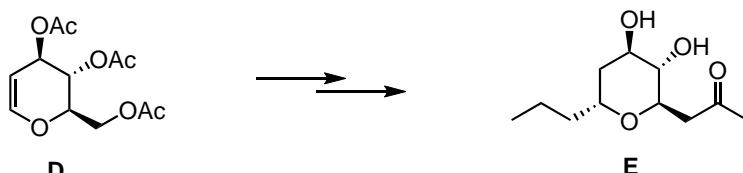**A**
Wieland-Miescher ketone

B

C

Q1: Give synthetic proposals to obtain (i) **B** from **A** and (ii) **C** from **B**.

Nakazawa, Y.; Nagatomo, M.; Oikawa, T.; Oikawa, M.; Ishikawa, Y.

D

E

Q2: Propose a possible sequence to convert **D** into **E**.

Garrido, F.; Santalla, H.; Gómez, G.; Fall, Y.

TBSO⤴B(OH)$_2$
(1.0 eq.)
2nd gen. XPhos Pd (10 mol%)
CS$_2$CO$_3$ (3.0 eq.), THF, 77% → **A**

2nd gen. XPhos Pd

XPhos

1) ⤴B(OH)$_2$ (1.3 eq.), 2nd gen. XPhos Pd (10 mol%)
CS$_2$CO$_3$ (3.0 eq.), THF, 56%

B
(endo/exo mixture)

2) NaOMe (3.2eq.), THF; I$_2$ (2.0 eq.), 97%
3) **A** (1.1 eq.), 2nd gen. XPhos Pd (5 mol%), aq.NaOH (3.0 eq.),
   THF/H$_2$O, 59%

1) TBAF (2.3 eq.), THF, 90%
2) SO$_3$•pyr (3.3 eq.), DMSO (0.3 M),
   Et$_3$N (5.6 eq.), CH$_2$Cl$_2$

B[a]

*[a] endo/exo mixture

C[a]

1)
MeOOC⤴P(OMe)$_2$, NaH (10 eq.), THF
(3.2 eq.)

2) 100 °C, 65 h, CDCl$_3$, 75%

1)
EtOOC⤴P(OEt)$_2$, NaH (14 eq.), THF
(7.0 eq.)

2) 100 °C, 17 h, CDCl$_3$, 41%

endiandric acid K

cryptobeilic acid D