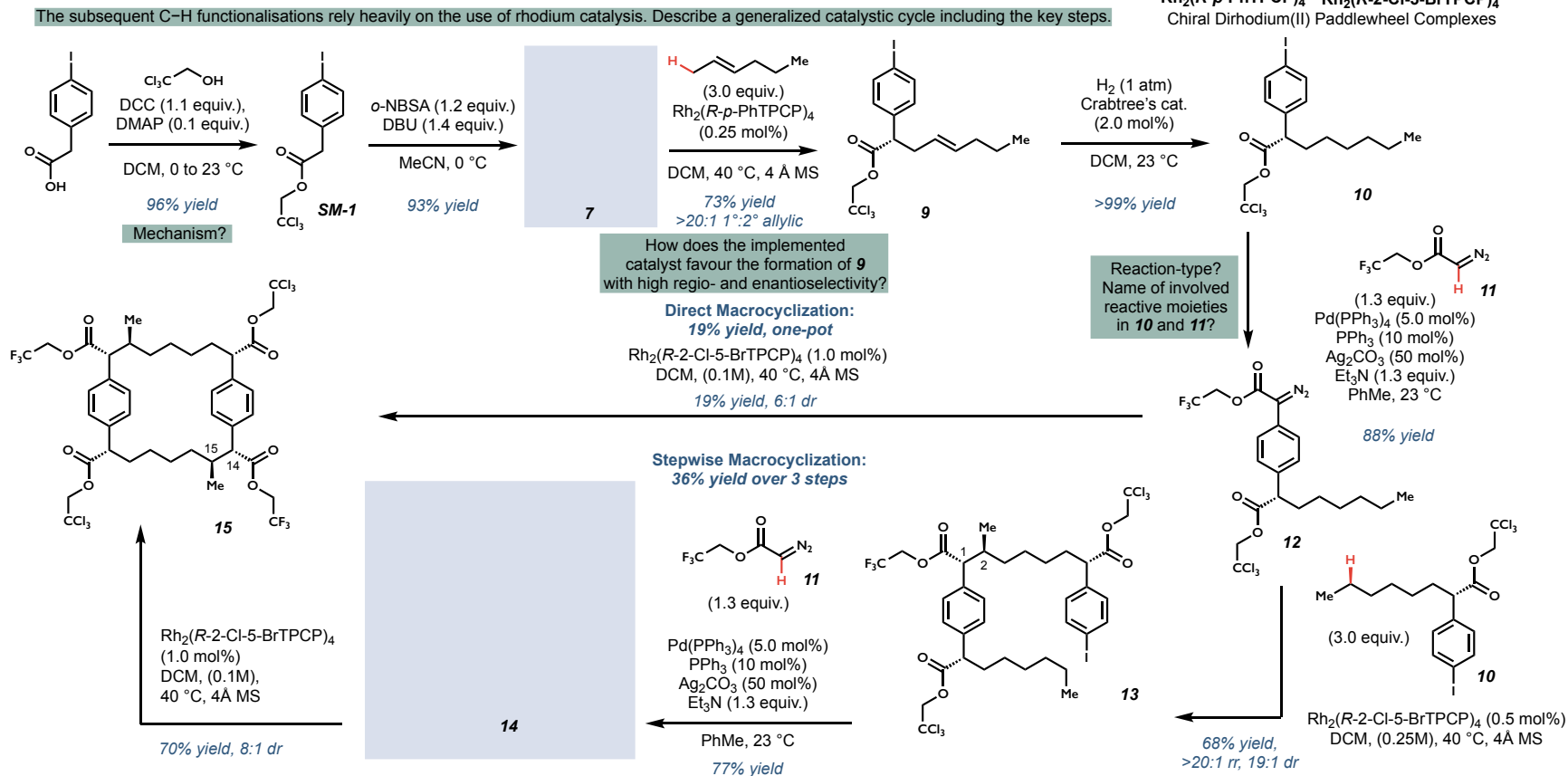
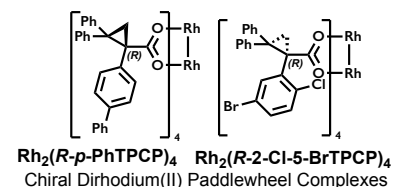
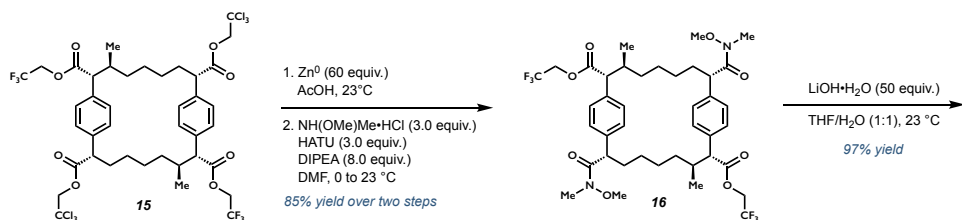


Total synthesis of (–)-cylindrocyclophane A facilitated by C–H functionalization

Clementson Group Problem Session
Friday 4th of September 2026

(–)-Cylindrocyclophane A is a 22-membered C_2 -symmetric [7.7]paracyclophane, bearing a bis-resorcinol functionality and comprising a total of six stereocentres. It has cytotoxic properties against cancer cell lines and was first isolated in 1990 from the cyanobacterium *Cylindrospermum licheniforme*. You are asked to fill in the missing **chemical structures** and answer the **questions**.



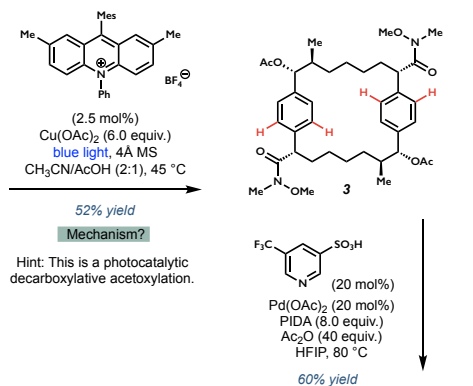


Mechanism?

Which type of selectivity does this step achieve?

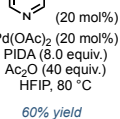
Hint: Step 1 involves an aqueous work-up and yields a diacid.

Considering the further synthetic pathway suggest why it is useful to transform compound **15** into bis-Weinreb amide **16**.



Mechanism?

Hint: This is a photocatalytic decarboxylative acetoxylation.

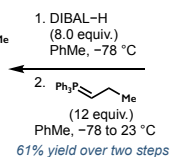


(-)-Cyliindrocyclophane A

Mechanism?

Reagents and reaction type?

Intermediate after the first step?



Name of the reaction in step 2?

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