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Total Synthesis of Manzamine A and Related Alkaloids
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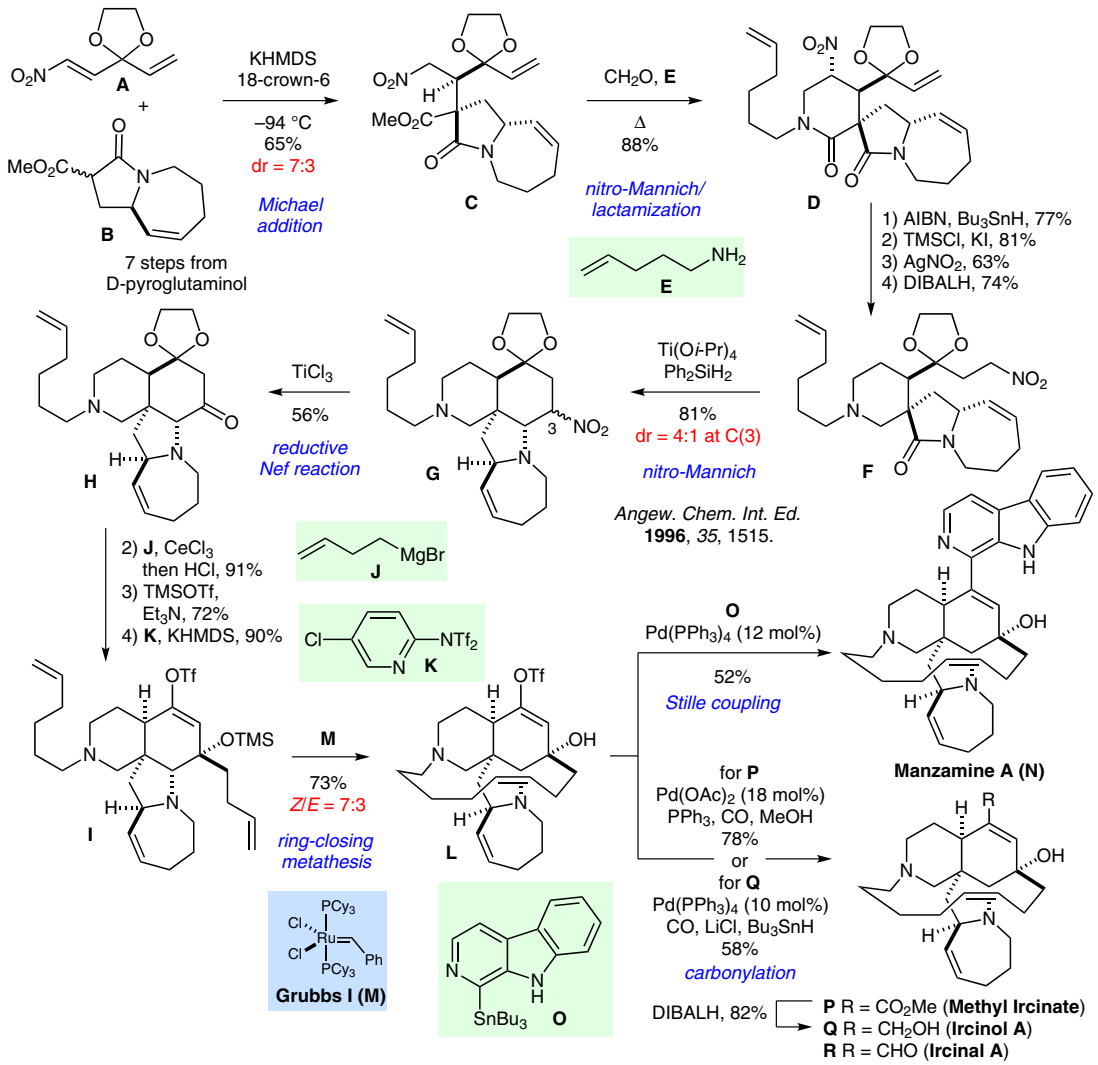
Total Synthesis of Manzamine A and Related Alkaloids



Significance: Manzamine A (**N**) is a highly structurally complex alkaloid with a wide range of biological activities. The total synthesis reported is the shortest to date, accessing manzamine A (**N**) in 20 linear steps from commercially available starting materials. The key feature of the synthesis is the use of nitro groups as handles to construct two rings of the manzamine core by nitro-Mannich reactions.

Comment: The total synthesis of manzamine A (**N**) starts with a Michael addition onto nitroolefin **A**. A series of two nitro-Mannich reactions delivers **I**, which undergoes ring-closing metathesis to construct the 13-membered ring incorporating a *Z*-double bond. Palladium-catalyzed coupling reactions on vinyl triflate **L** produce manzamine A (**N**) or the related alkaloids **P**–**Q**, alternatively.

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Category

Synthesis of Natural Products and Potential Drugs

Key words

nitro-Mannich reaction

ring-closing metathesis

Michael addition

alkaloids