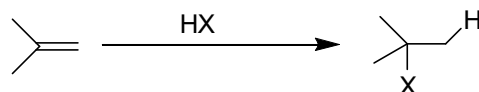


## 2: Reactions to Know

### 1. Addition to Alkenes

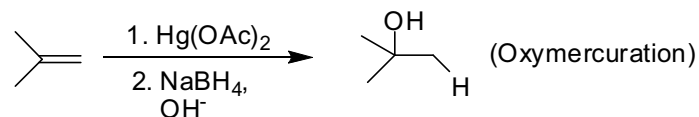
#### - Alkyl halide formation



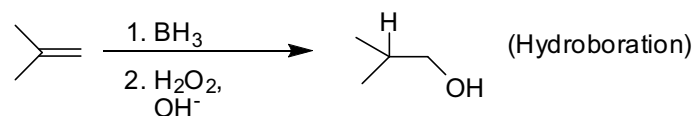
X = Br, Cl, or I.

Halogen ends up on the more substituted carbon (Markovnikov Addition).

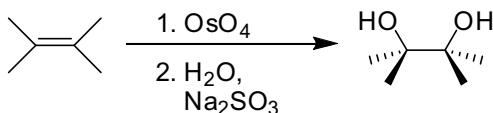
#### - Alcohol formation: Markovnikov



#### - Alcohol formation: anti-Markovnikov

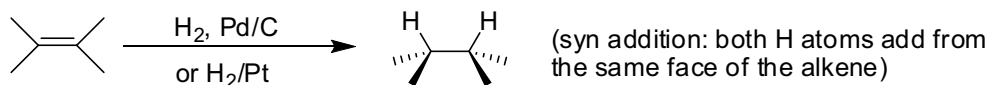


#### - 1,2-Glycol formation (dihydroxylation): syn addition

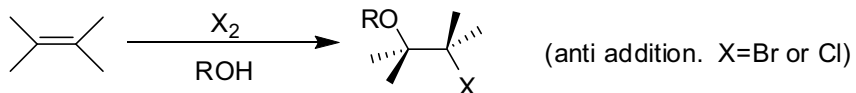


(anti addition could be achieved through: 1) epoxide formation, followed by 2) epoxide ring opening.)

#### - Alkane formation (reduction of double bond)

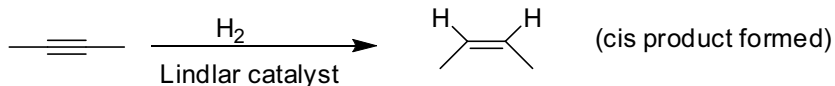


#### - Bromo(and chloro) ether formation

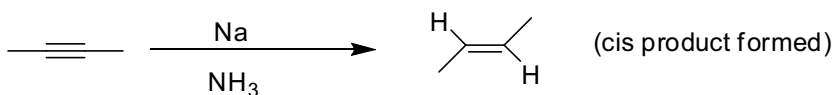


### 2. Reduction of Alkynes

#### - cis-Alkene formation

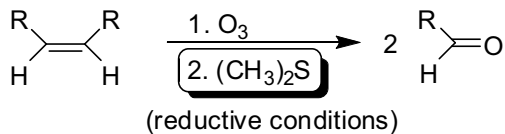


#### - trans-Alkene formation

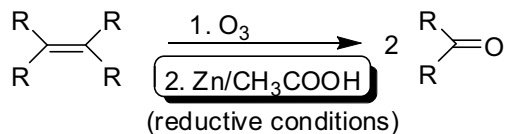


### 3. Cleavage of Double Bonds

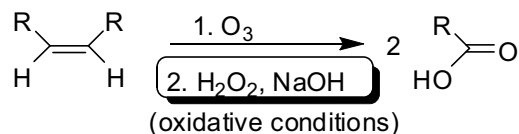
#### - aldehyde formation



#### - ketone formation

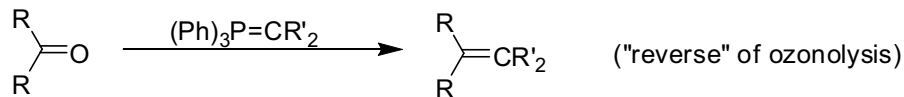


#### - carboxylic acid formation

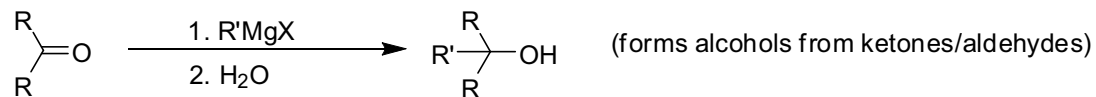


### 4. C-C Bond Formation

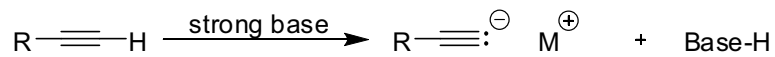
#### - Wittig Reaction



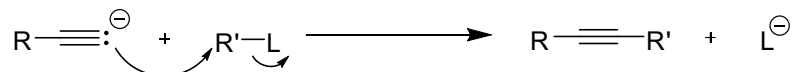
#### - Grignard Reaction



#### - Alkynylation



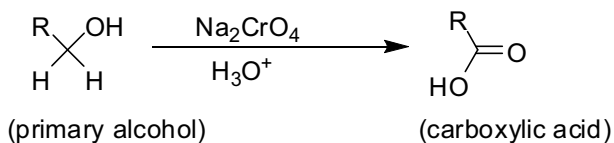
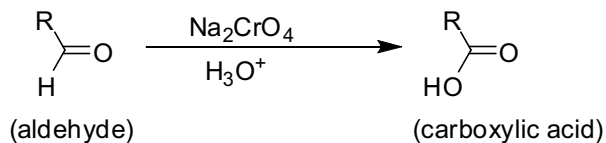
(strong base: nBuLi, NaNH<sub>2</sub>, and etc. M=Li or Na, respectively.)



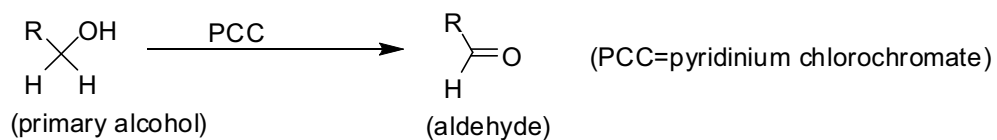
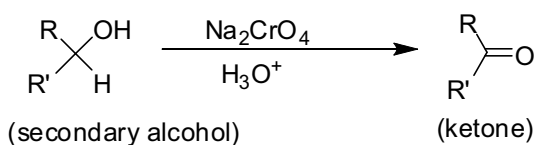
(L=leaving group)

### 5. Oxidation

#### - carboxylic acid formation

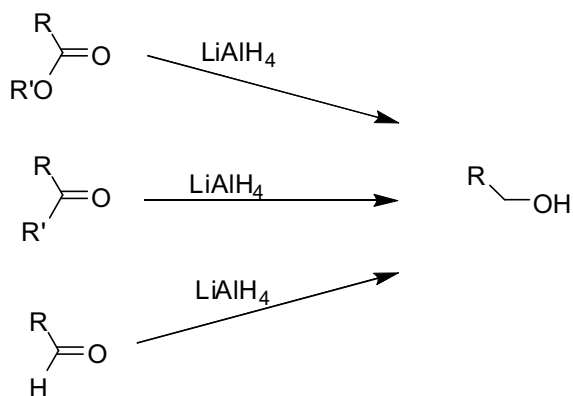


#### - ketone/aldehyde formation



### 6. Reduction

#### - alcohol formation



### 7. Functional Group Conversion

#### - conversion of -OH into a better leaving group

