Amino Acids — Last Lecture (:'()

Note Title 5/15/2014

Announcements:

(1) Please fill out course evaluations + Discussion section evaluations.

(2) VMA's : TODAY , 5-7 pm, 130 Sharp Lab

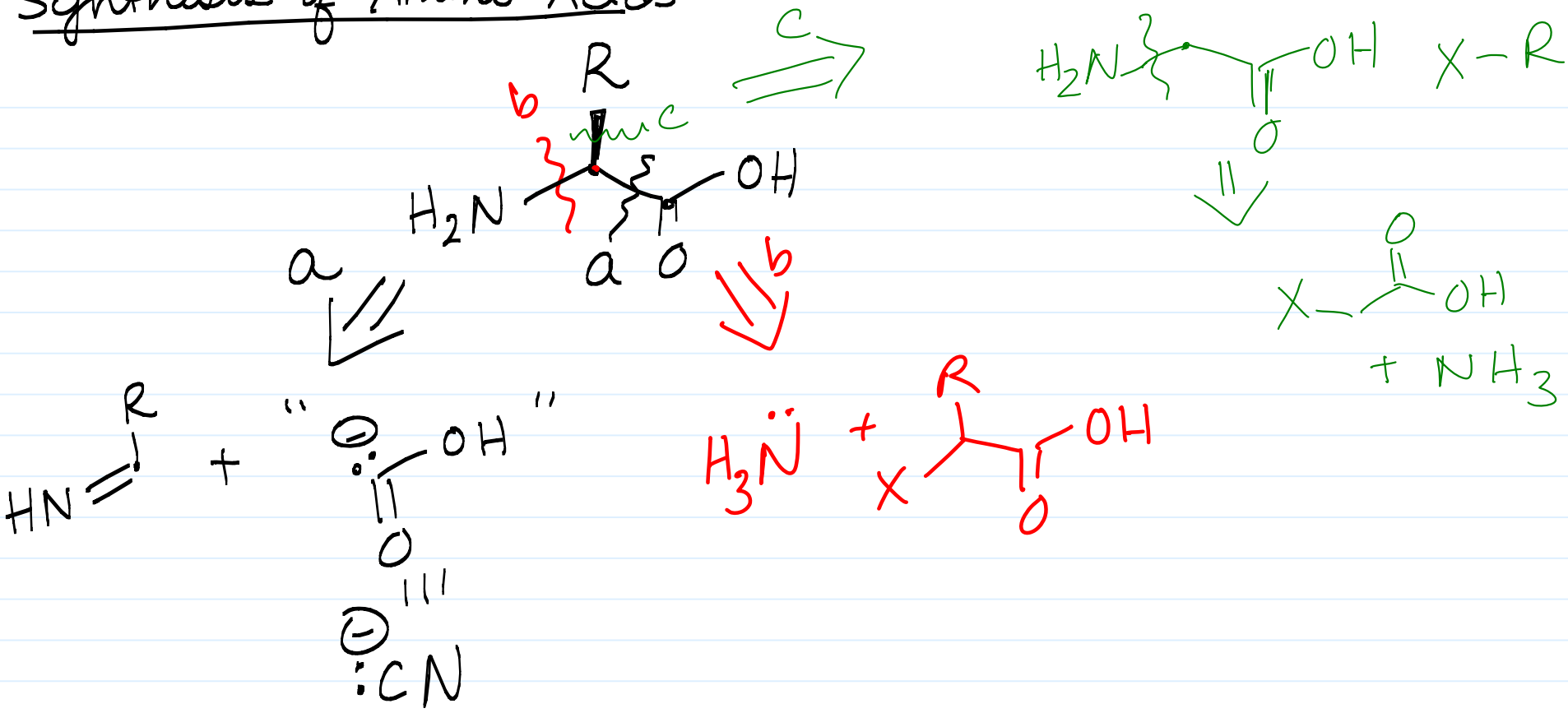
(3) Final Exam: Wed, 5/28 7-10 pm
Room: TBA

(4) Extra Office Hours / Review Sessions:

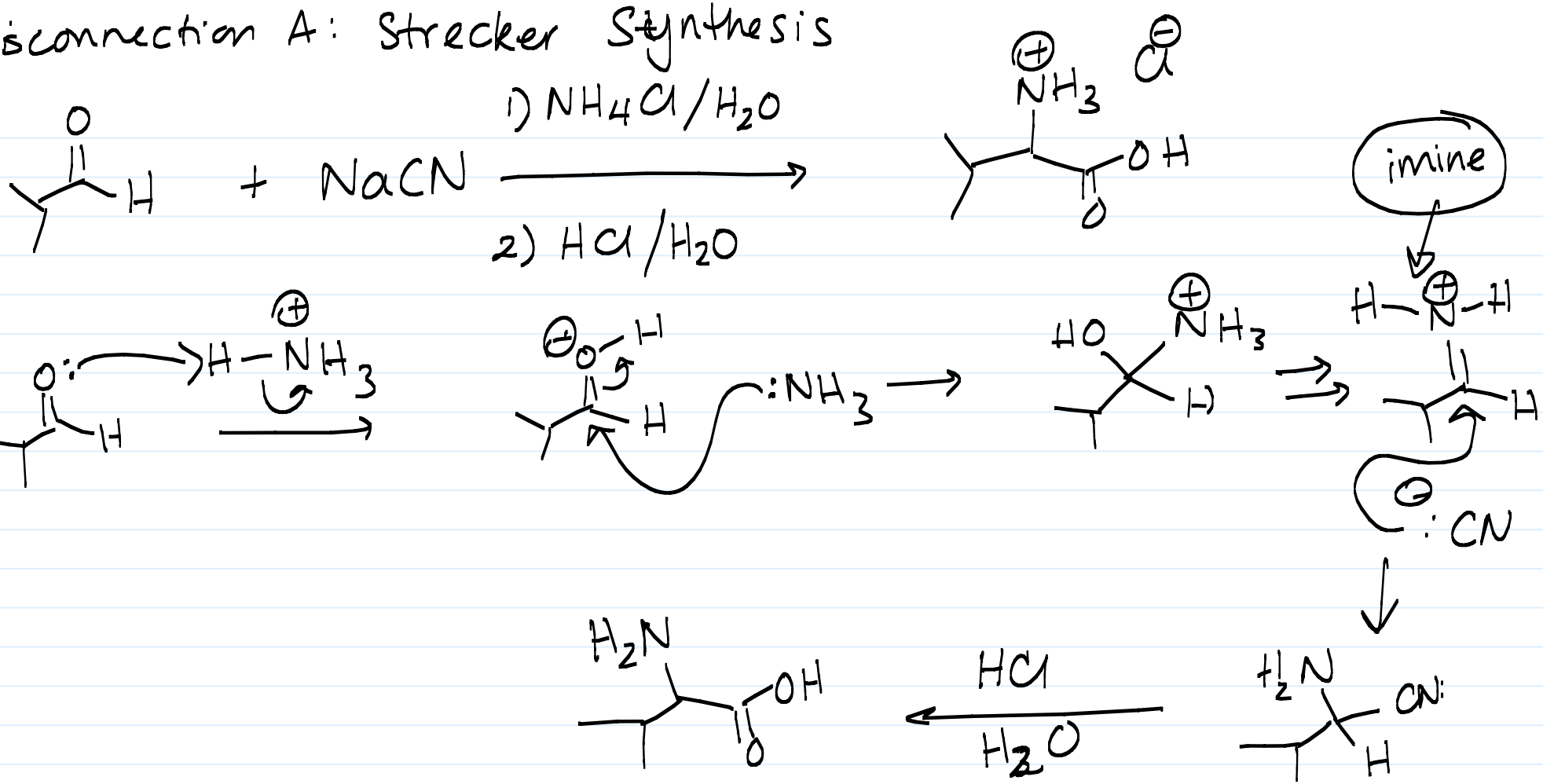
Tues, 5/20	12:30 - 1:30,	205 BRL (Jixin)
	3:30 - 4:30,	220 BRL (Mary)
Thurs, 5/22	10:30 - 11:30,	220 BRL (Mary)
Tues, 5/27	12:30 - 1:30,	205 BRL (Songnan)
	3:30 - 5:00,	319 WHL (Mary, Kelsey)

(5) Rec Letters?

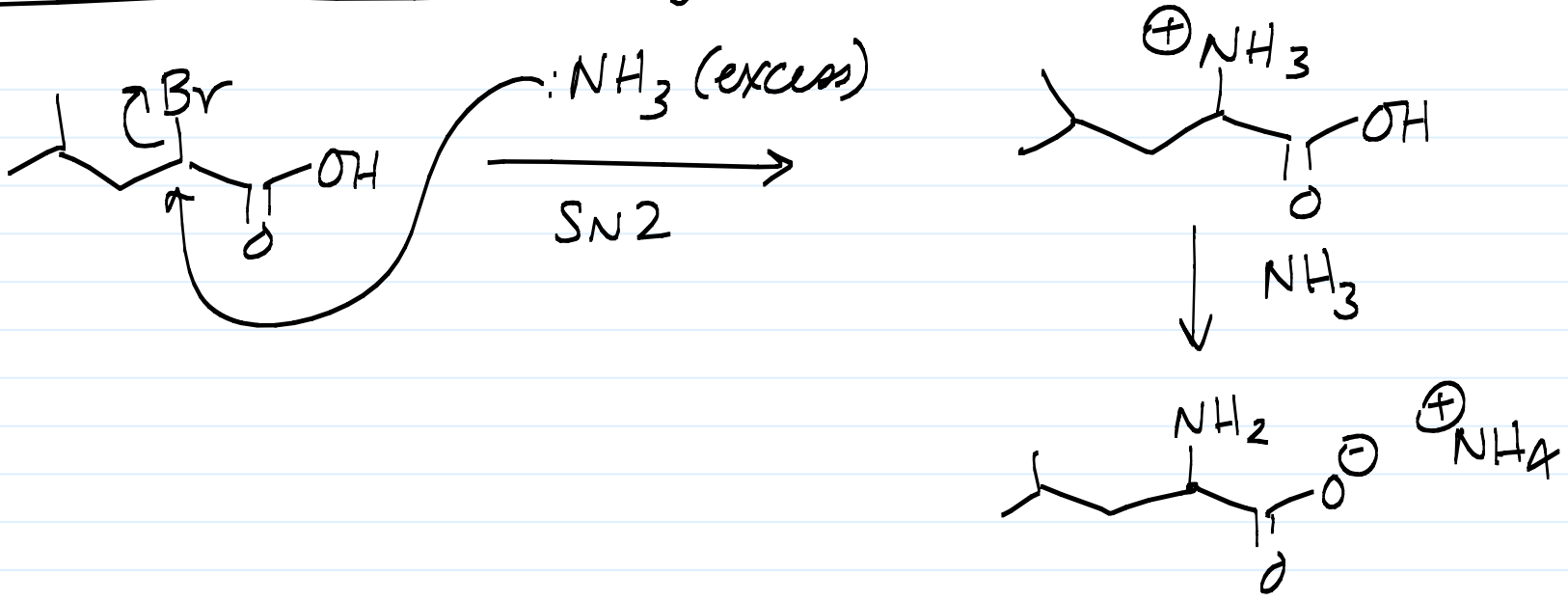
Synthesis of Amino Acids



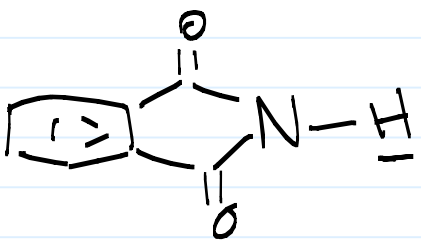
Disconnection A: Strecker Synthesis



Disconnection B: Alkylation of Ammonia

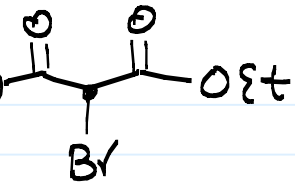


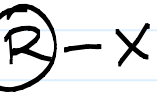
Disconnection C: Gabriel Malonic Ester Synthesis



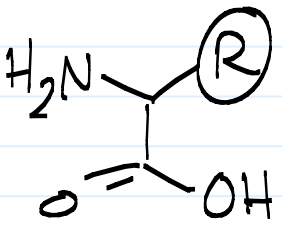
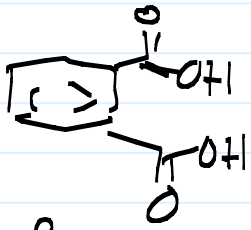
phthalimide

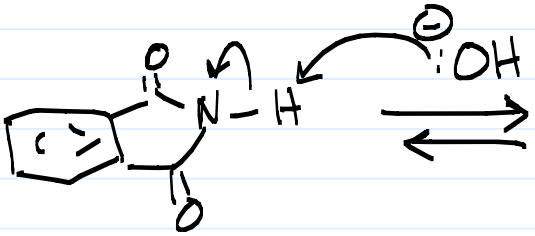
PhthNH

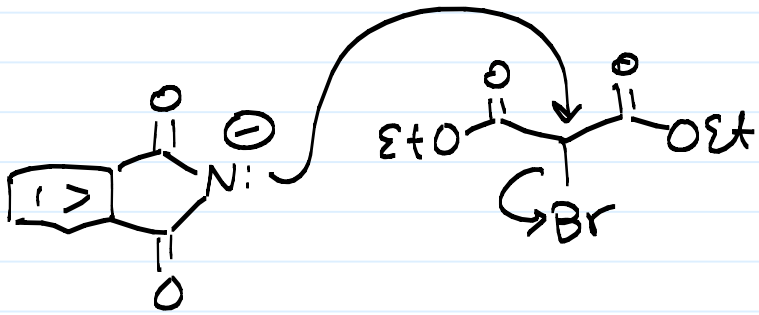
1) K_2CO_3, 

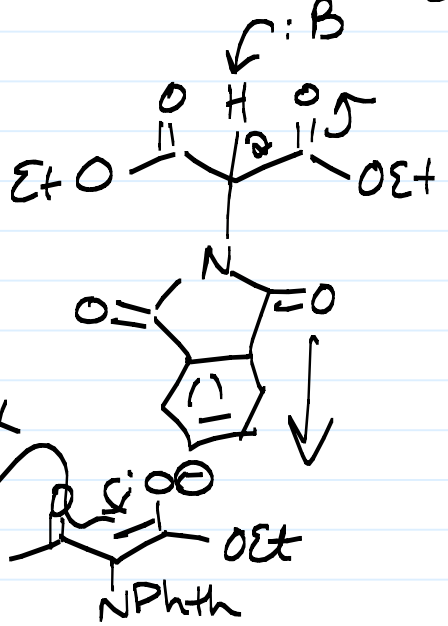
2) K_2CO_3, 

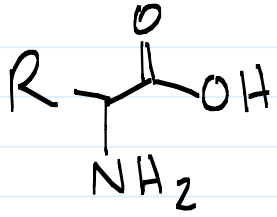
3) HCl/H_2O

 + CO_2 + 

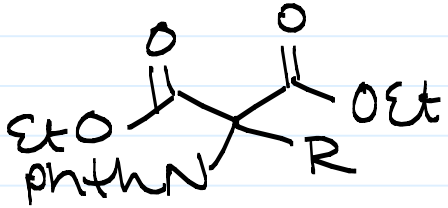




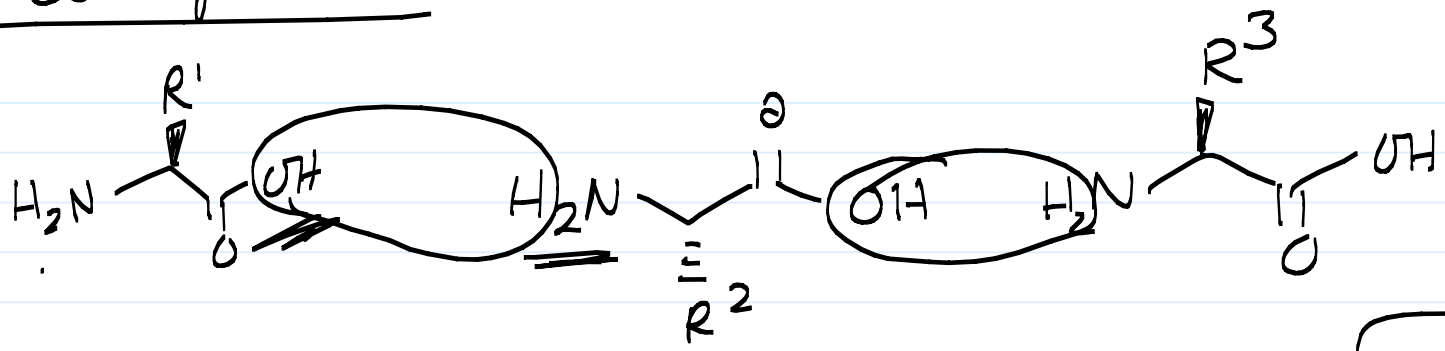




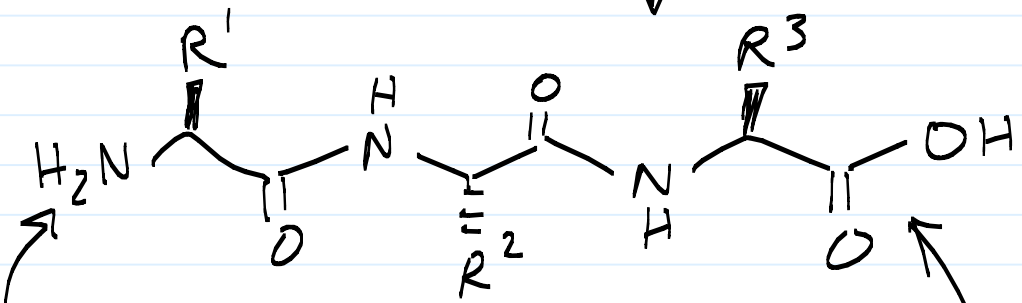
HCl, H_2O



Peptide Synthesis



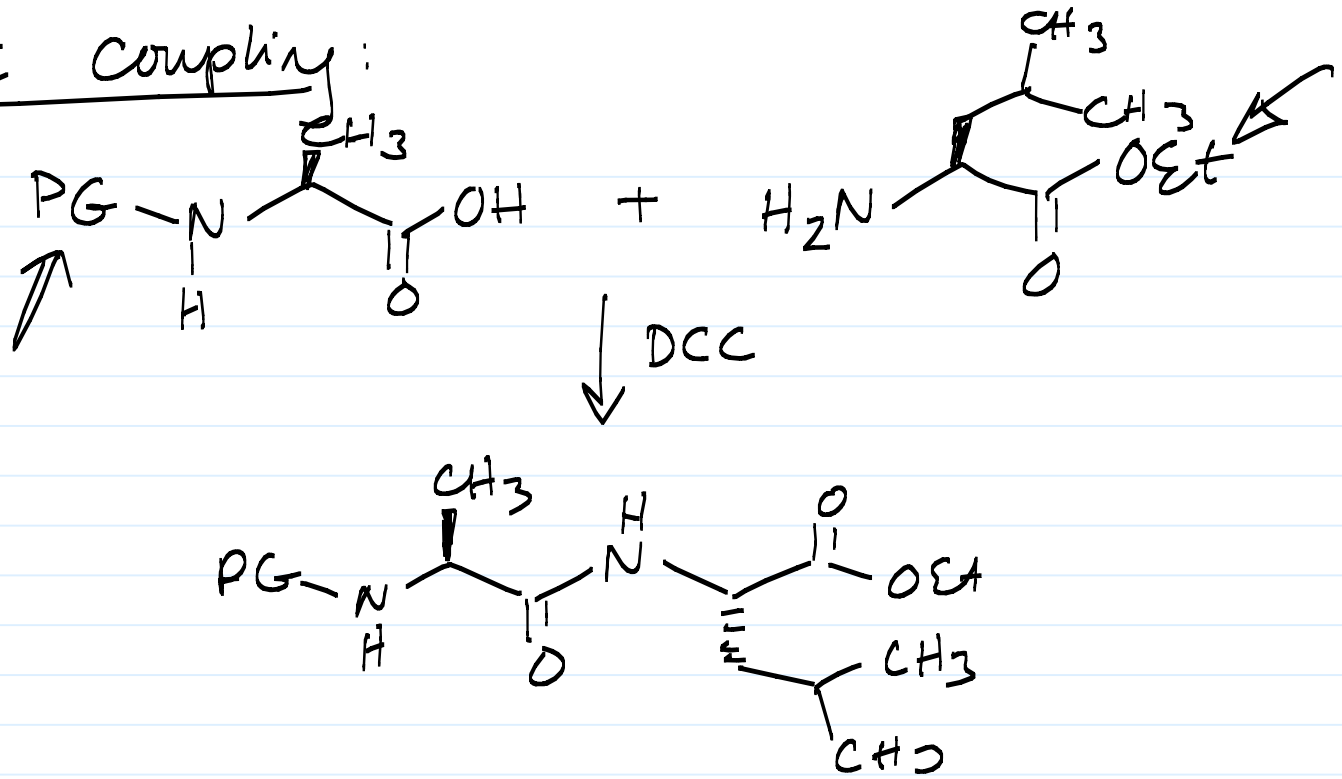
loss of H_2O → DCC



amino terminus on left

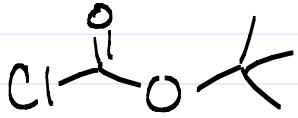
carboxy terminus on right.

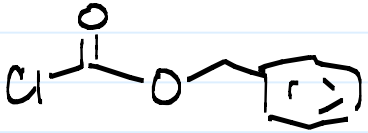
DCC coupling:



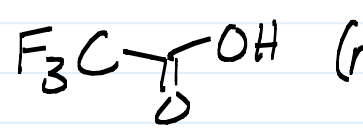
Protecting Group

Protection

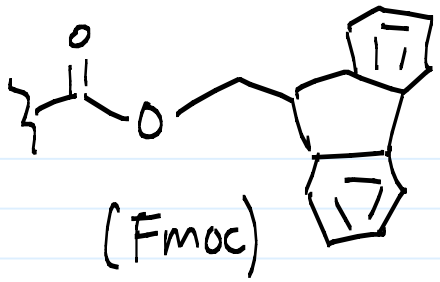




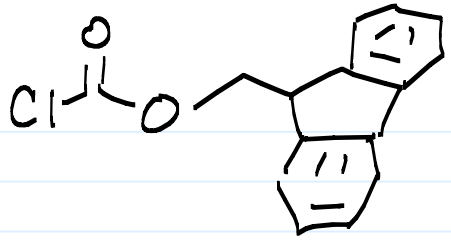
Deprotection

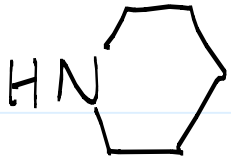


Pd/C, H_2

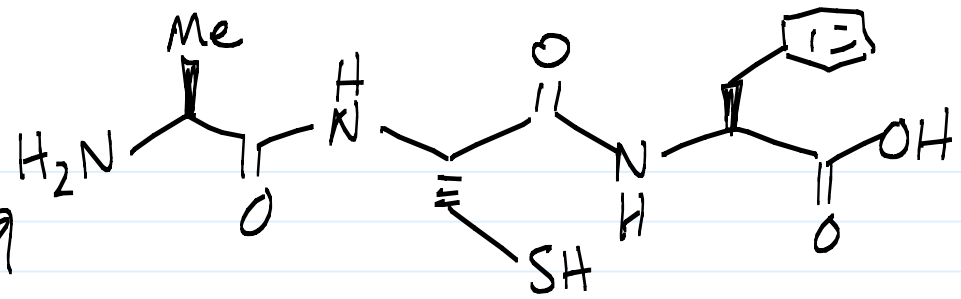


(Fmoc)





(mild base)



amino terminus on left

alanine
Ala
A

Cysteine
Cys
C

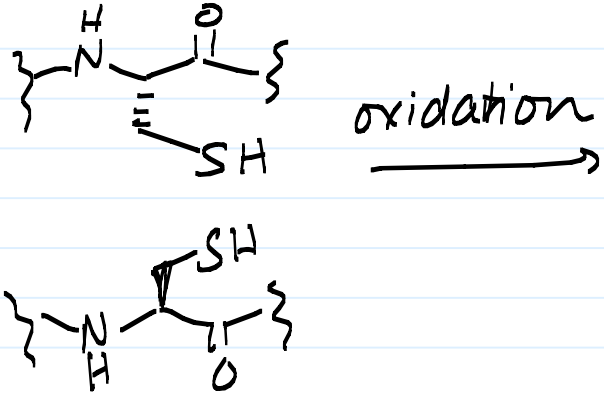
phenylalanine
Phe
F

ACF (not FCA)

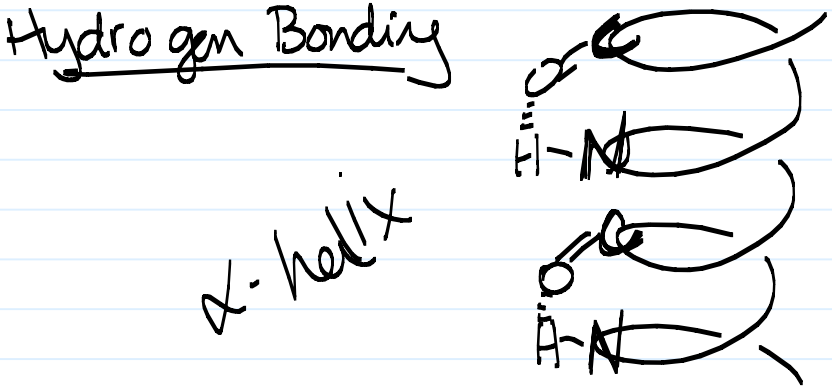
Protein Structure

1. Primary Structure = Amino Acid Sequence
2. Secondary Structure

Disulfide Bridges



Hydrogen Bonding



③ Tertiary Structure

Overall topology of Protein

- hydrophobic
- hydrophilic

④ Quaternary Structure

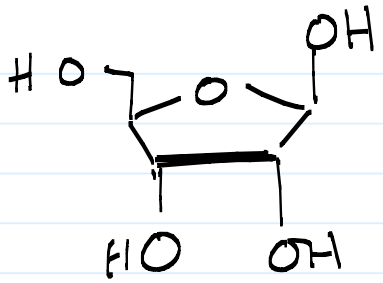
protein/protein interactions

DNA + RNA

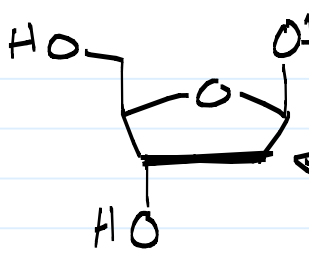
RNA

DNA

Sugar



β-ribofuranose

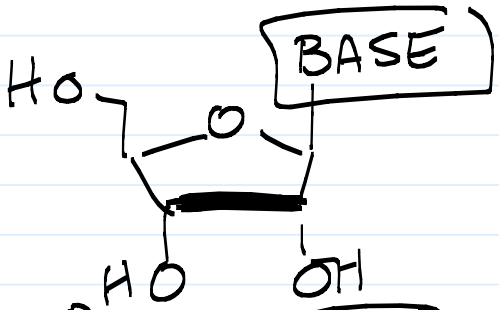


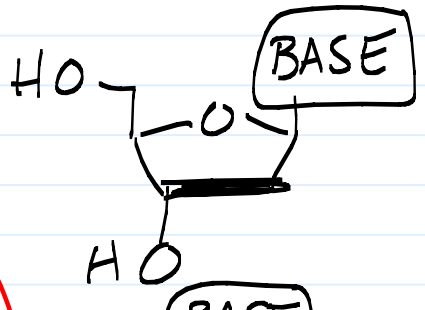
deoxy!

β-2-deoxyribofuranose

Nucleoside

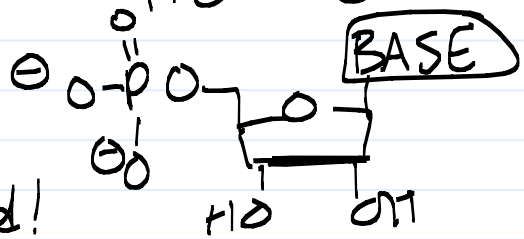
Add the Base

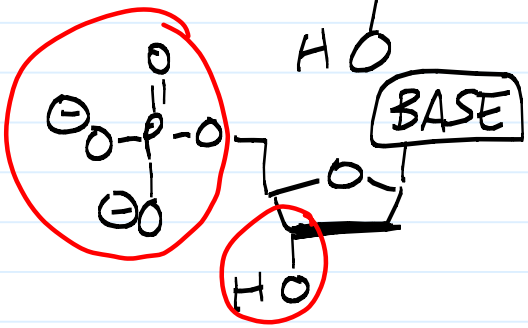




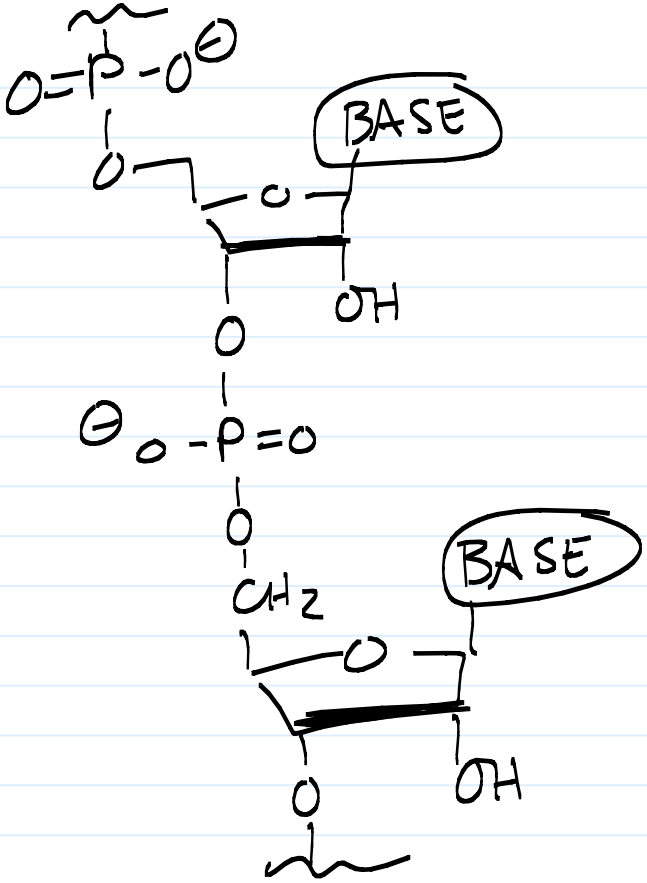
Nucleotide

Phosphorylated!

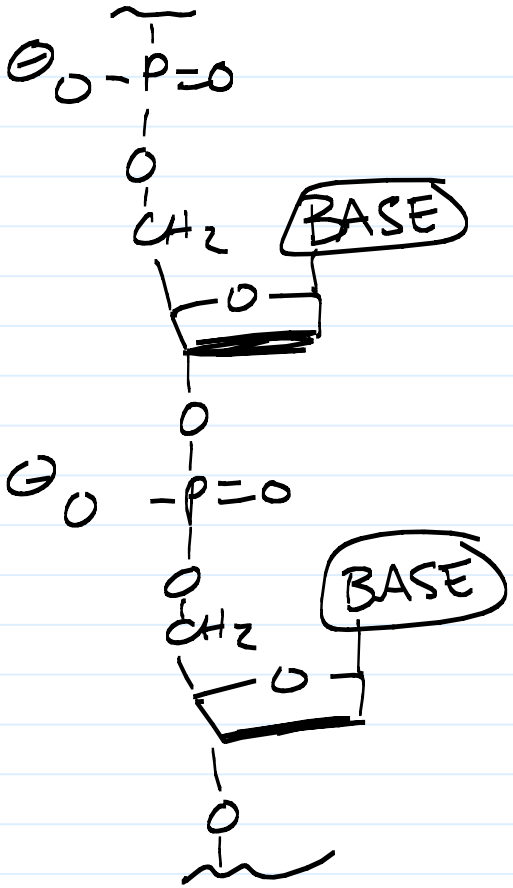




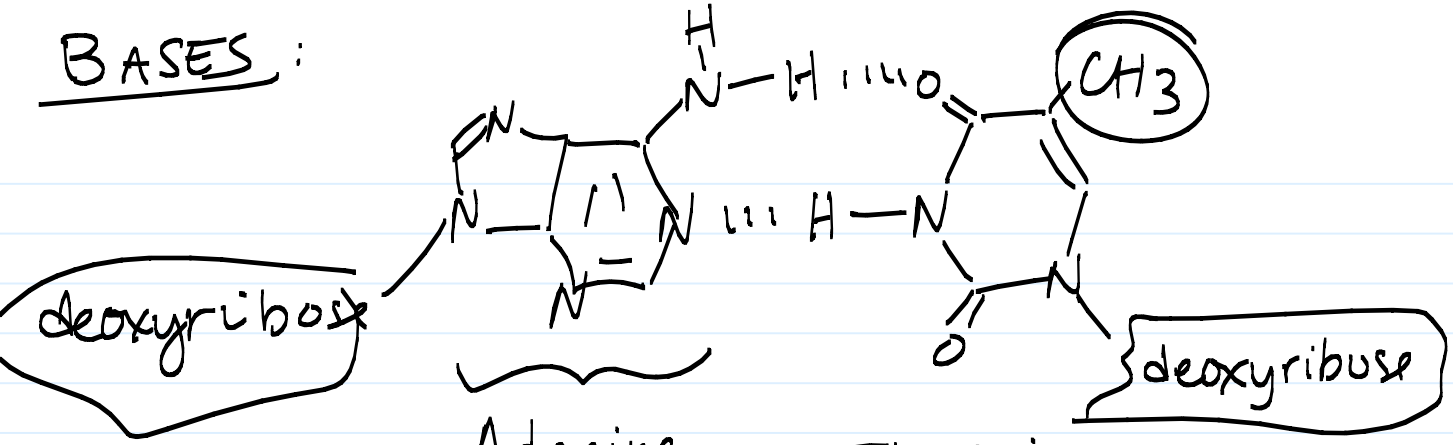
RNA



DNA



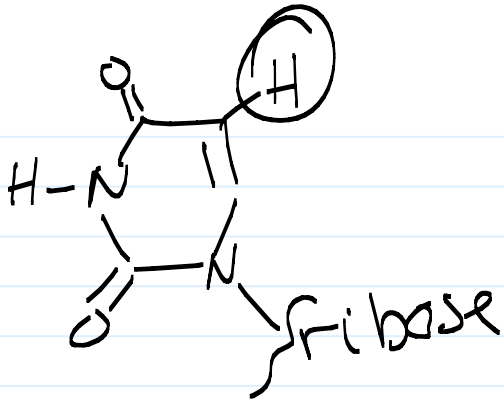
BASES:



Adenine
(A)

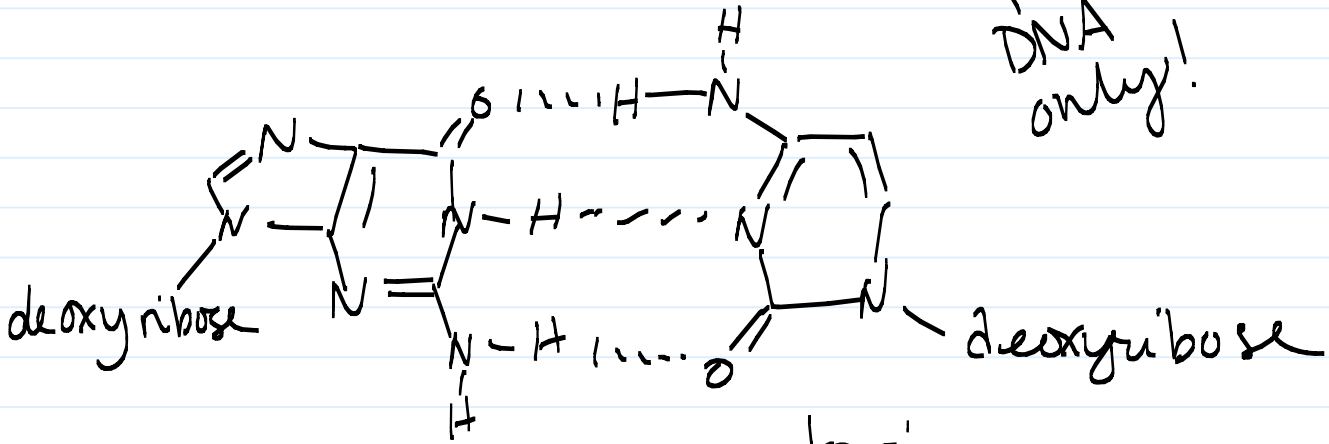
Thymine
(T)

DNA only!



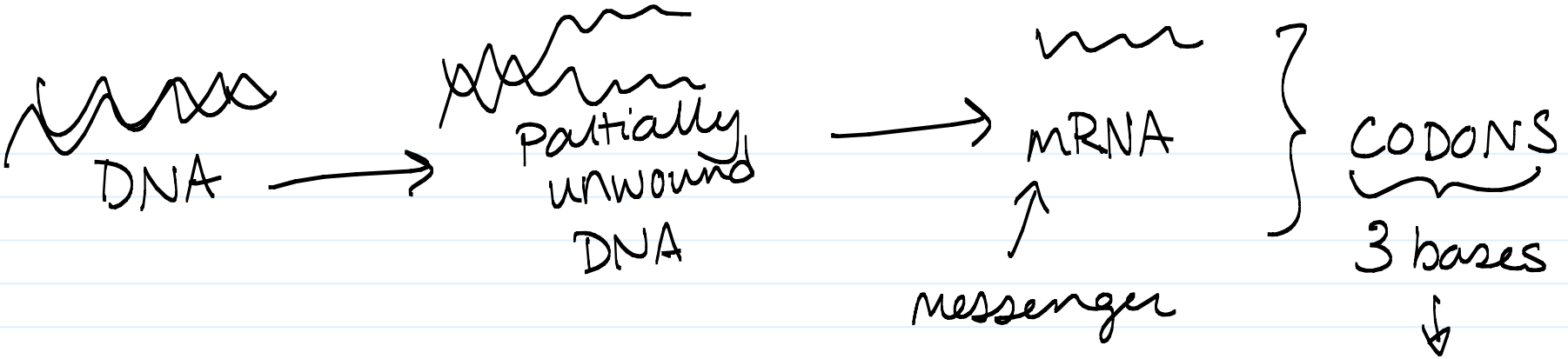
uracil
(U)

RNA only!



guanine
(G)

cytosine
(C)



"start" = AUG

"stop" UAA
UGA
UAG

UUU → Phe

UCU → Ser

See Table 23.2.