Total Synthesis of (−)-Dactylolide

Steps 1 and 2: what kind of name reactions take place? Think of the mechanism!

How would you prepare the starting materials?

How would you prepare Y?

1) [RuCp(CH$_3$CN)$_3$]PF$_6$
2) Pd$_2$(dba)$_3$•CHCl$_3$, X
3) DIBAL
4) IBX
5) Y
6) TBSCl
7) [RuCp(CH$_3$CN)$_3$]PF$_6$, BPin

How would you prepare Y?
8) \( \text{Re}_2\text{O}_7 \)

9) \( \text{MgCl} \)

10) \( \text{O} - \text{C} - \text{I} \), DIAD, PPh\(_3\)

11) \( \text{TlOEt, Pd(PPh}_3)_4\), C

Step 8: Think of a mechanism!

Why Thallium?
Why is Benzoquinone added?