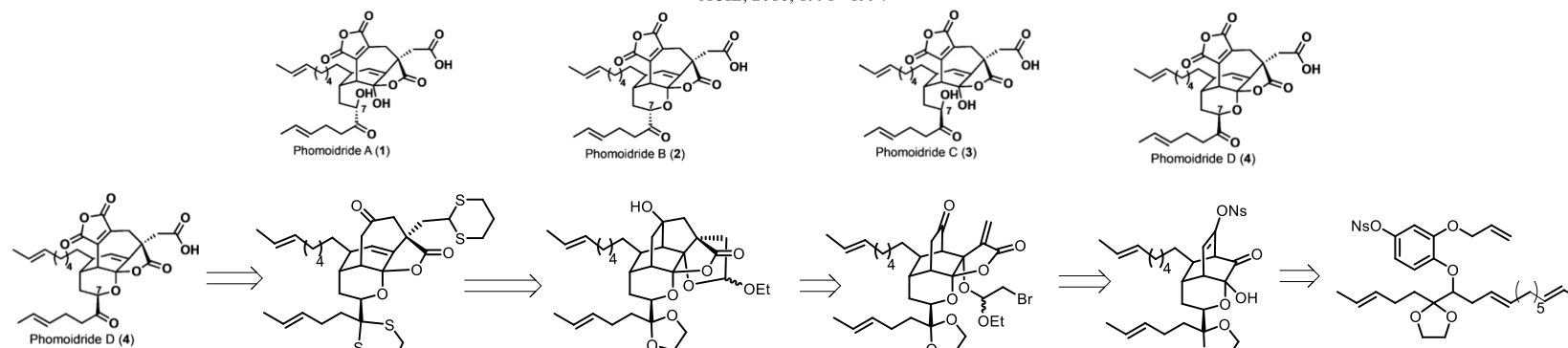


Total Synthesis of Phomoidride D

Joyce C. Leung, Aaron A. Bedermann, Jón T. Njardarson, David A. Spiegel, Graham K. Murphy, Naoto Hama, Barry M. Twenter, Ping Dong, Tatsuya Shirahata, Ivar M. McDonald, Munenori Inoue, Nobuaki Taniguchi,

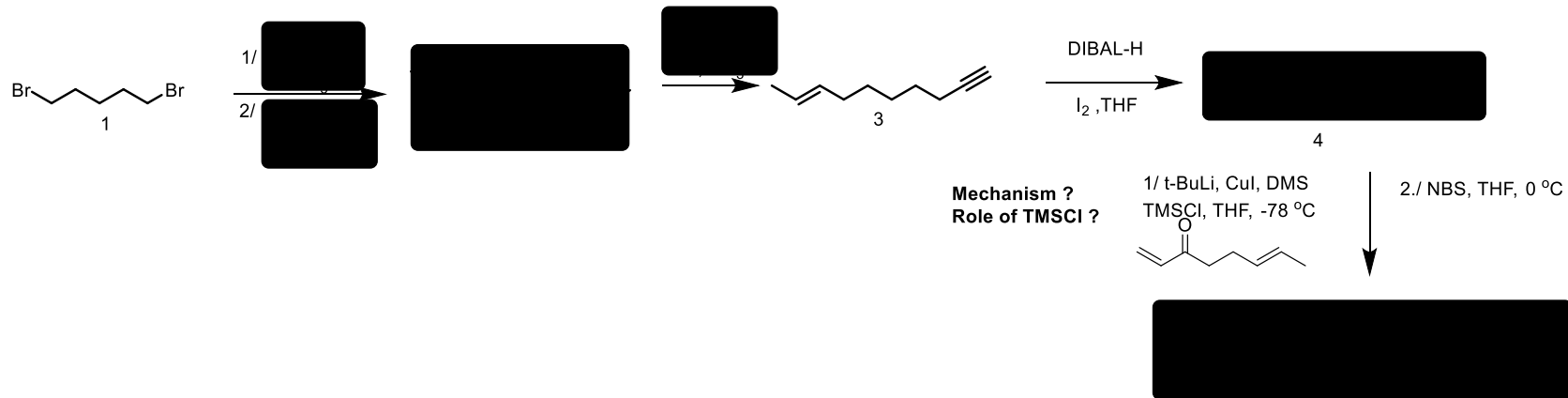
Travis C. McMahon, Christopher M. Schneider, Nancy Tao, Brian M. Stoltz, and John L. Wood*

ACIE, 2018, 1991–1994

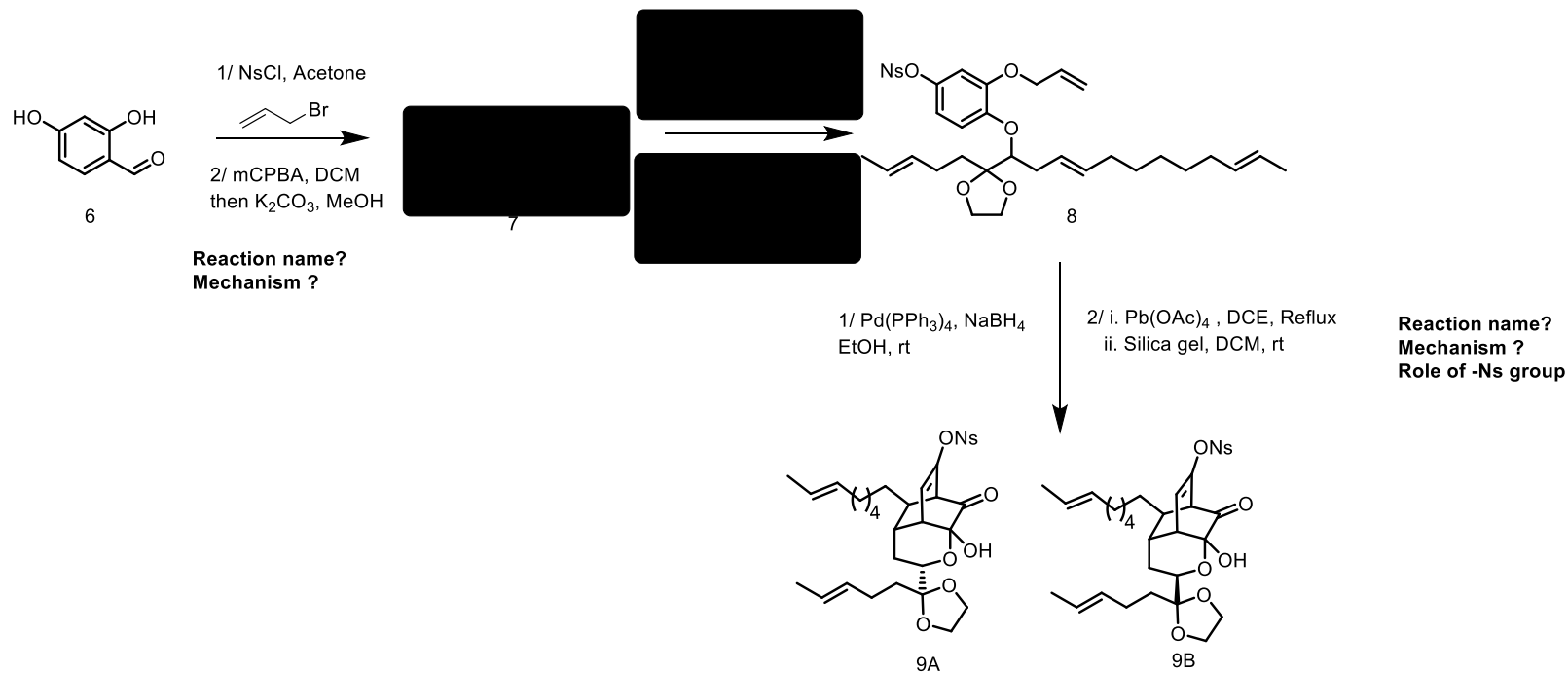


- Isolated by Pfizer from an unidentified fungus obtained from the twigs of a juniper tree in Dripping Springs, Texas in 1995
- Biological testing and structure elucidation Pfizer researchers in 1997
- Four well-known total syntheses by K. C. Nicolaou, Tohru Fukuyama, Matthew D. Shair, Samuel J. Danishefsky
- At least 18 advanced synthetic approaches

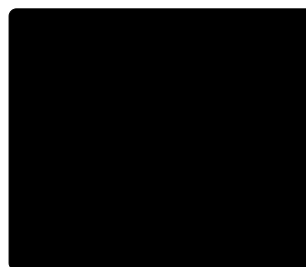
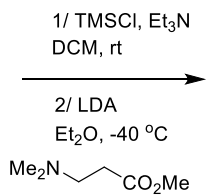
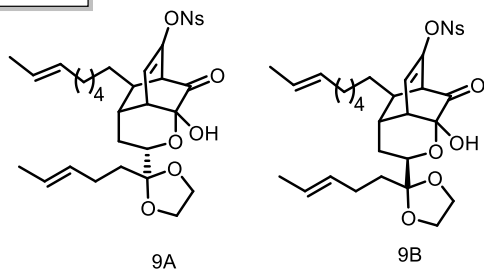
A



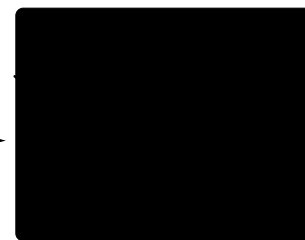
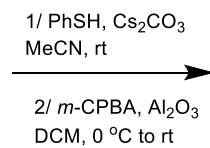
B



C



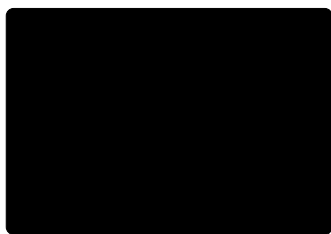
10



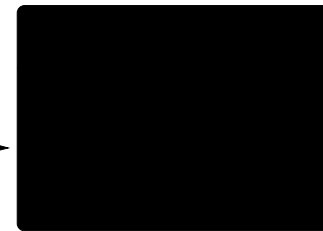
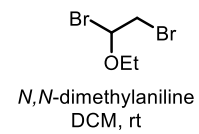
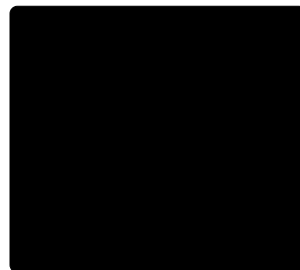
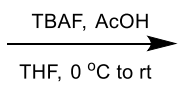
11

Reaction name?
Mechanism?

D



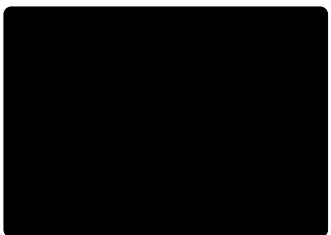
11



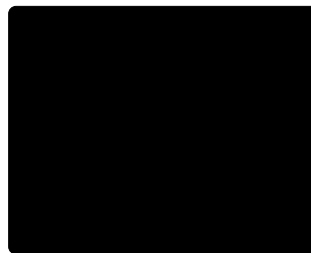
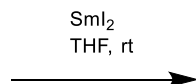
13

Type of precursor?

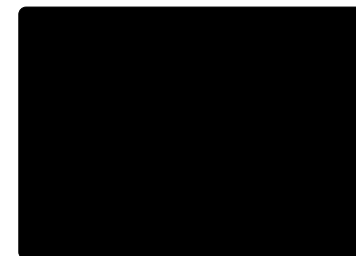
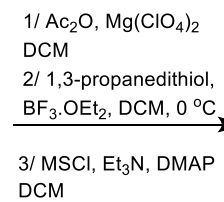
E



13



14



15

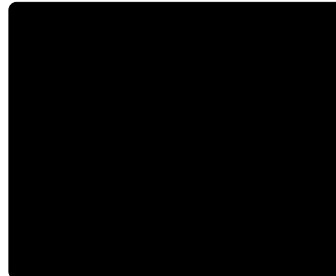
F



15

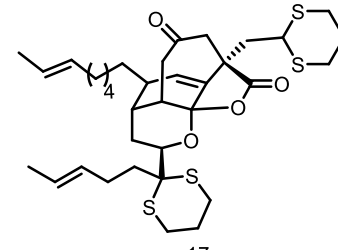


Mechanism ?
Reaction Name ?



16

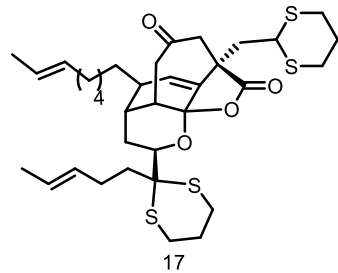
+



17

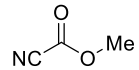


G



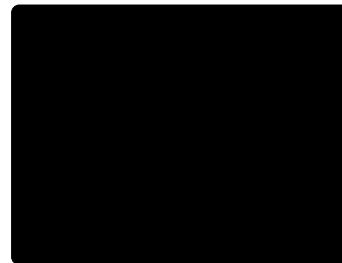
17

LiHMDS, HMPA



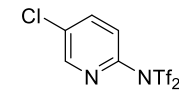
Et₂O, -40 °C to rt

Reagent name?
Mechanism ?
by-product ?

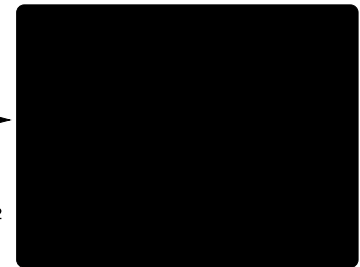


18

NaH
THF, 0 °C to rt

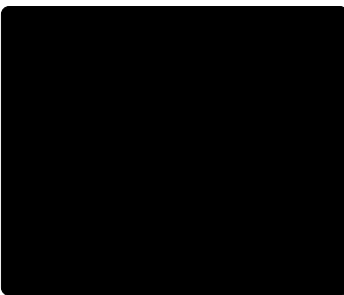


Reagent name?



19

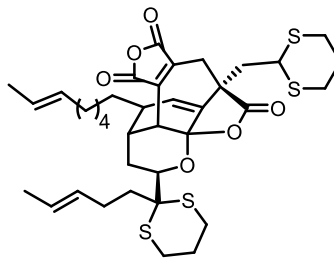
H



Pd(OAc)₂, P(2-furyl)₃
i-Pr₂NEt, H₂O

CO, DMF, 90 °C

Mechanism ?

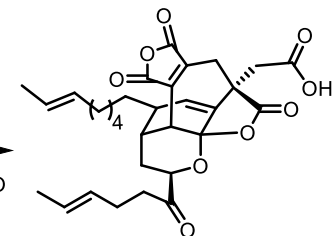


20

1/ MeI, CaCO₃,
80% MeCN aq.

2/ NaClO₂, NaH₂PO₄·H₂O
2-Me-2-butene
t-BuOH/THF/H₂O (3:1:1)

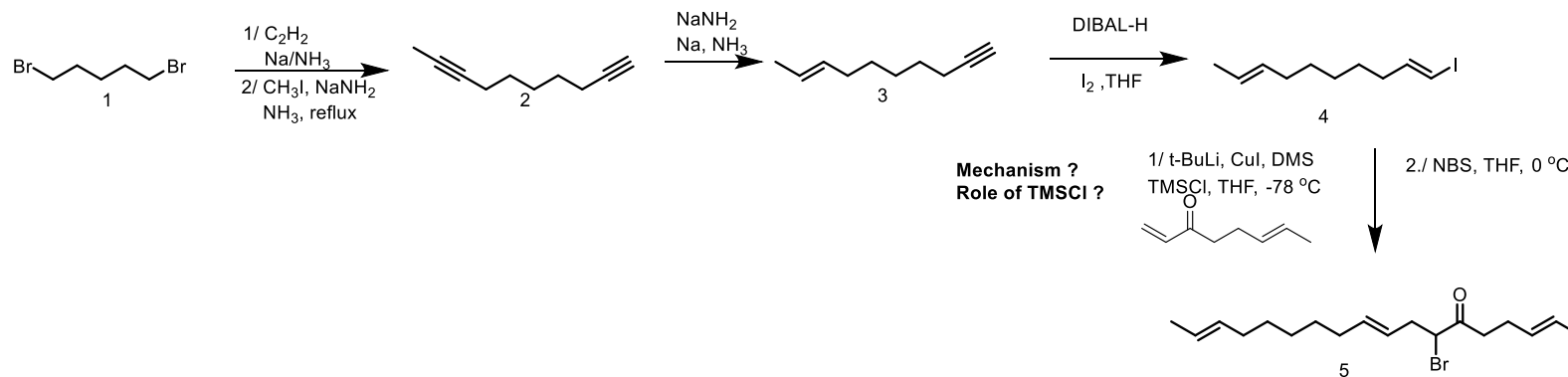
Reaction name ?
Mechanism ?



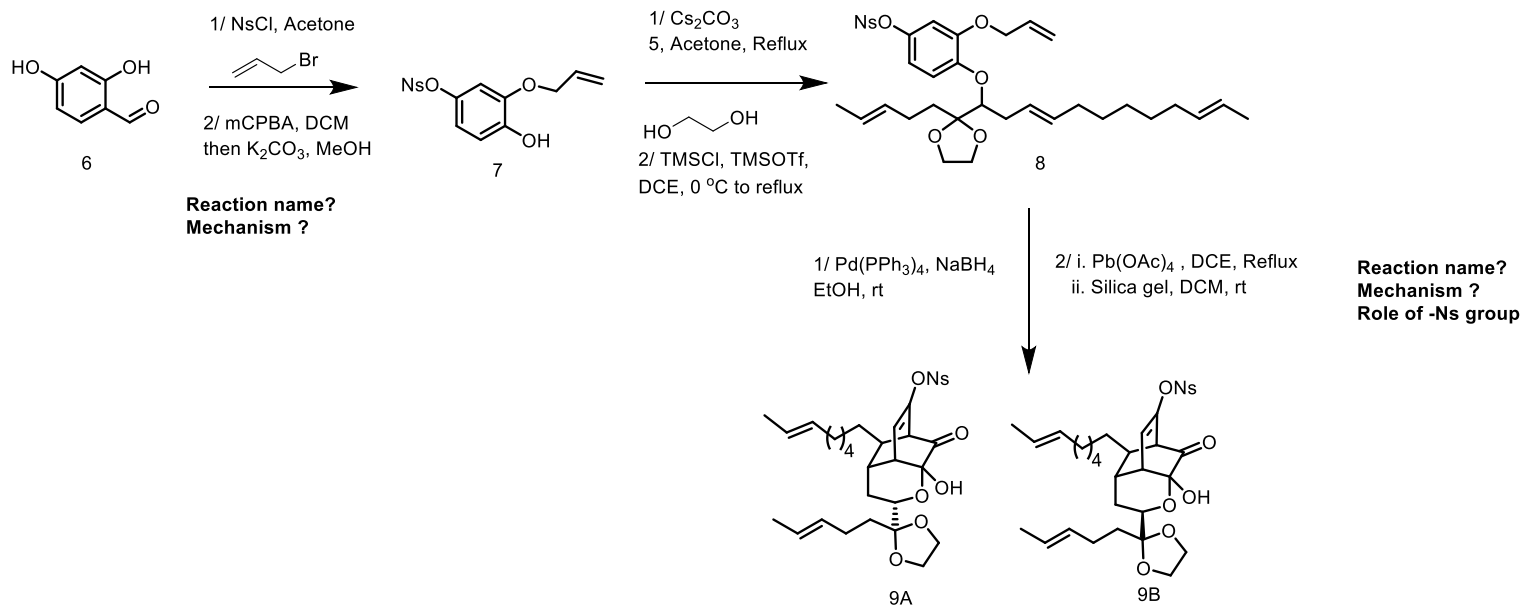
Phormoidride D

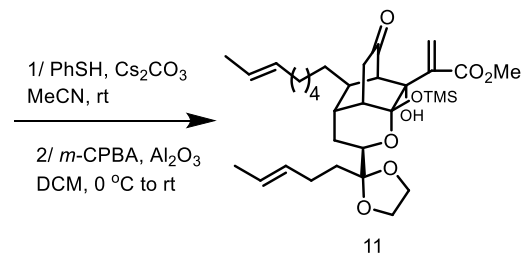
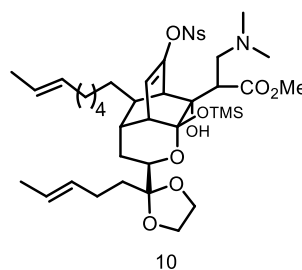
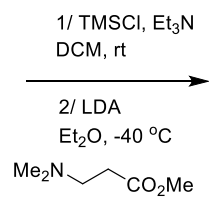
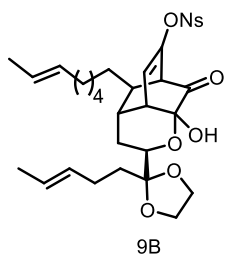
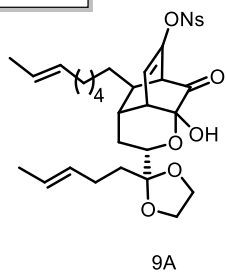
Solutions

A

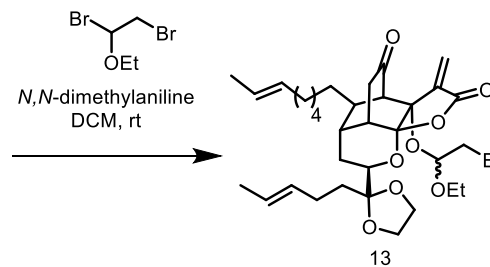
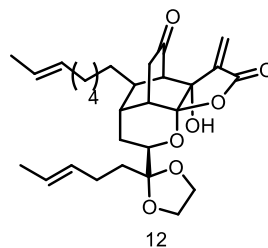
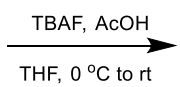
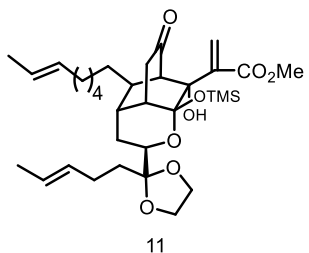


B

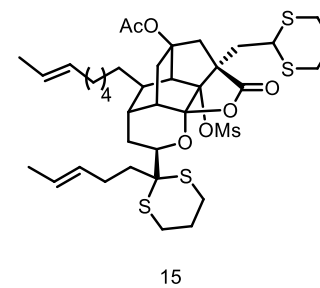
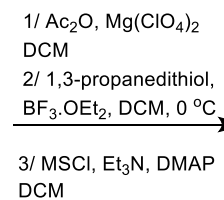
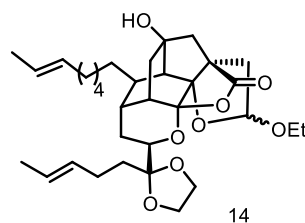
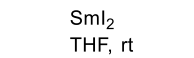
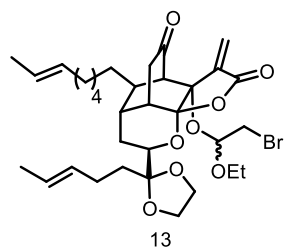


C

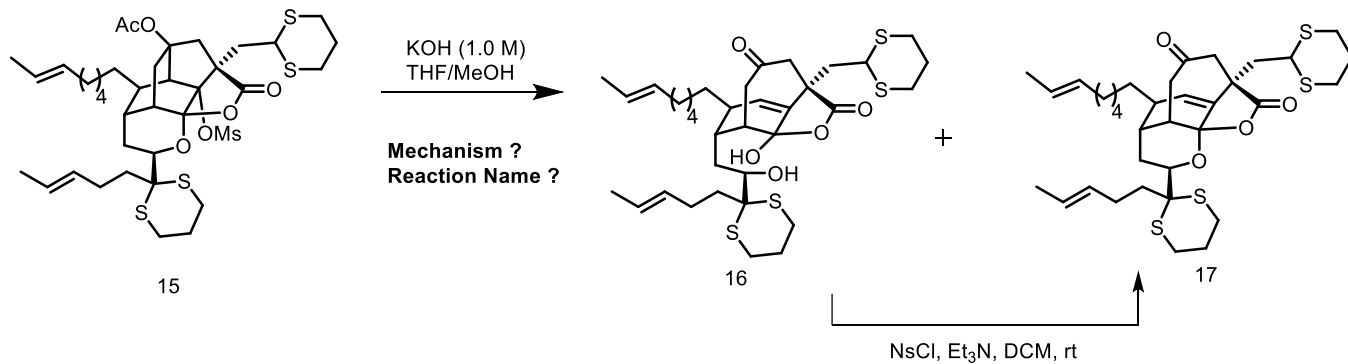
Reaction name?
Mechanism?

D

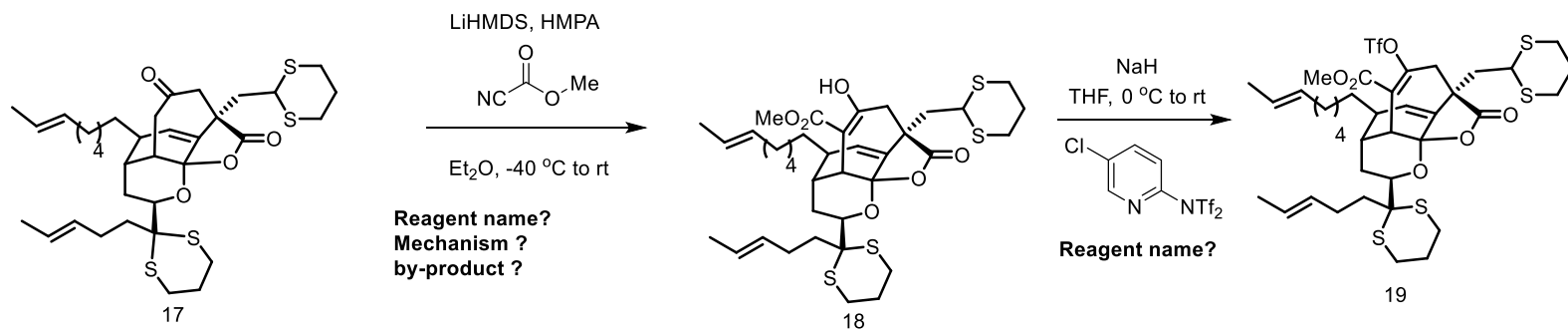
Type of precursor?

E

F



G



H

