Streamlined Total Synthesis of Uncialamycin and Its Application to the Synthesis of Designed Analogues for Biological Investigations

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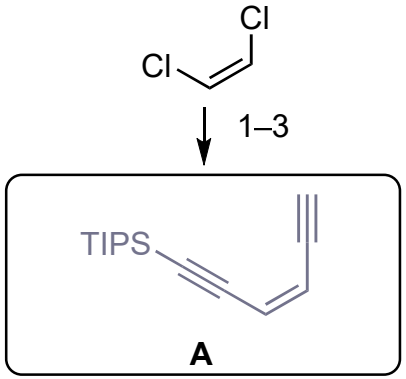
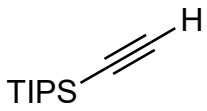


1) $Pd(PPh_3)_4$, CuI, **1**
2) $Pd(PPh_3)_4$, CuI, **2**
3) K_2CO_3



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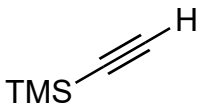
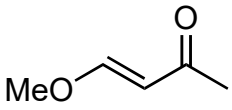


2

4) BBr_3
5) NaOH, **4**, H_2O
6) $CsCO_3$, TBAI, DMBBr
7) **5**, HCO_2H, NEt_3
8) DIBALH *then* TESCl, imH



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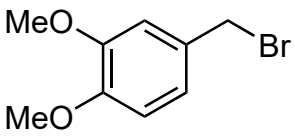
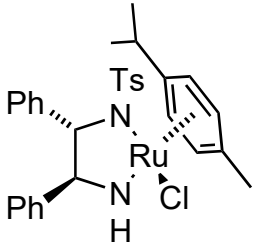


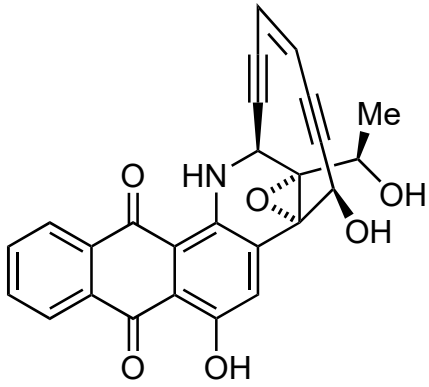
DMBBr



5

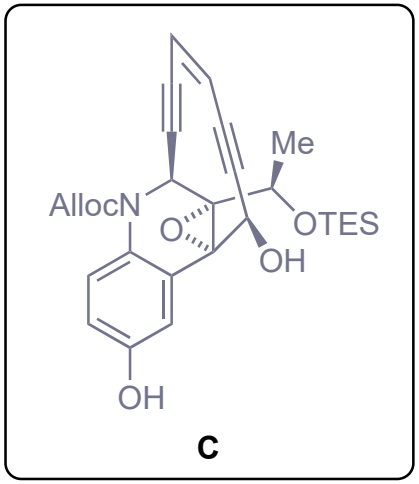
1) Name of the reaction
5) Provide a mechanism;
Name of the reaction;
Hint: a new heterocycle is formed
7) Name of the reaction

1) Sonogashira coupling
5) Pfitzinger quinoline synthesis
7) Noyori assymmetric reduction



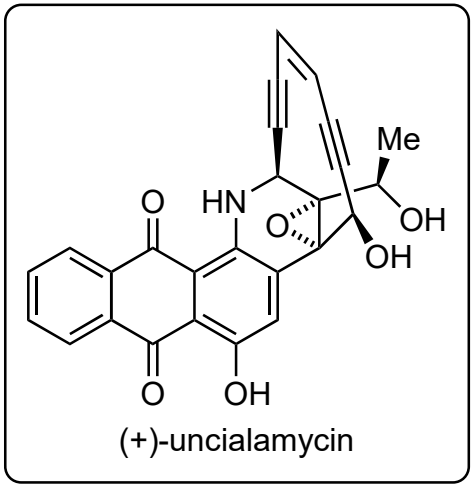
(+)-uncialamycin

9-18



C

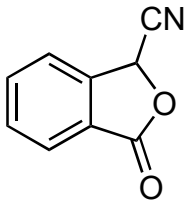
19-22



(+)-uncialamycin

9) **A**, *i*-PrMgCl *then* **B** *then* AllocCl
10) AcOH, H_2O
11) $NaBH_4$ *then* *m*-CPBA, $NaHCO_3$
12) AcCl (1 equiv.), DIPEA
13) DMP, $NaHCO_3$
14) TBAF, AcOH *then* $NaBH_4$
15) TESCl, imH *then* K_2CO_3, MeOH
16) DMP, $NaHCO_3$
17) DDQ, phosphate buffer (pH 6.8)
18) $CeCl_3$, KHMDS

19) PIDA, MeOH
20) **6**, LHMDS
21) $Pd(Ph_3)_4$, morpholine
22) 3 HF · NEt_3



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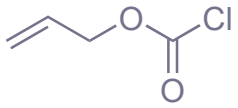
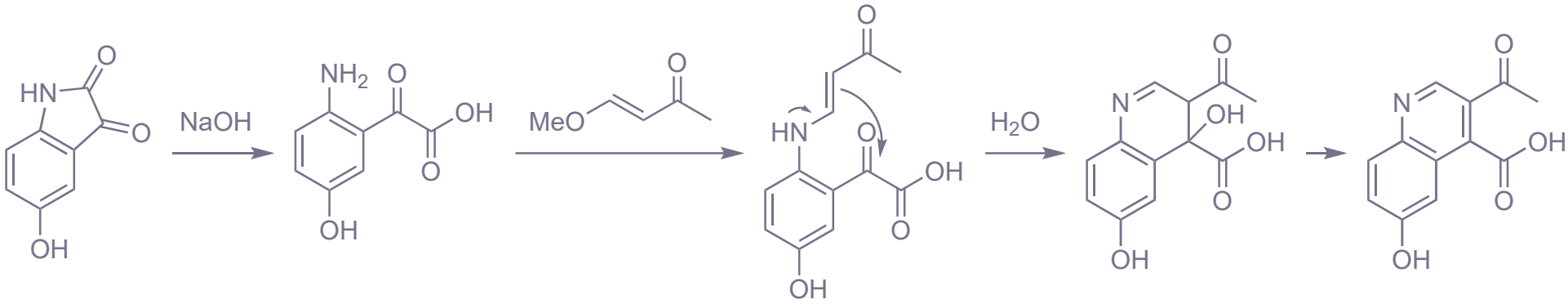
9) Structure of AllocCl

9) 

20) Provide a mechanism
Name of the reaction

20) Hauser–Kraus annulation

5)


HN
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O
OH
NaOH
NH2
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OH
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OH
MeO
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HN
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OH
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H2O
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OH
OH
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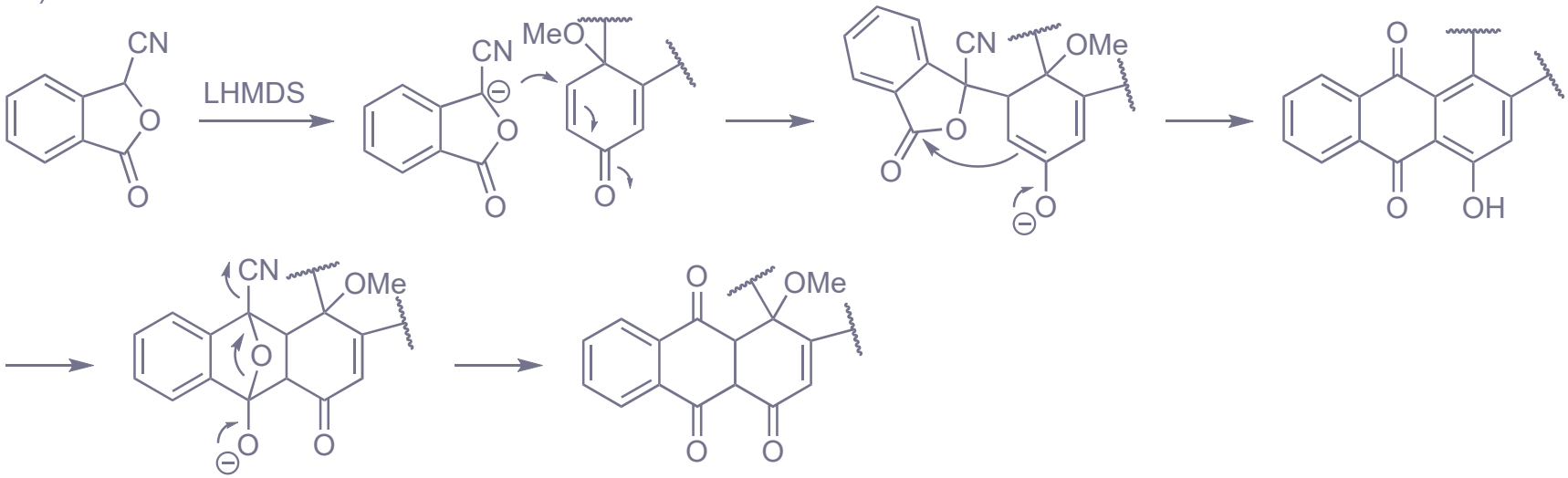
OH
OH

20)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LHMDS
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MeO
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OMe
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OH
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OMe
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