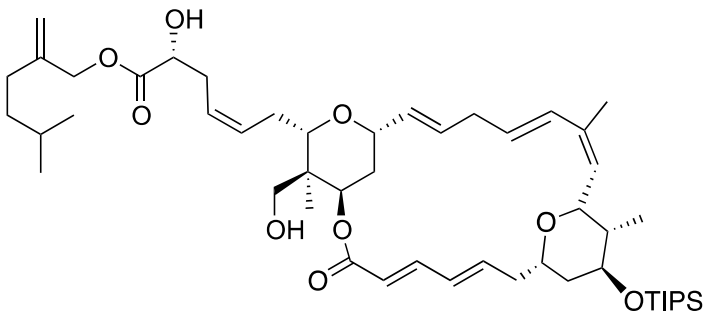
Total Synthesis of (-)-lasonolide A



(-)-lasonolide A

- Lasonolide was discovered in 1994 by McConnell as a antitumor agents from marine organisms.
- In 2002, the correct fully elucidated structure was disclosed in Lee's total synthesis.
- A more concise and efficient synthesis was developed In this work.

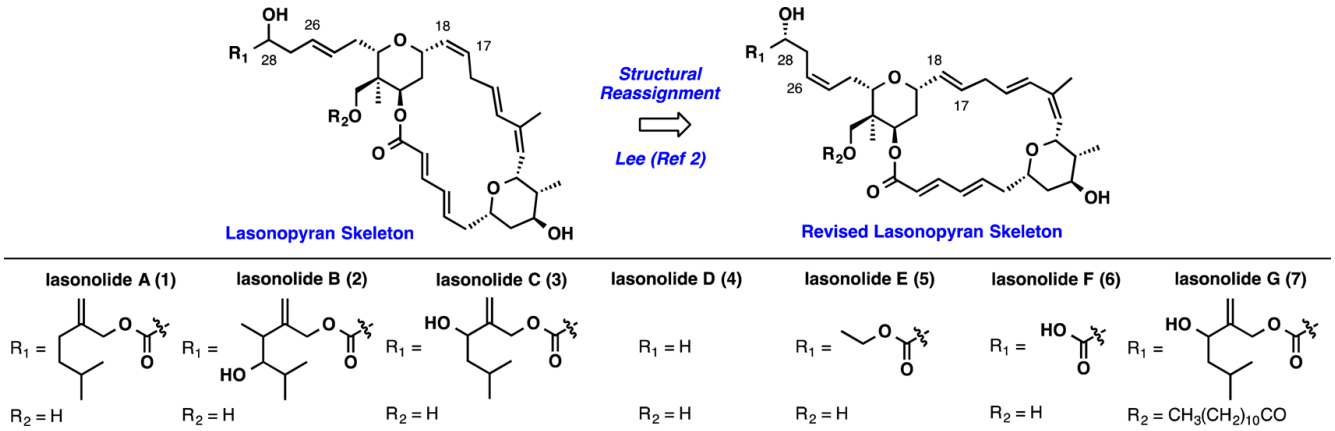
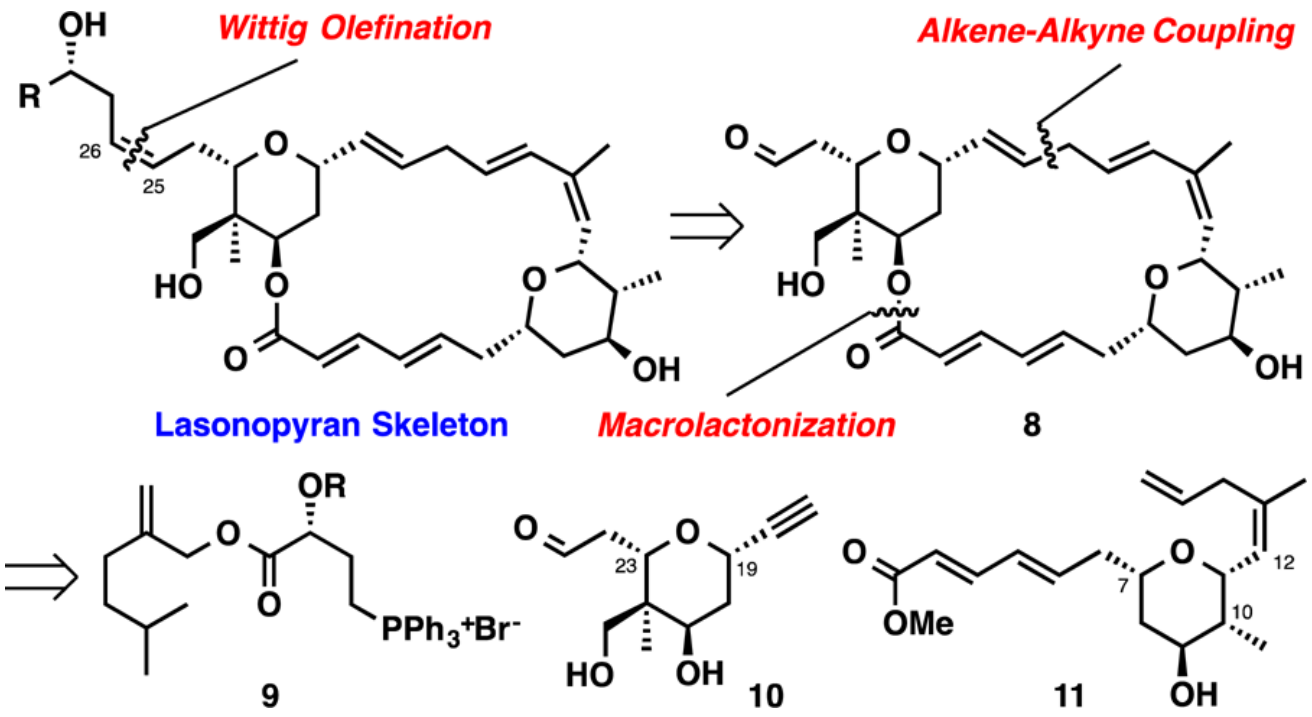


Figure1. Reassigned lasonopyran Skeleton and lasonolides analogues

Liu Research Group

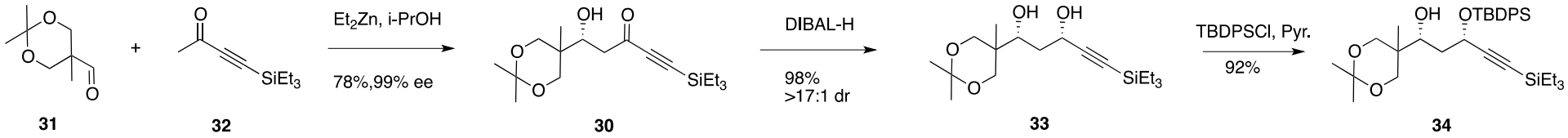
Julia Liu

Synthesis Plan for (-)-Lasonolide A

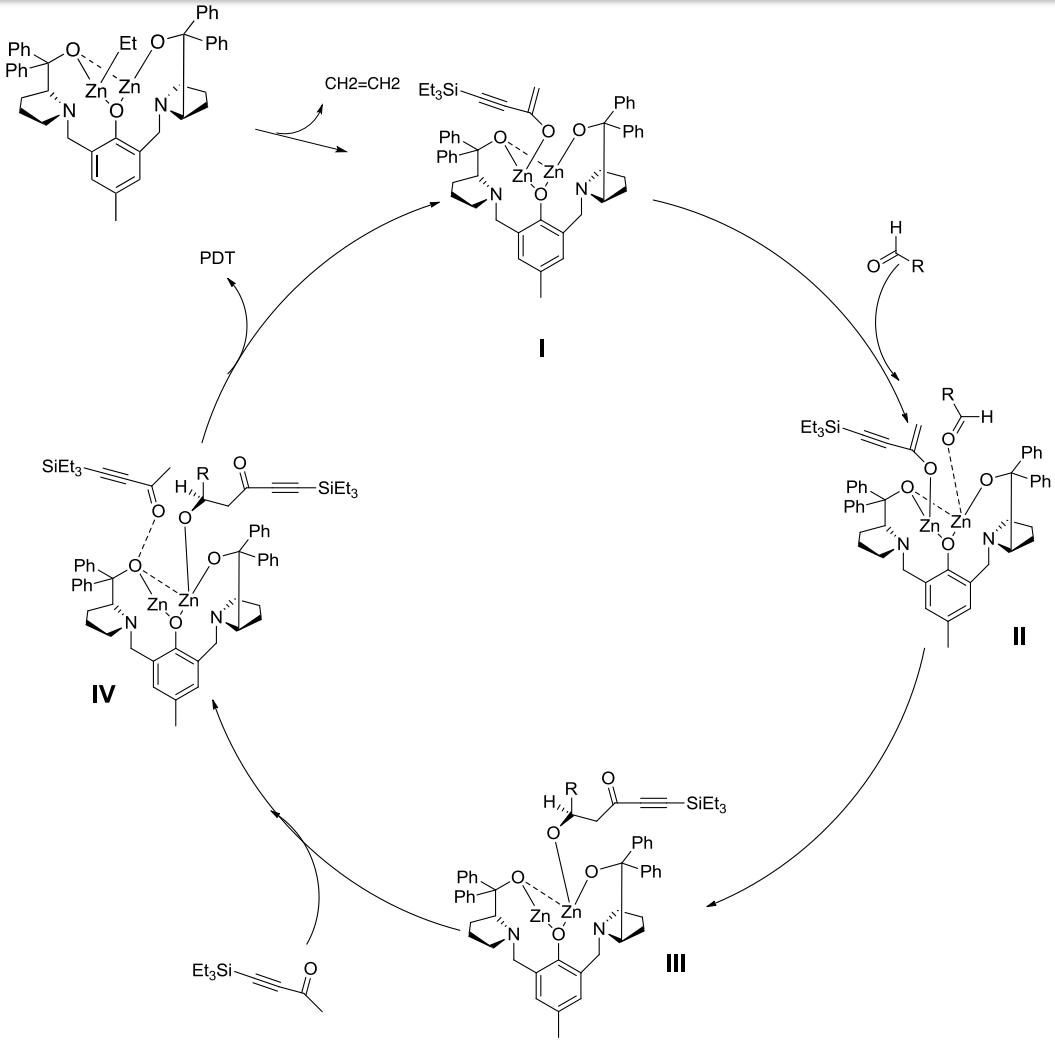


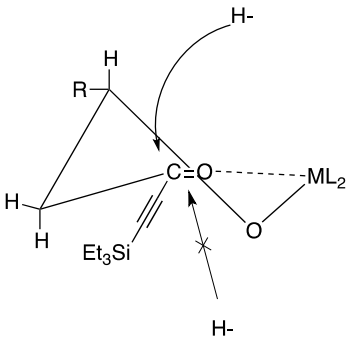
Scheme 1. Devised synthesis plan

Synthesis of subtarget 1



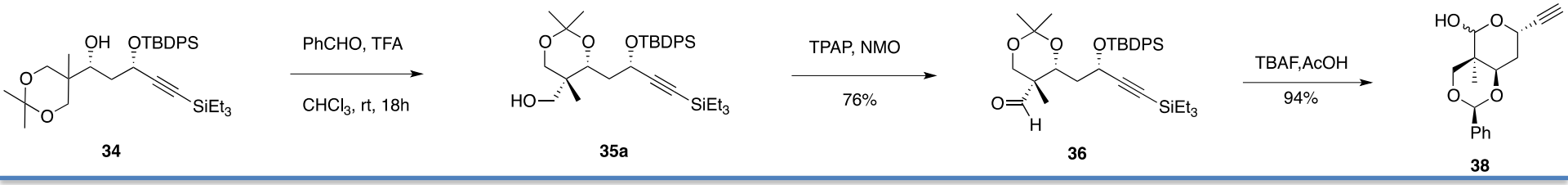
Zn-catalyzed aldol rxn



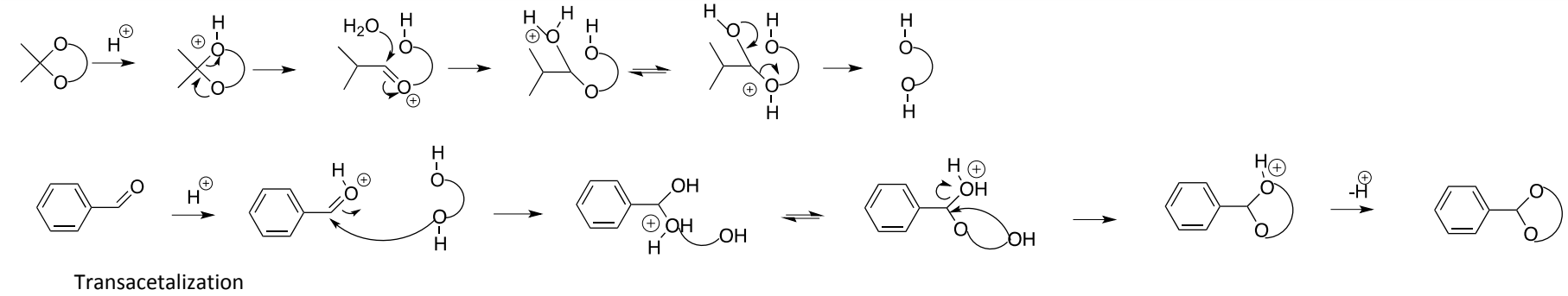


1,3-syn-reduction

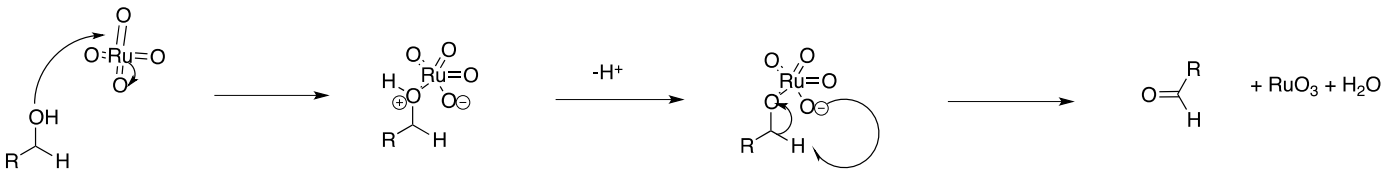
Synthesis of subtarget 1

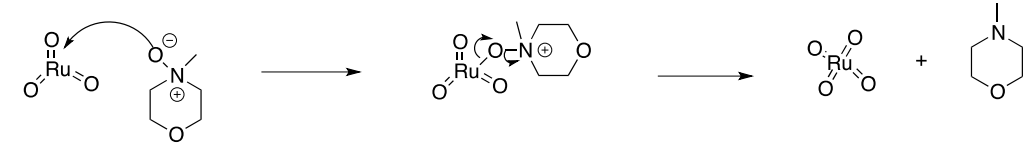


34 **35a** **36** **38**



Transacetalization

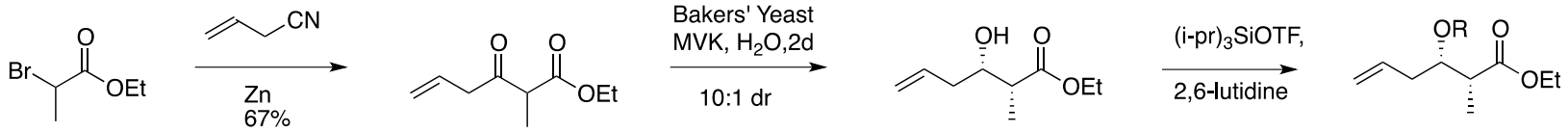




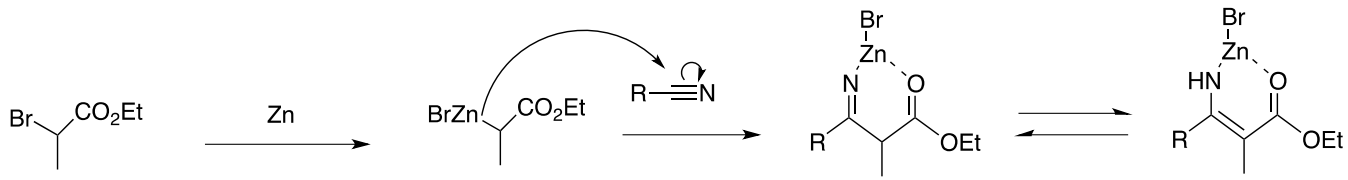
TPAP/NMO oxidation

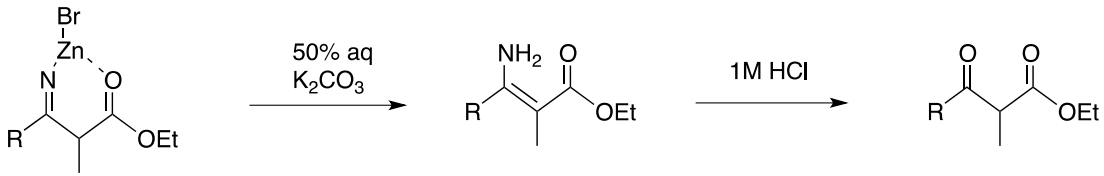
TBAF deprotection

Synthesis of subtarget 2



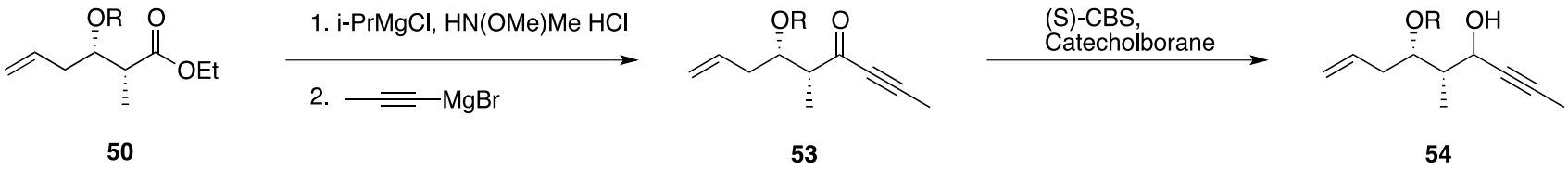
47 **41** **48** **50**



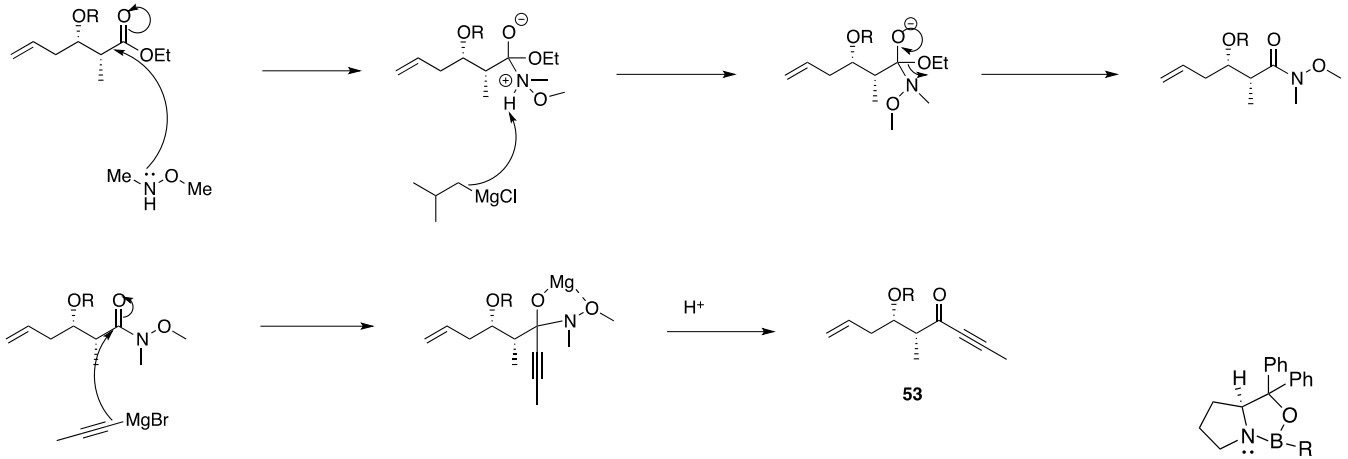


Blaise rxn

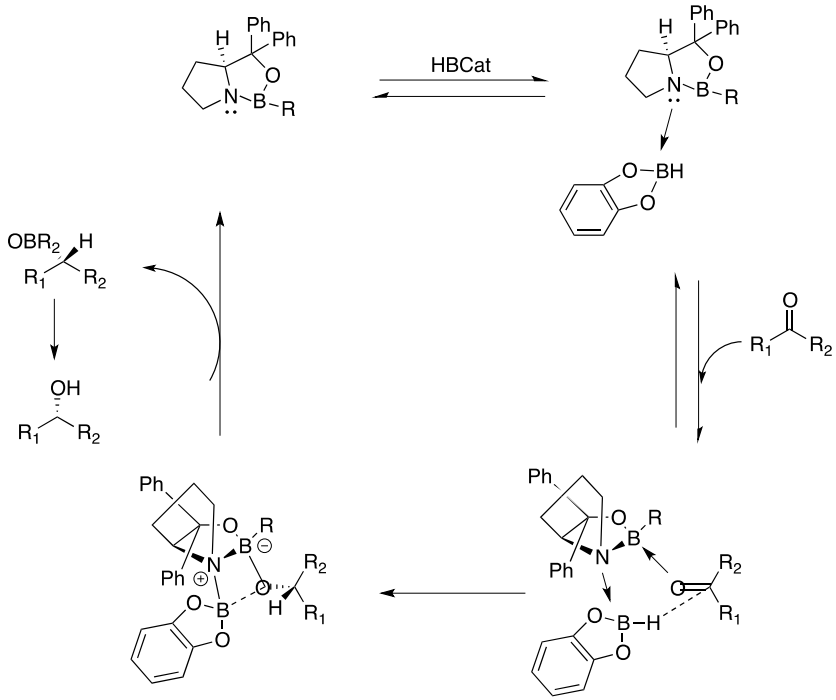
Synthesis of subtarget 2



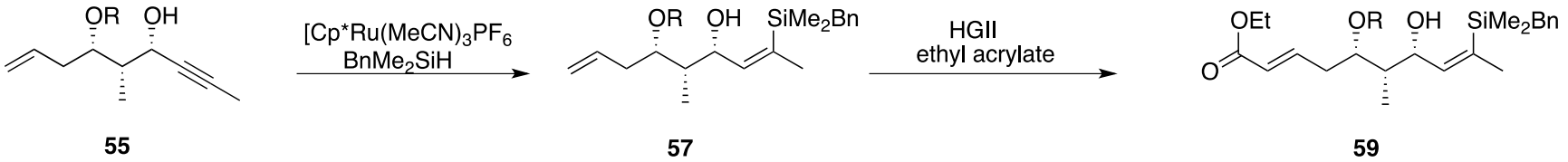
50 **53** **54**



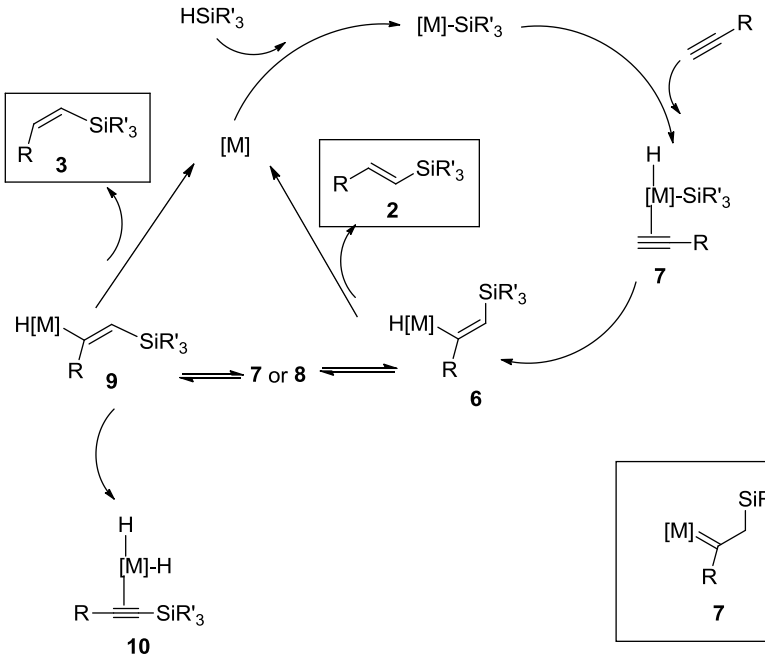
Weinreb amide synthesis and Grignard addition

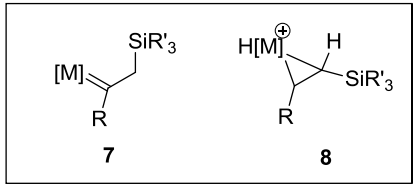


Synthesis of subtarget 2



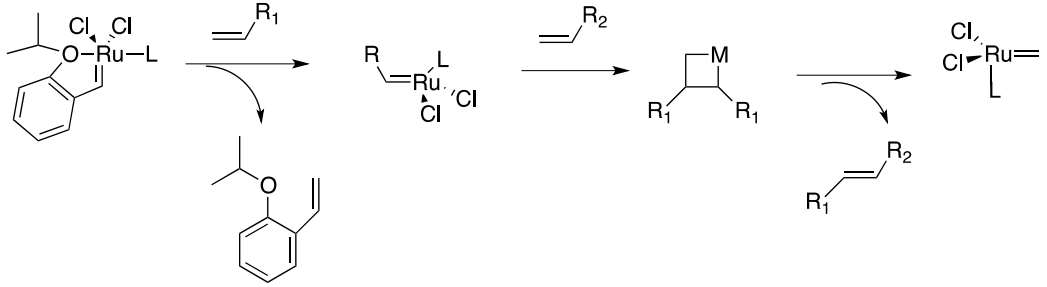
55 **57** **59**



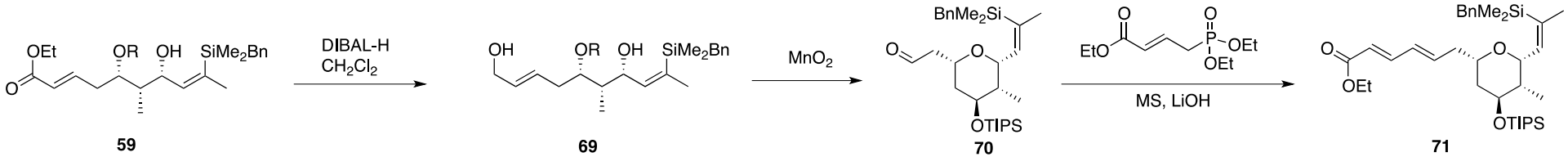


Ru-catalyzed hydrosilylation

Olefin cross-metathesis



Synthesis of subtarget 2



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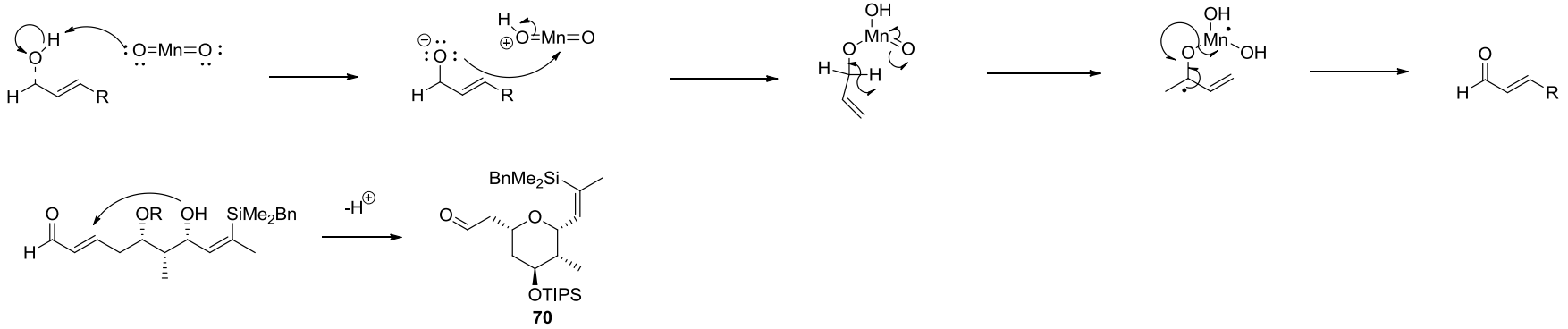
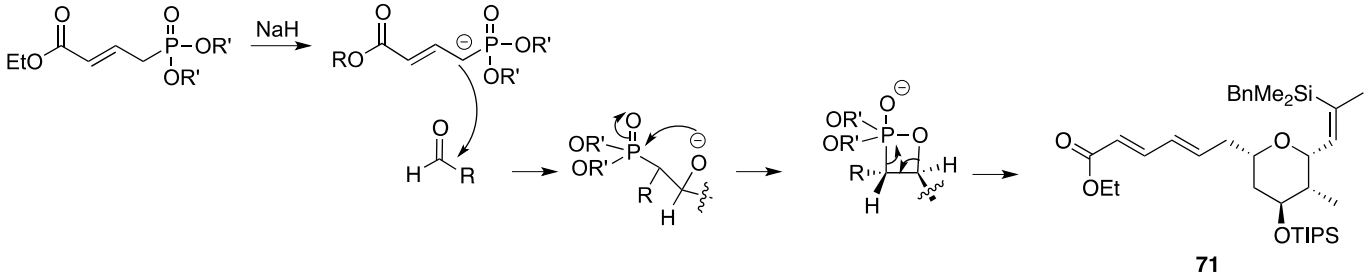


70

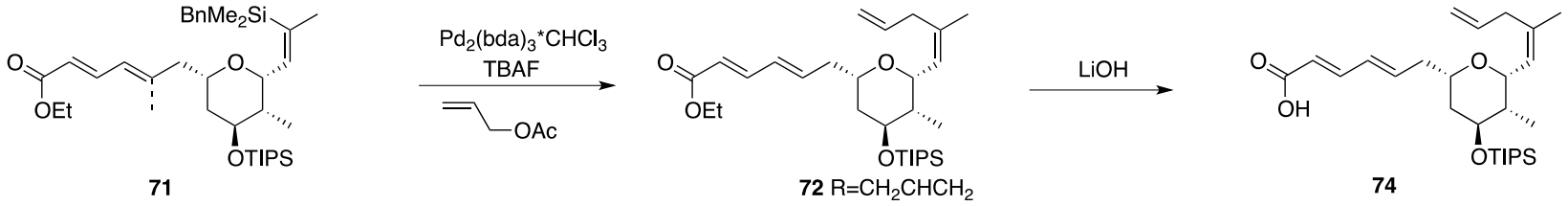
Allyic oxidation with MnO_2

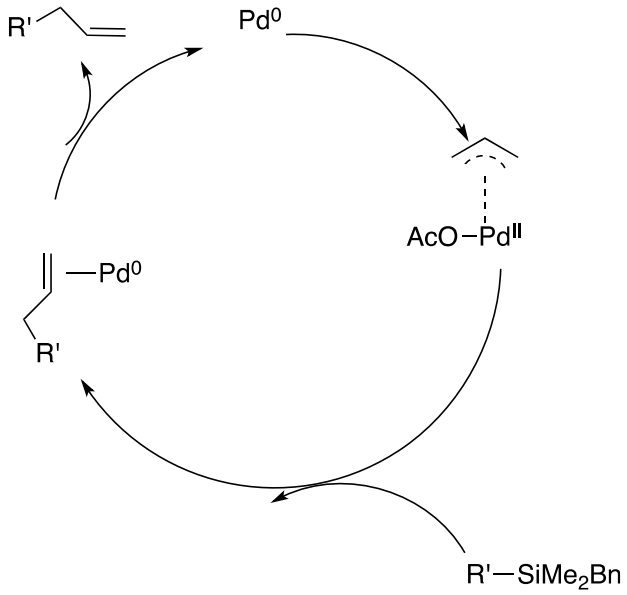


71

HWE reaction

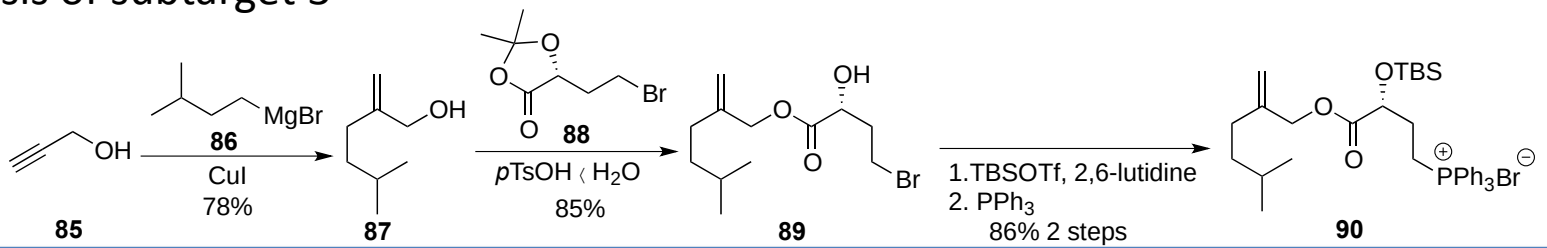
Synthesis of subtarget 2

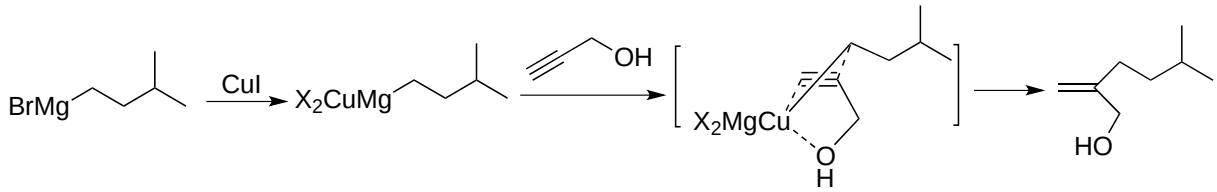




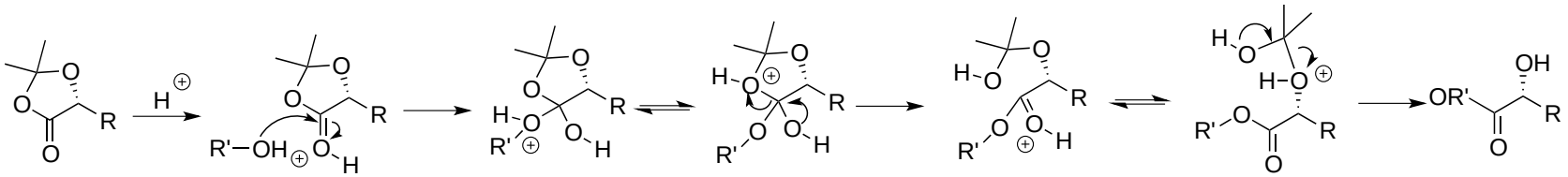
Hiyama coupling

Synthesis of subtarget 3

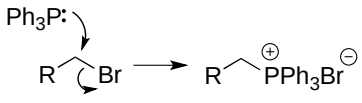




Carbometallation of propargyl alcohol

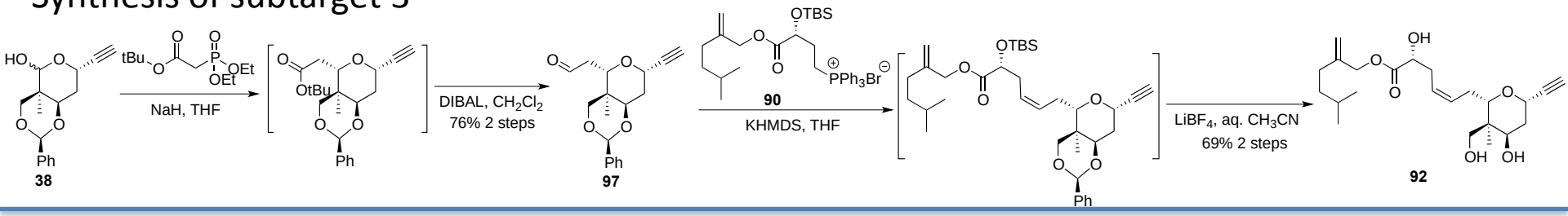


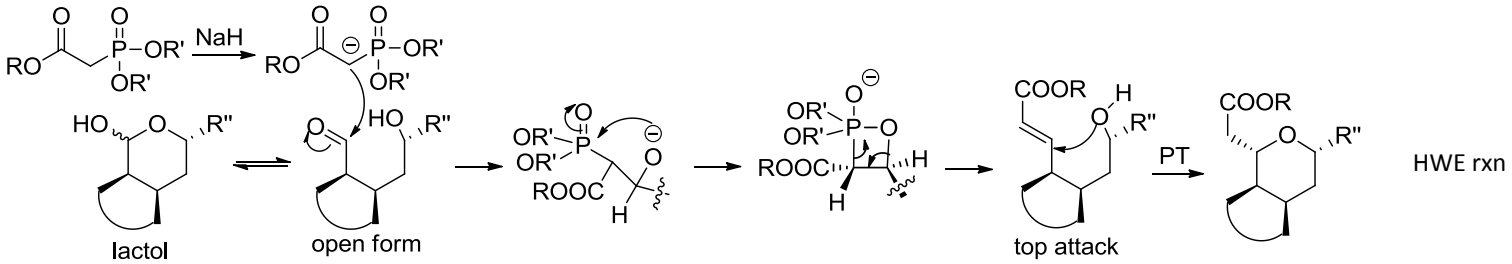
Acid-catalyzed ester formation

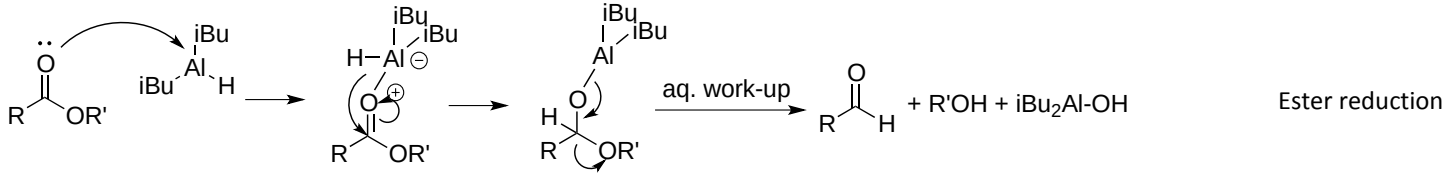


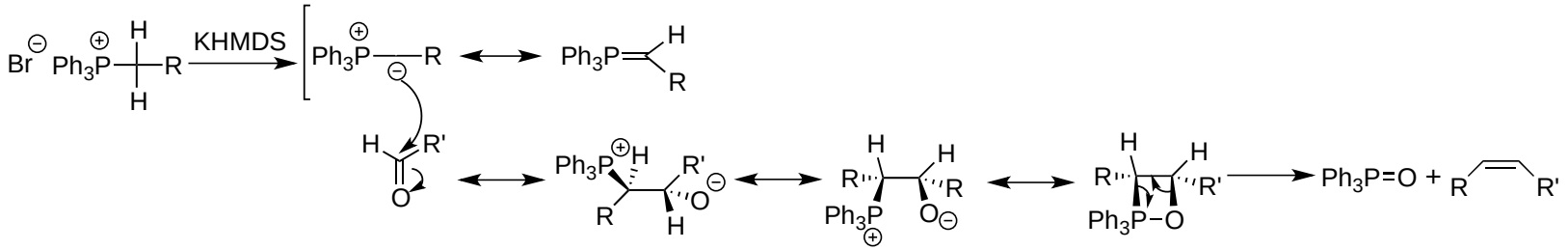
Phosphonium halides formation

Synthesis of subtarget 3

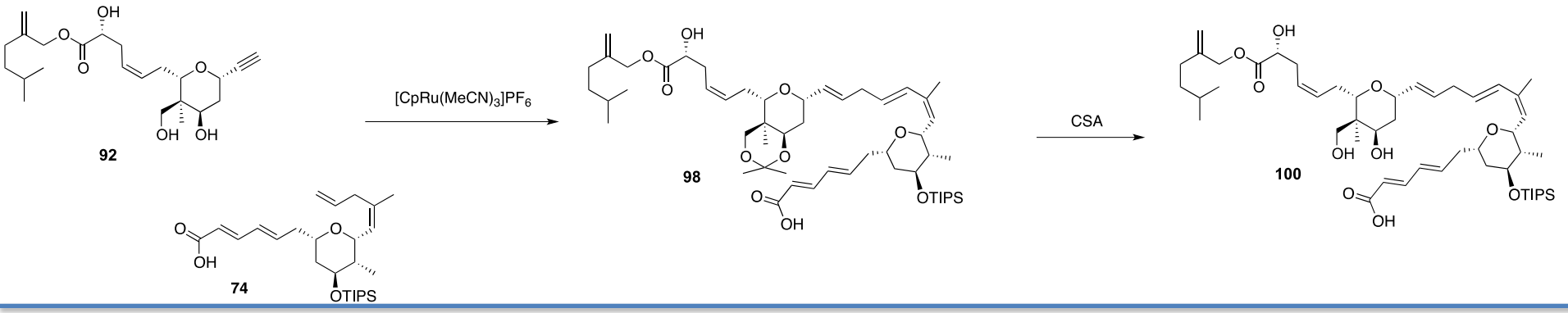


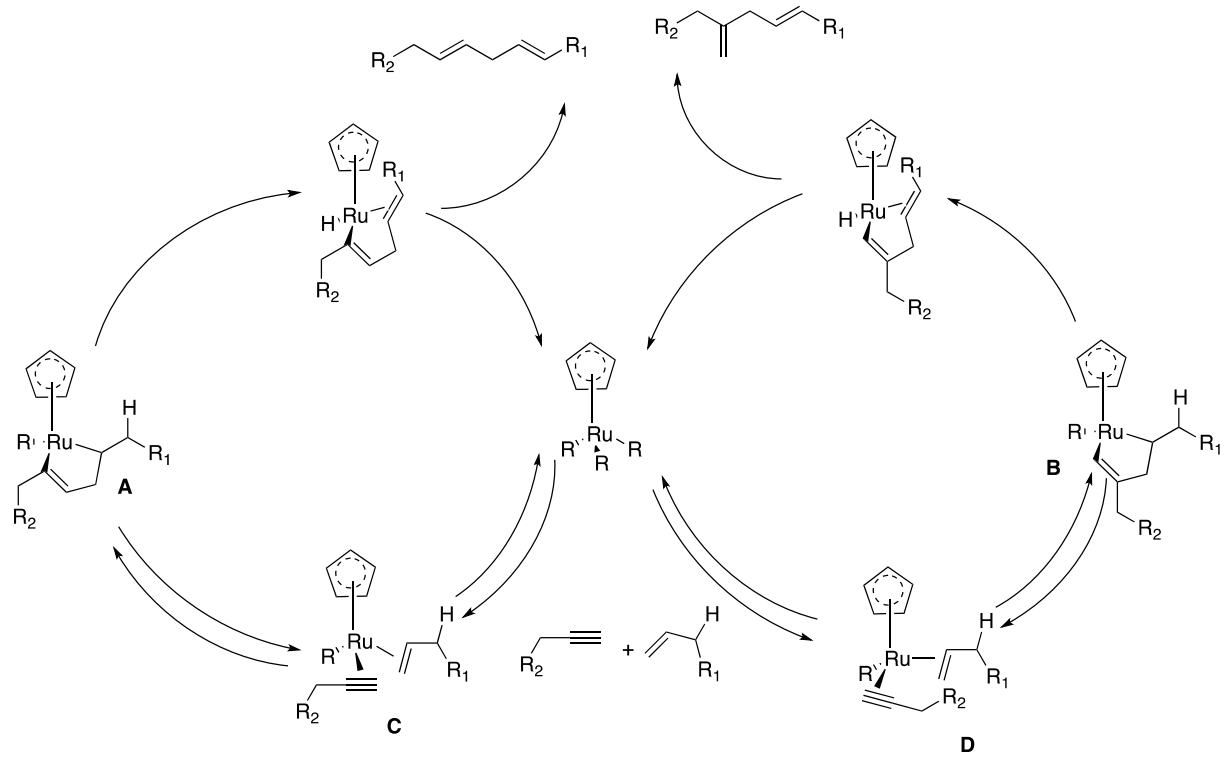






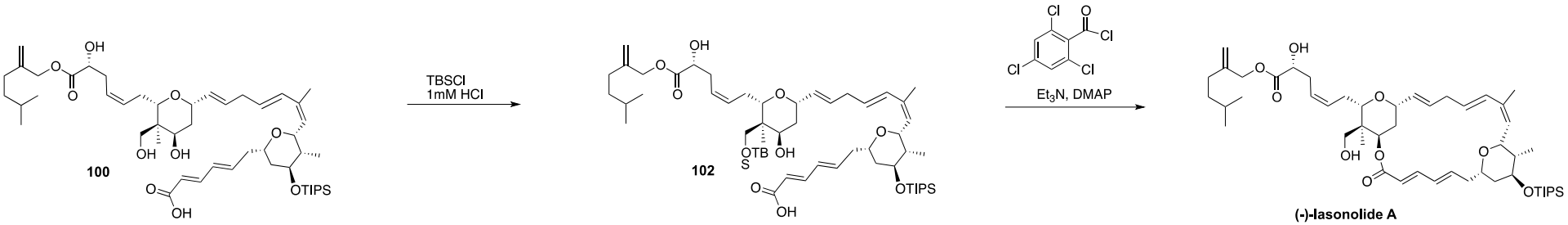
Synthesis of (-)-Lasonolide A

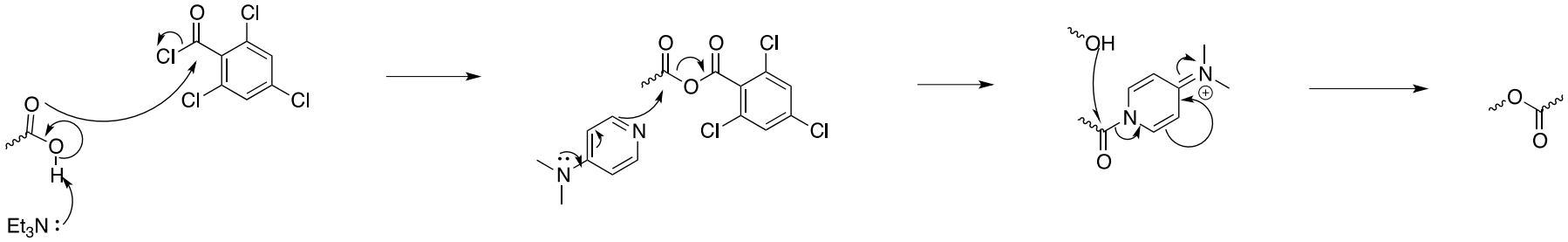




Ru-catalyzed alkene-alkyne coupling

Synthesis of (-)-Lasonolide A





Yamagushi macrolactonization