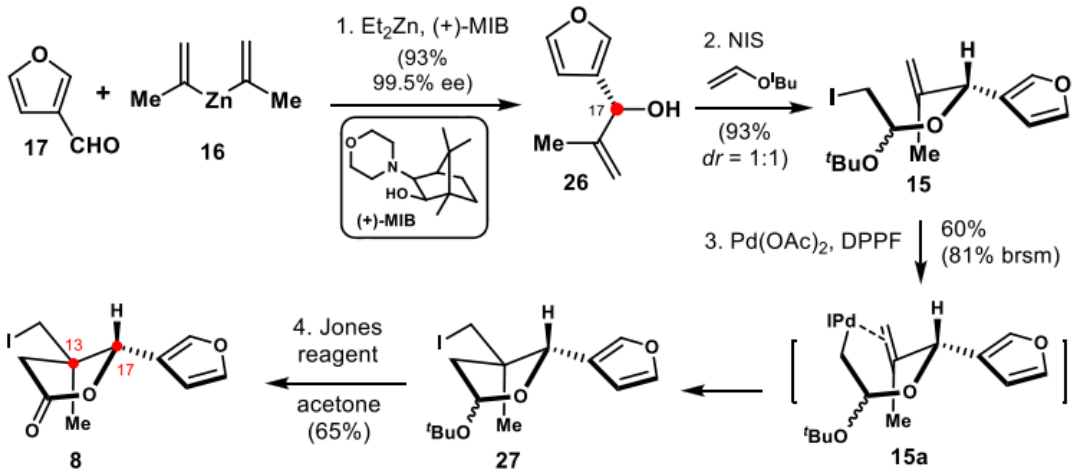






Synthesis of Iodide 8

Scheme 2. Synthesis of Iodide 8[a]



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An Amino Alcohol Ligand for Highly Enantioselective Addition of Organozinc Reagents to Aldehydes: Serendipity Rules

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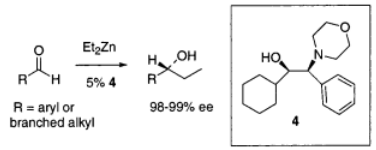
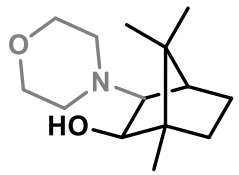
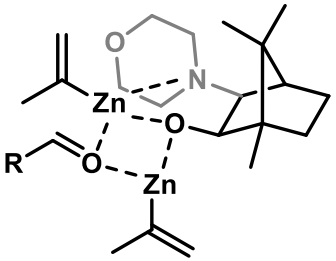
ABSTRACT

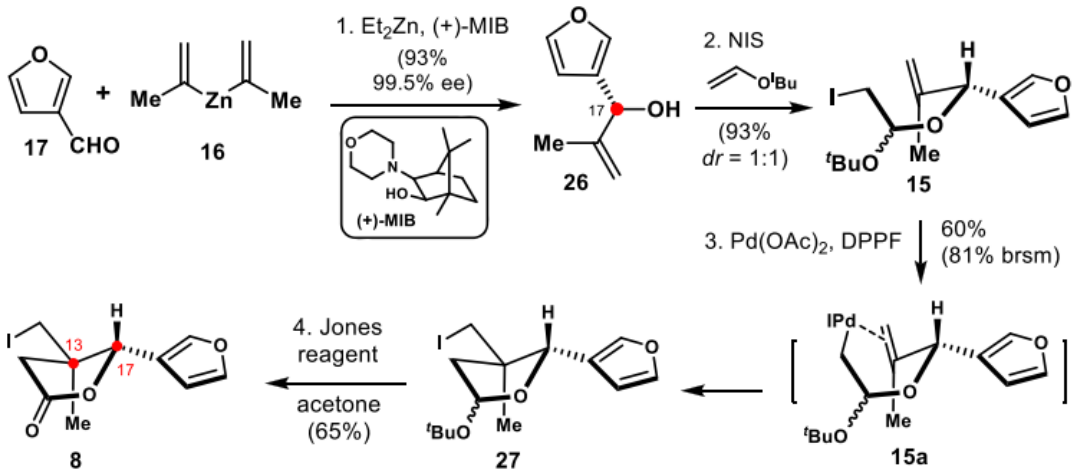






Completion of Total Synthesis

Scheme 2. Synthesis of Iodide 8[a]



IATC (iodine atom transfer cyclisation

- 20 steps, 2% overall yield from commercial starting materials
- Key features – Asymmetric alkylation, RCM, Pauson Khand and photoredox conjugate addition.

Scheme 3. Total Synthesis of (+)-Haperforin G (6)[a]