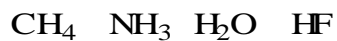
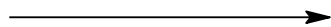


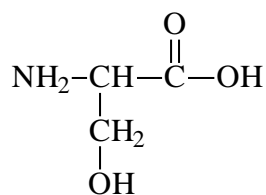
The Seven Pillars of Organic Chemistry  
Professor Diab  
USF

1. Acidity/basicity

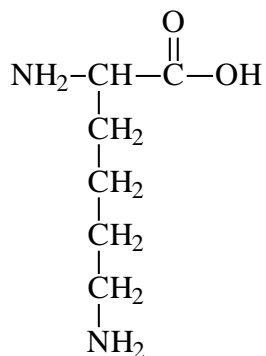
Increasing acidity



2.

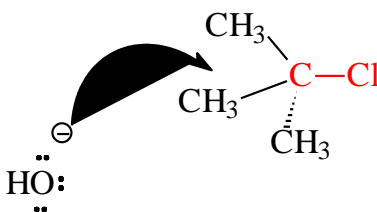
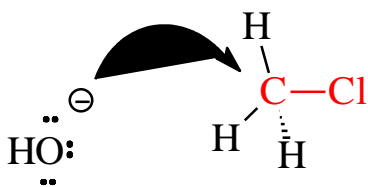


Serine: pH of side chain is 7

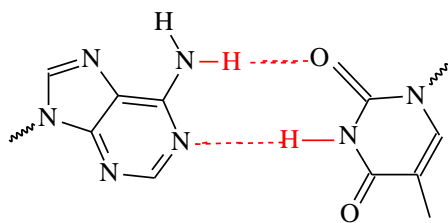


Lysine: pH of the side chain is 10.53

3. Dipole-Dipole Interaction and Reactivity

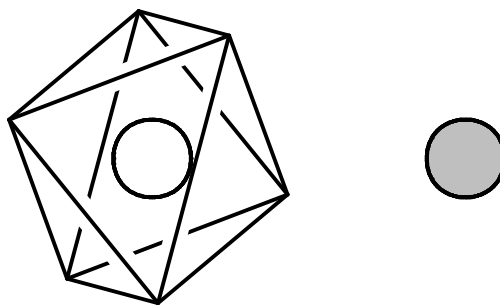


4.



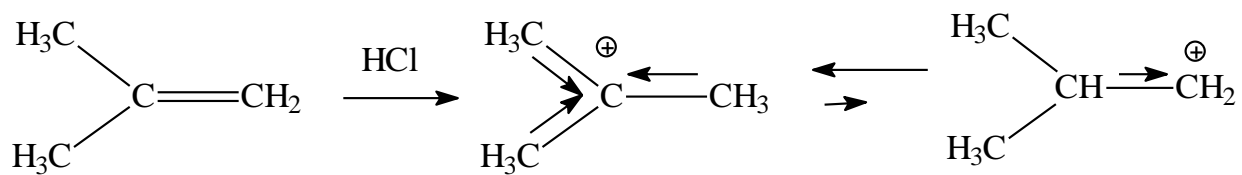
Adenine

Thymine

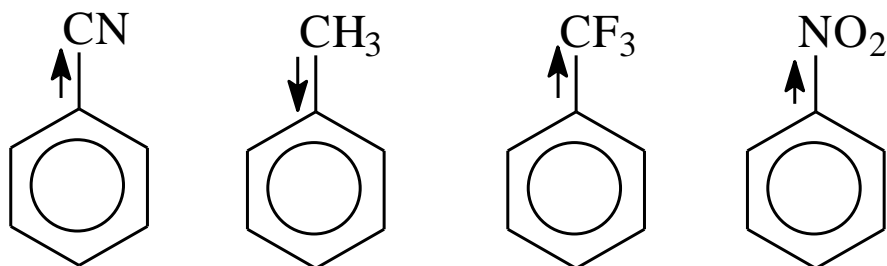


Enzyme-Substrate

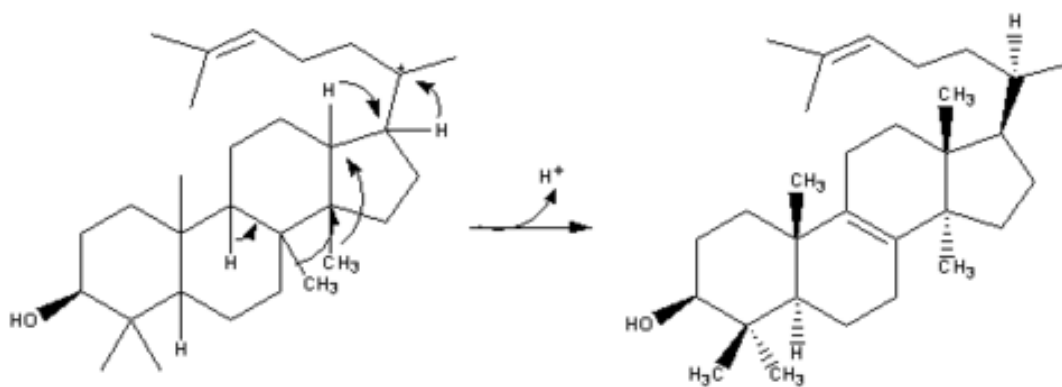
5. Stability and Reactivity of the Carbocation: 1,2 – Shift?



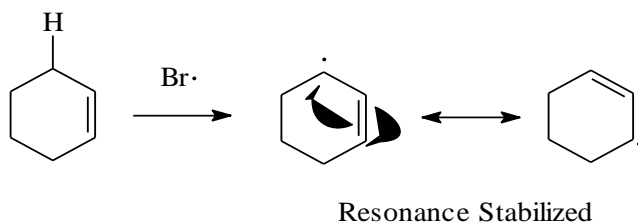
6.



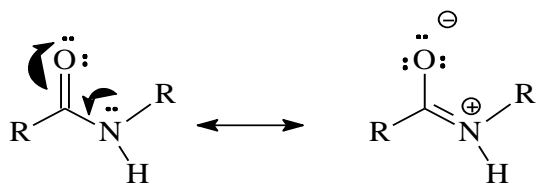
7.



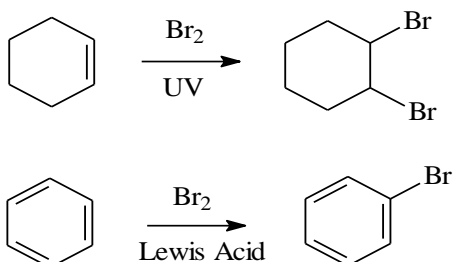
8. Delocalized of Electrons – Structure and Reactivity



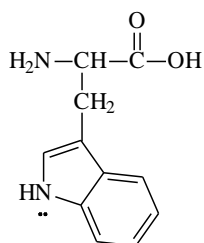
9.



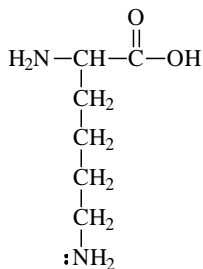
10. Structure and Reactivity - Addition Vs. Substitution Reactions



11. Delocalized Electrons: Basicity

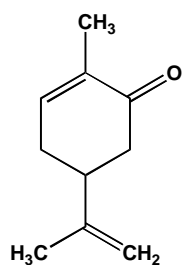


Tryptophan pH = 7  
Lone pair are delocalized in the aromatic system - needed to form conjugated, aromatic system

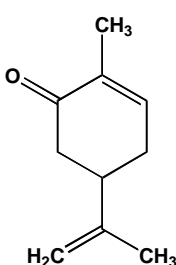


Lysine pH = 10.53  
Lone pair are not delocalized. Hence they are available to be donated...  
Lewis Base

12. Stereoisomers – Chirality and Drug Reactivity

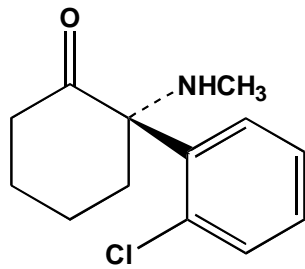


**d-carvone**  
**(CARAWAY)**



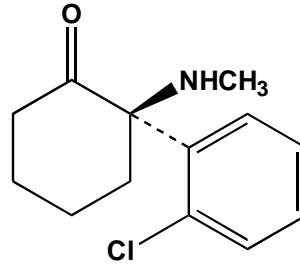
**l-carvone**  
**(SPEARMINT)**

13.



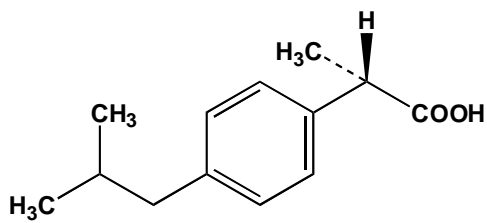
**S-(+)-Ketamine**

**2-4 times more potent than R(-)-ketamine in anaesthesia**



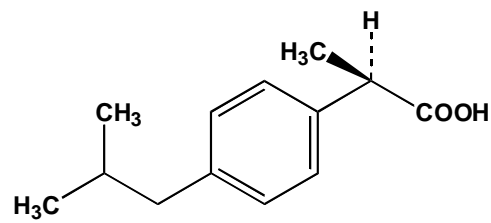
**R(-)-Ketamine**

**Causes spontaneous motor activity and post-emergent distress**



**S-Ibuprofen**

**Inhibits platelet thromboxane production twice as effectively as does the racemate**



**R-Ibuprofen**

**Racemizes to the S-form and does not cause G.I. lesions**