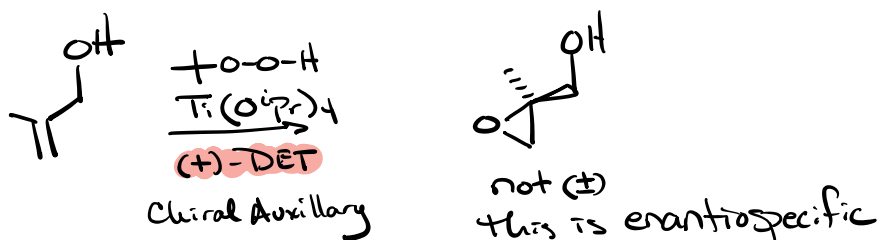
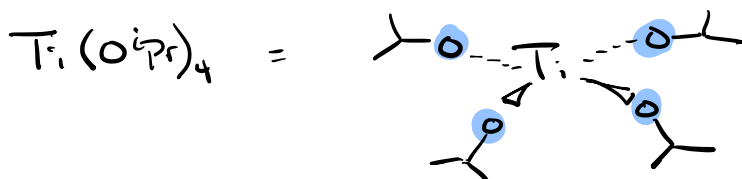
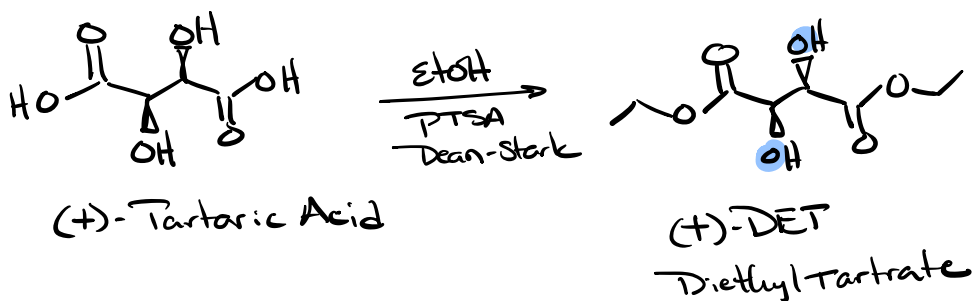


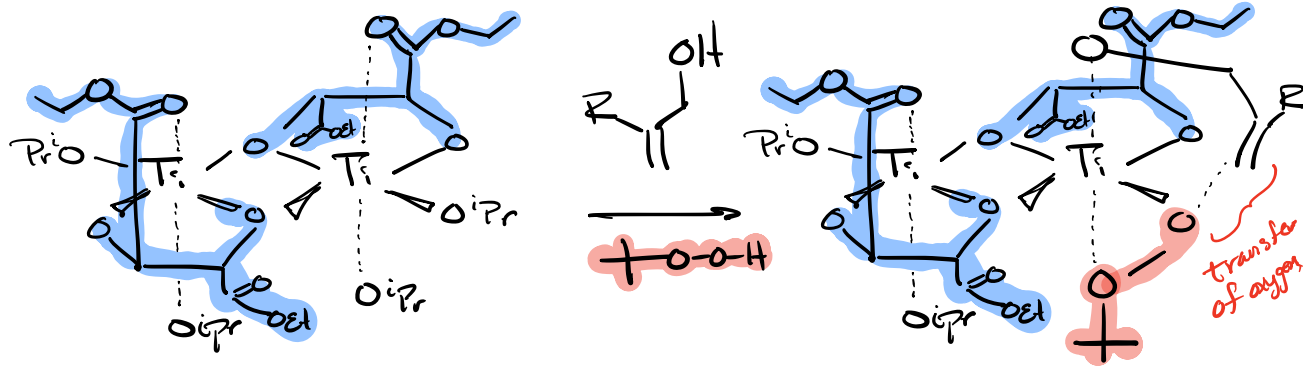
# Sharpless asymmetric epoxidation



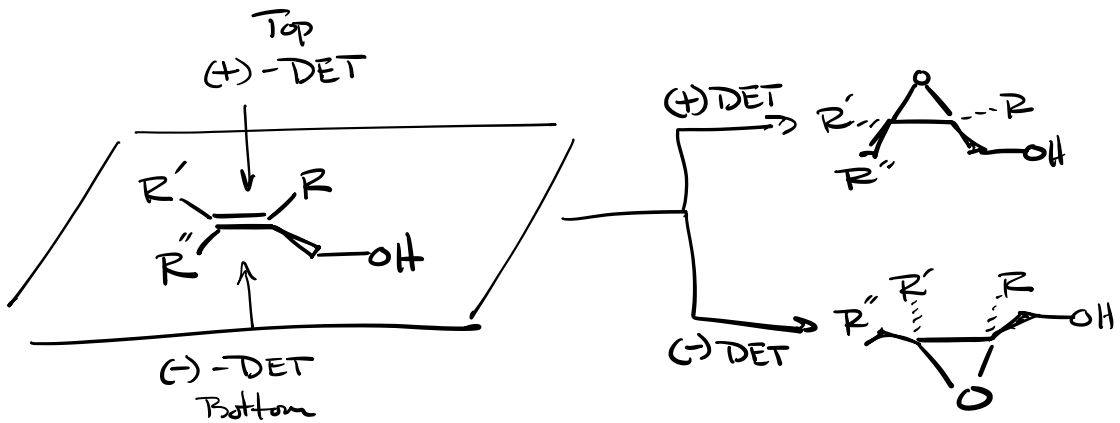
DET is from tartaric acid



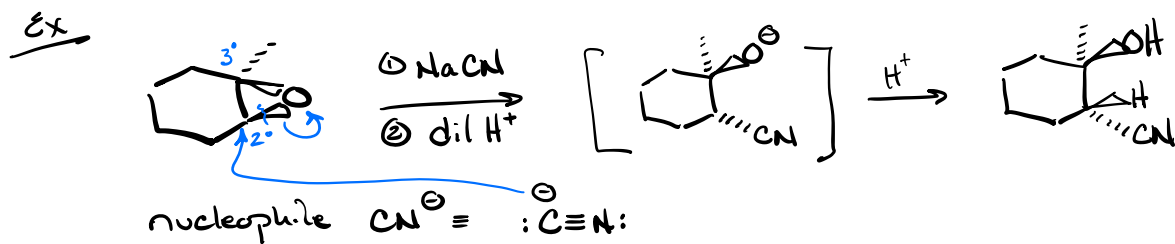
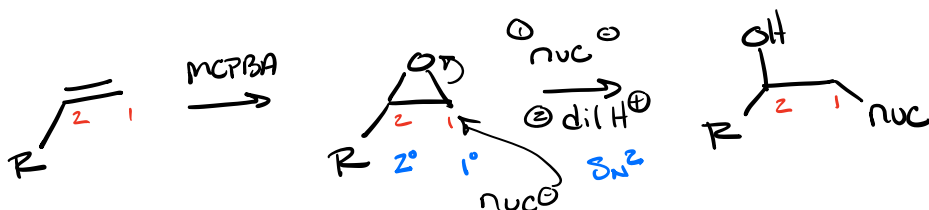
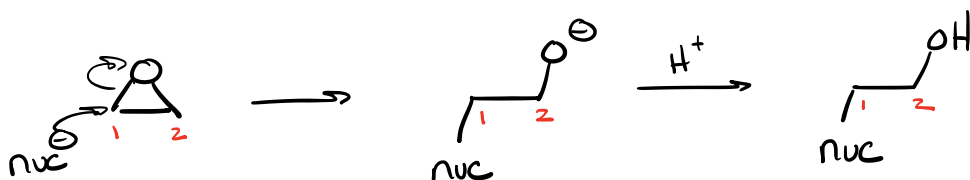
$\text{Ti}(\text{O}^i\text{Pr})_4 + \text{HO-O-H} + \text{DET}$  forms a dimer complex.



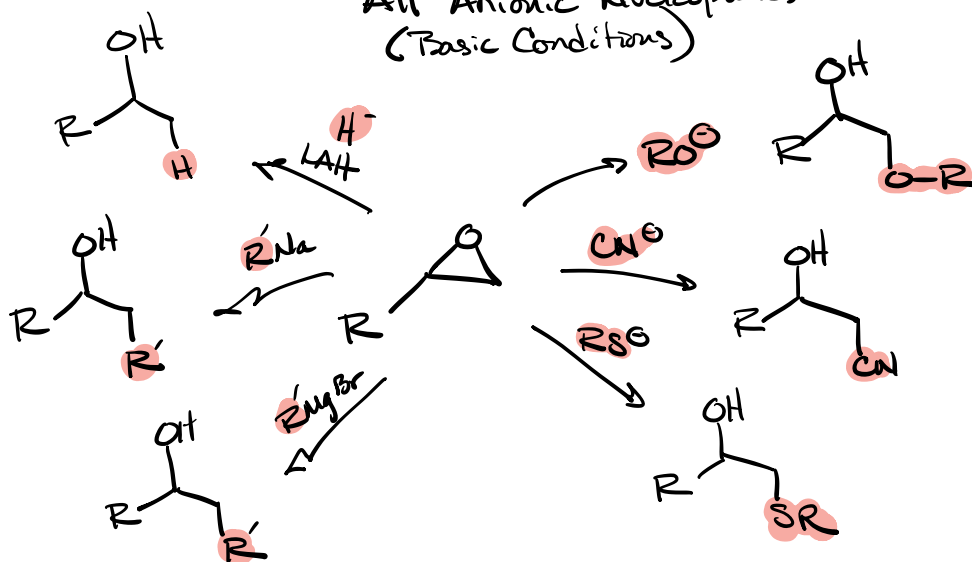
Transfer allowed  
only from 1 face



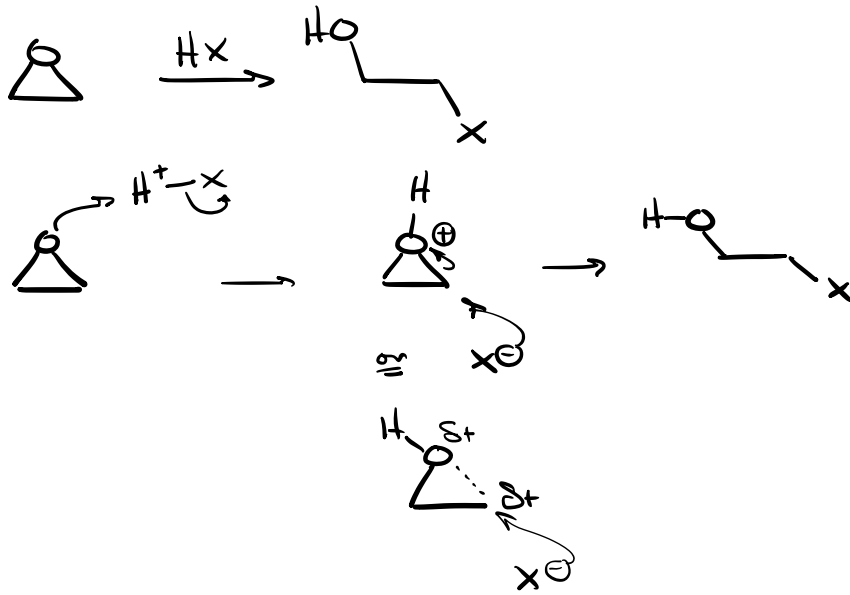
## Epoxides as electrophiles



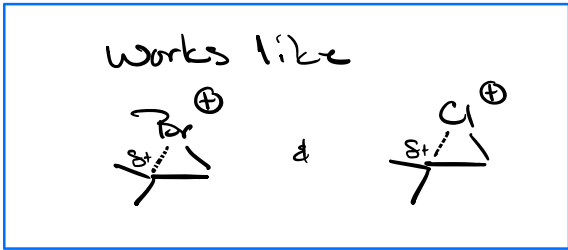
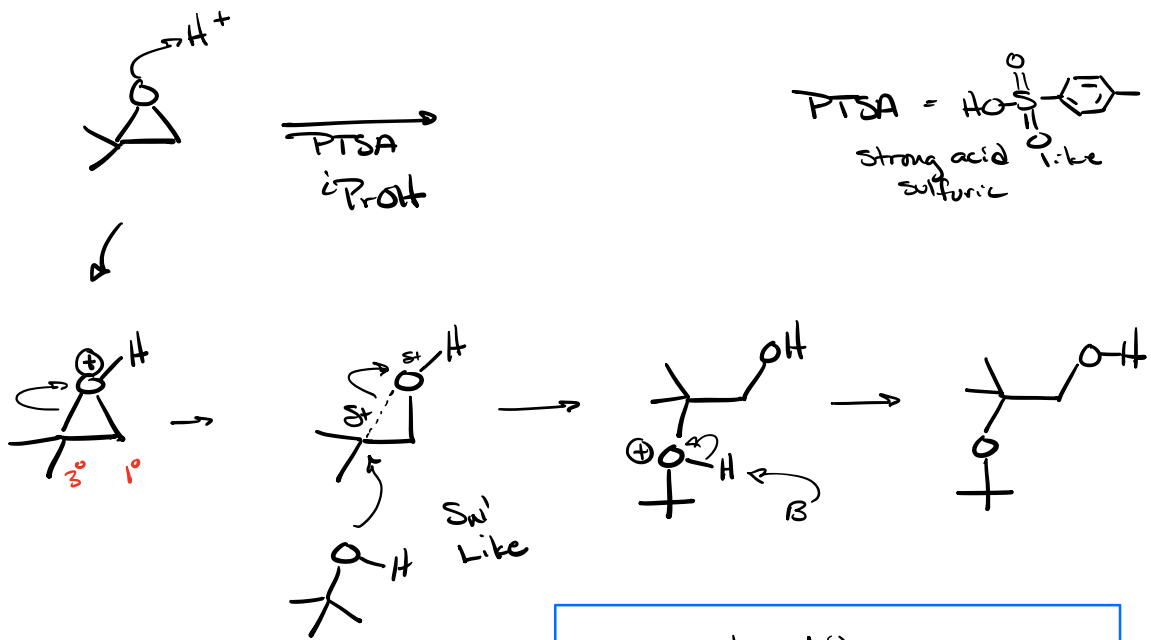
## All Anionic Nucleophiles (Basic Conditions)

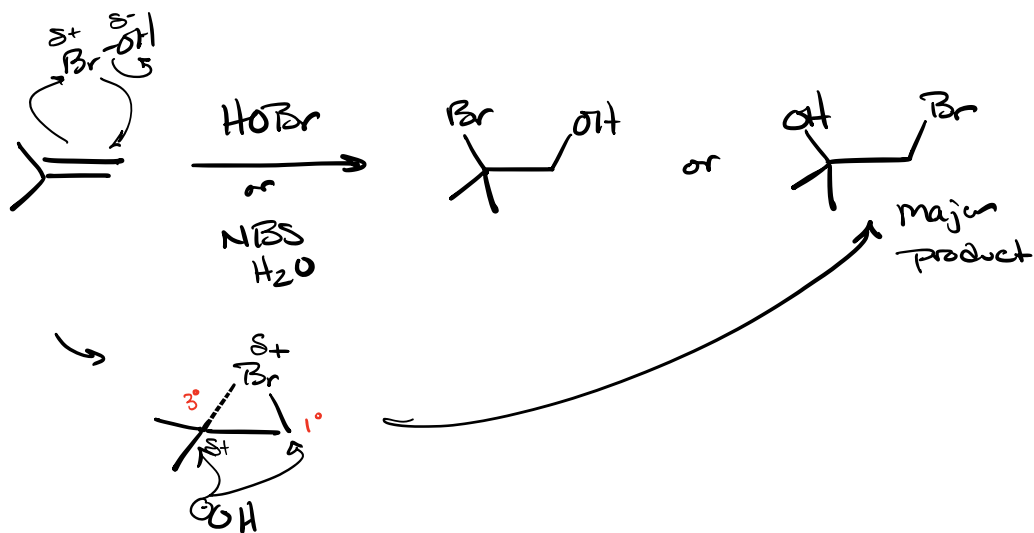


# Acidic Conditions

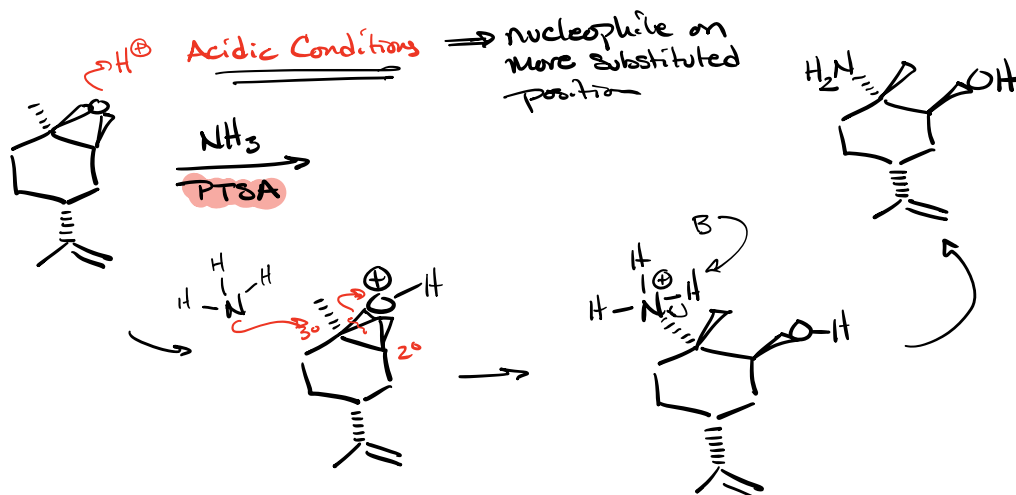


Ex



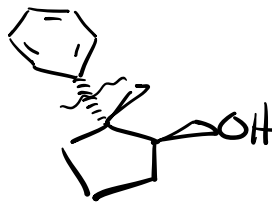
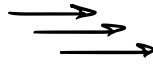


Ex

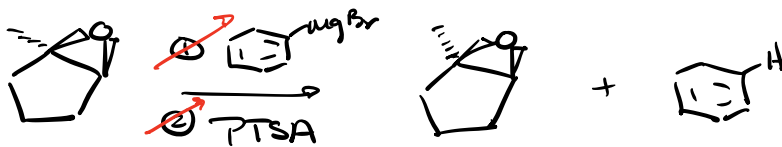
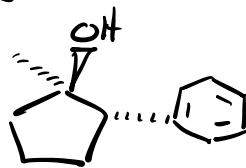


Ex

Synthesis



Basic Conditions ( $S_N2$ )



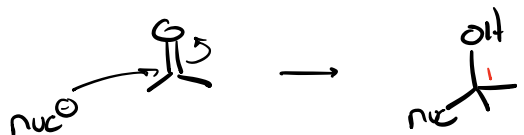
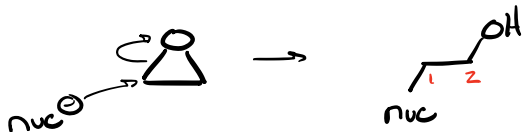
$R^{\ominus}$   
 $CN^{\ominus}$   
 $RO^{\ominus}$   
 $RS^{\ominus}$

Can't be used under acidic conditions !

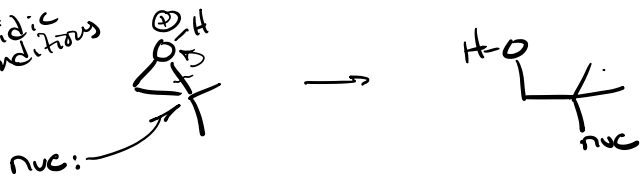
Acidic conditions only really work for  $NH_3$ ,  $RNH_2$ ,  $R_2NH$

# Big Take away

Basic Conditions



Acidic Conditions



Limited to neutral nucleophiles

# Aldehydes & Ketones

## Formation

