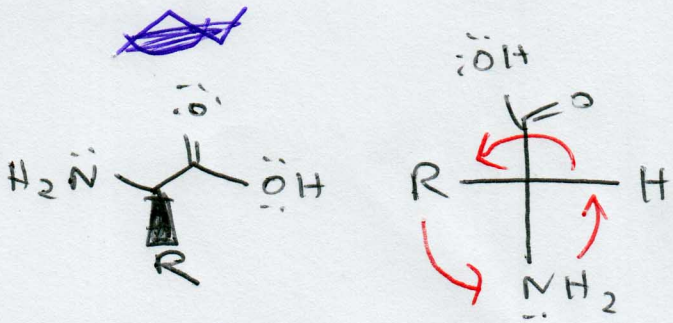
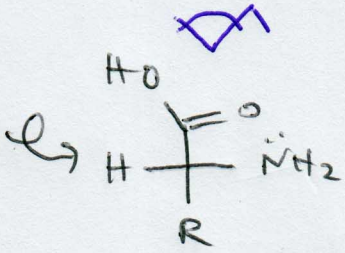
5/31/12

α-amino acids

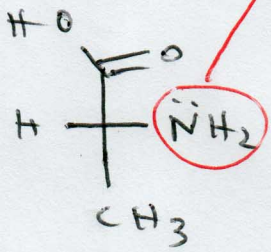
glycine

Gly G



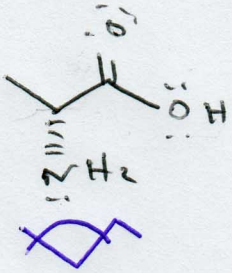


amino group on right

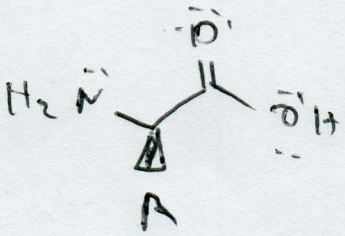


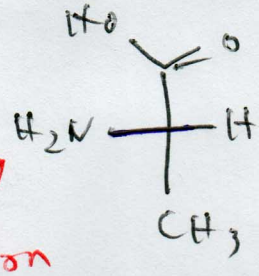
D-alanine

Ala A



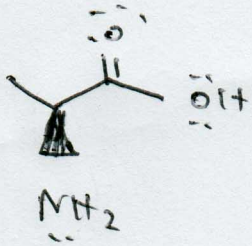
or





amino group on left

L-alanine



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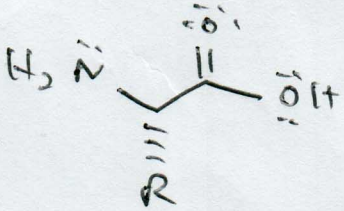
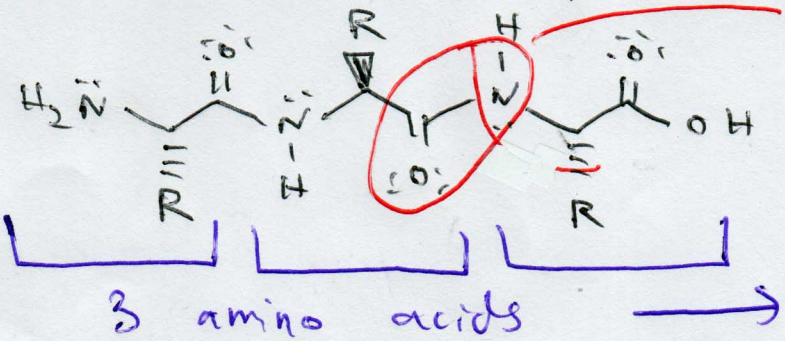


L-amino acids are biologically active

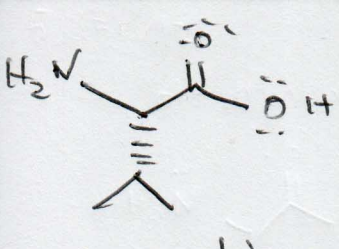
peptite- amino acid polymers



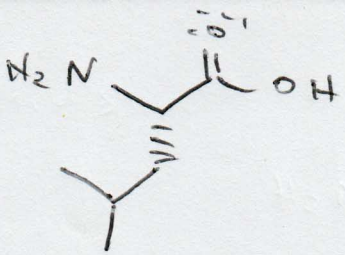
amide - relatively unreactive

3 amino acids → tripeptide

Sequence - list of amino acids in a ~~protein~~ peptide from the amino terminus to the acid terminus. (amino → acid)

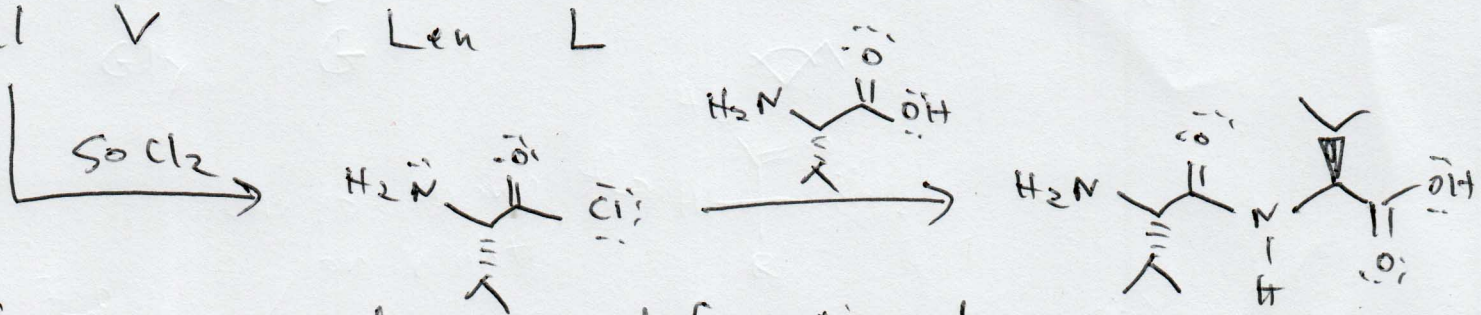


L-valine
Val V



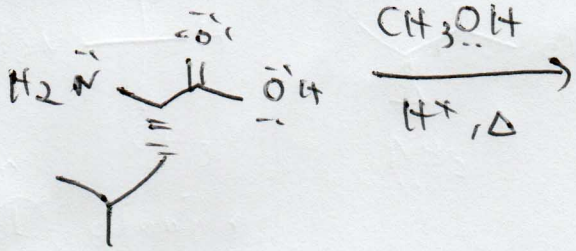
L-leucine
Leu L

⇒ dipeptide Val-Leu

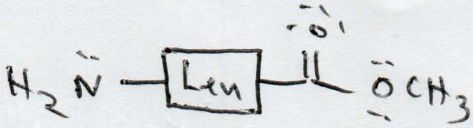


Since amino acids are difunctional, it is not possible to control the order in which amino acids add to one another without using a protecting group strategy.

C-protection



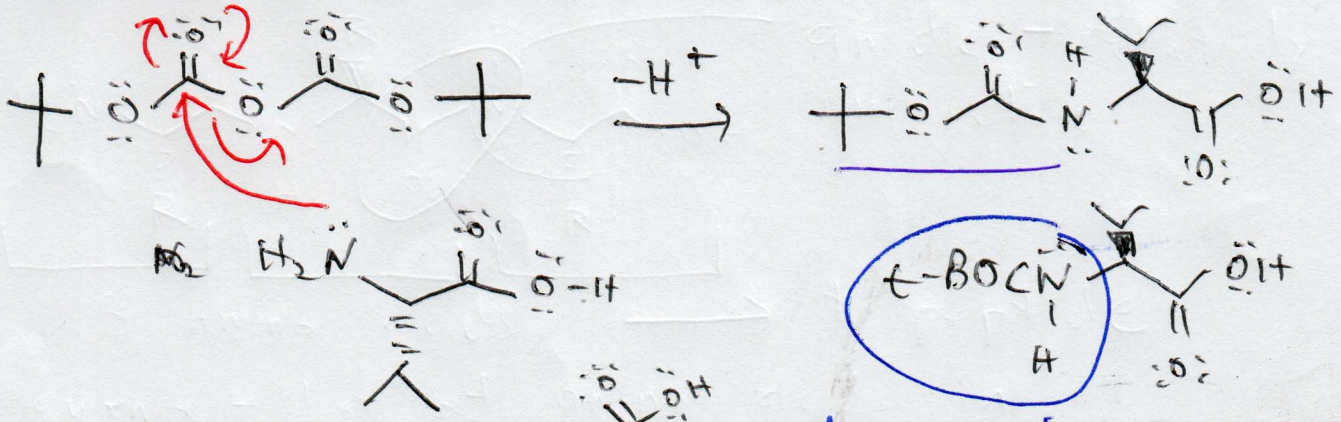
won't react w/ $SOCl_2$ or other reagents a carboxylic acid would



N-protection

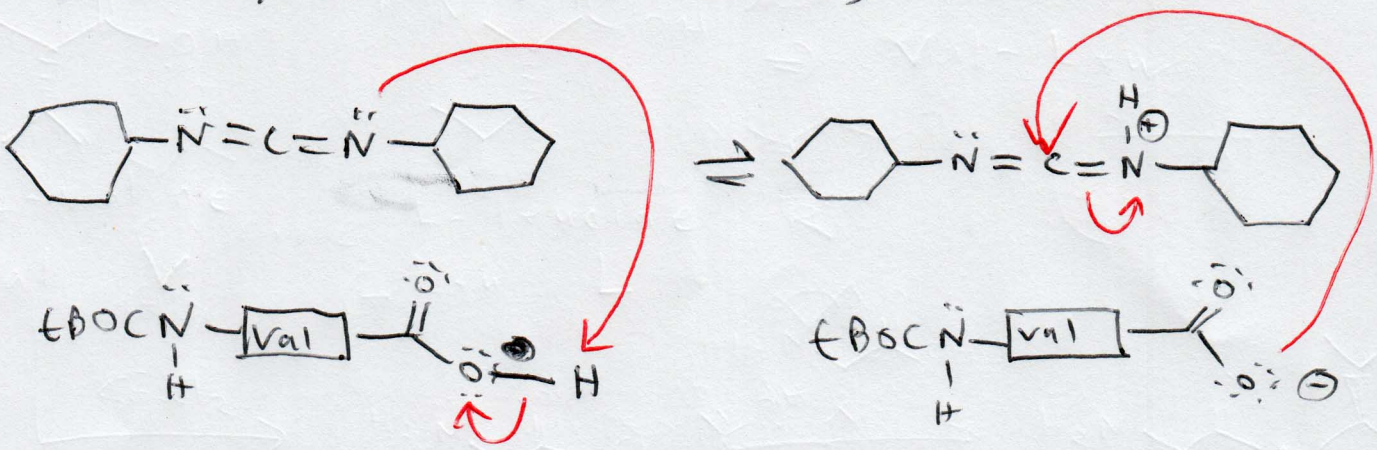
di-tert-butyl dicarbonate

t-BOC

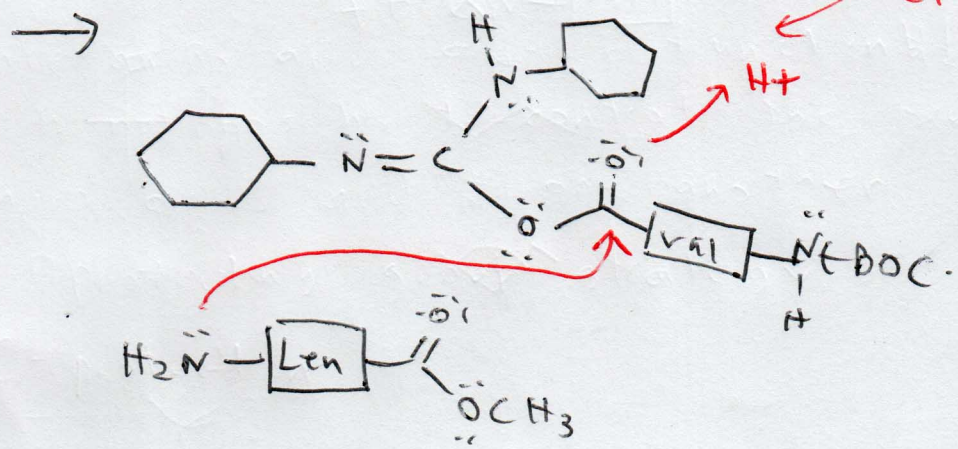


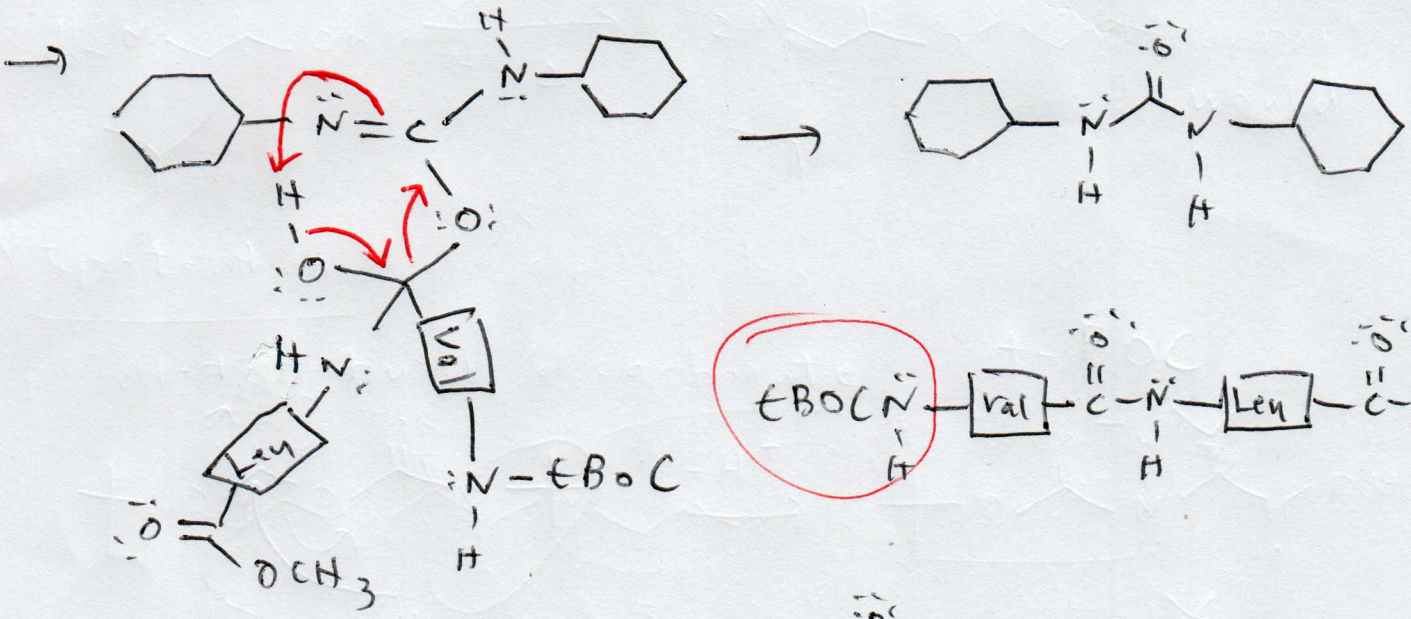
amide - won't react w/ carboxylic acid

dicyclohexylcarbodiimide (DCC)

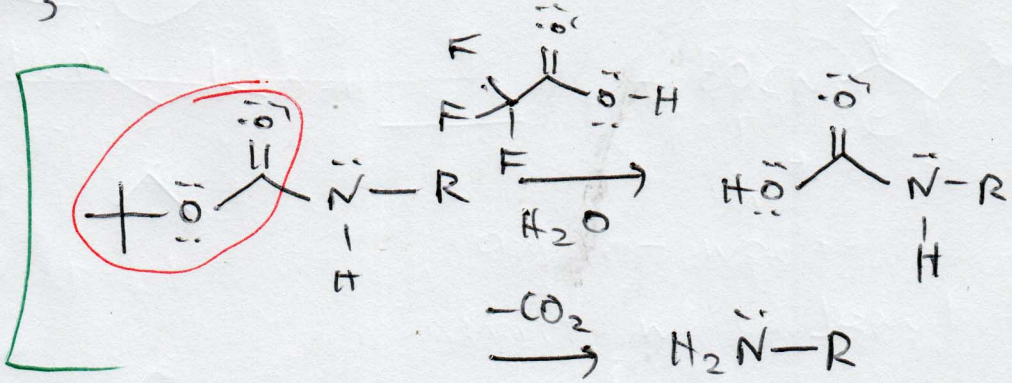


(Technically separate steps)

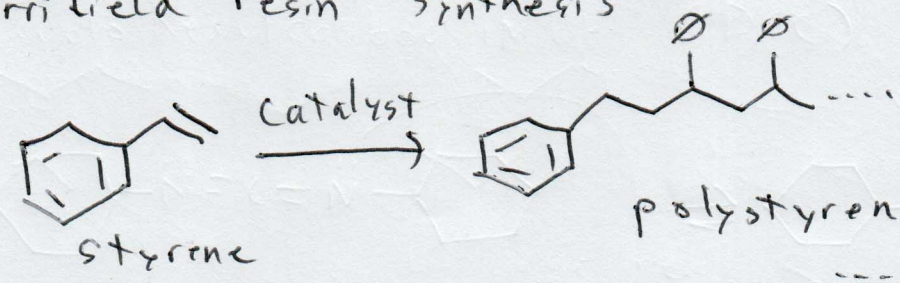


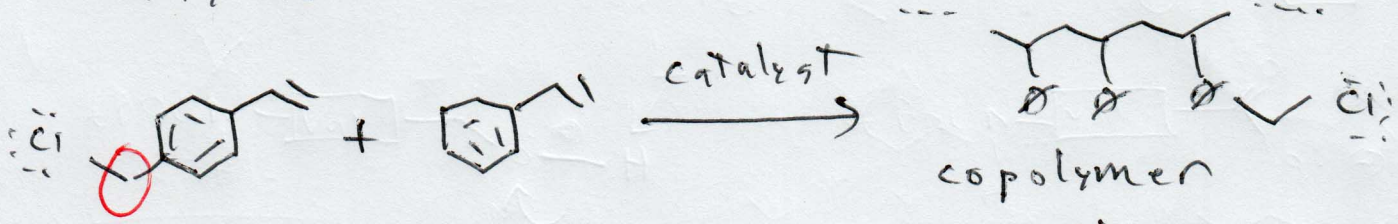


amino deprotection

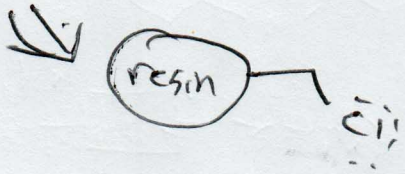


Merrifield resin synthesis

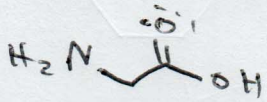




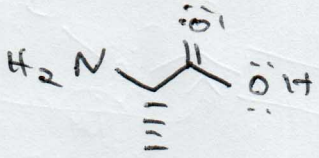
benzyl halide
→ very reactive



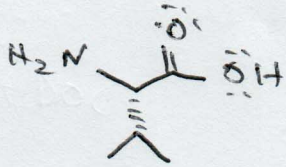
glycine



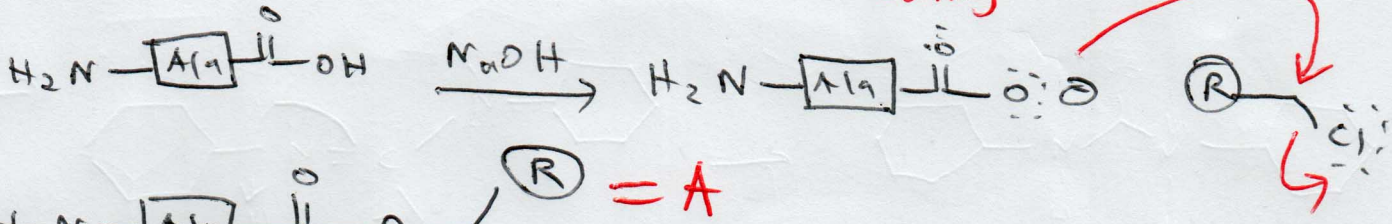
L-alanine



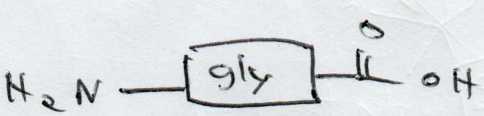
L-valine

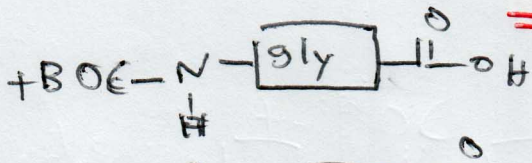


tripeptide VGA ← has the acid terminus that needs blocking

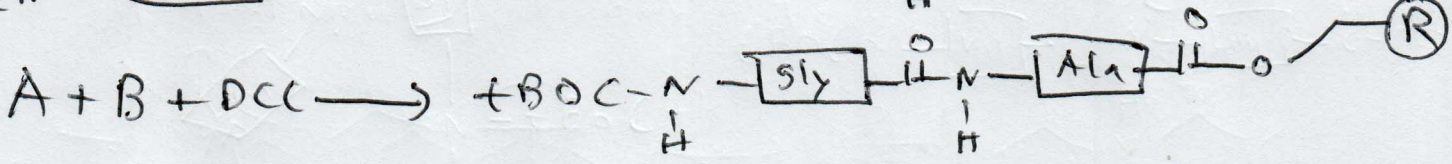


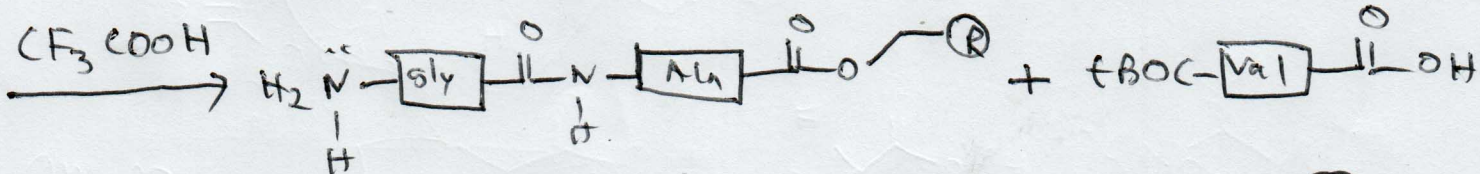
= A

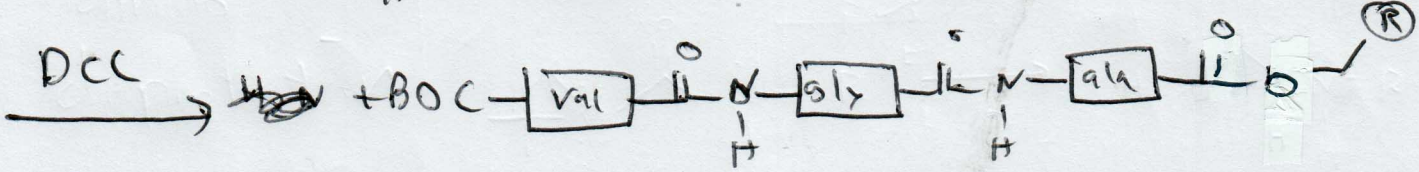




= B







CF3COOH → (de-Boc) HF → Val-Gly-Ala