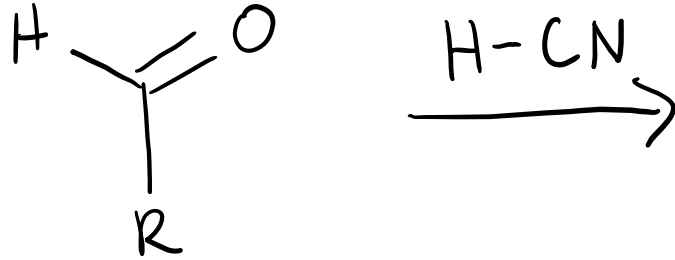


Carbohydrates: Chain Lengthening

Amino Acid Intro

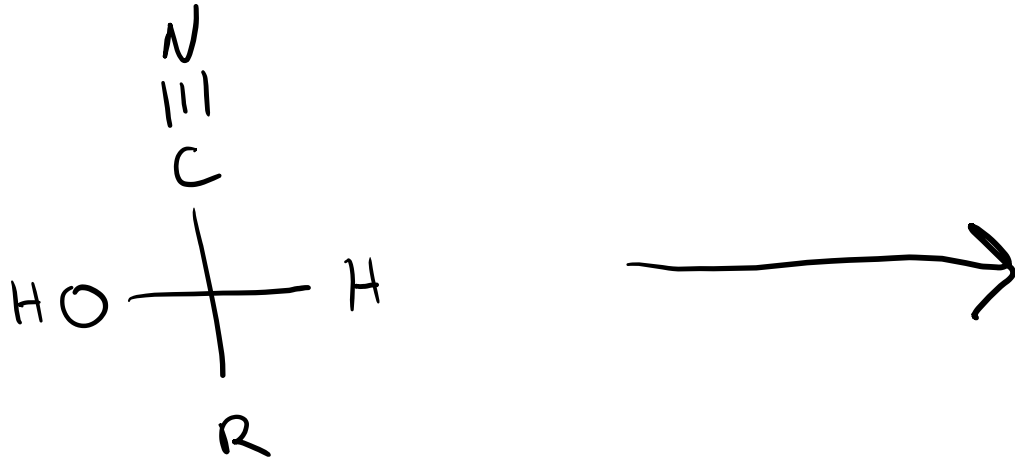
4/19/2023

Chain Lengthening: Kiliani-Fischer Synthesis

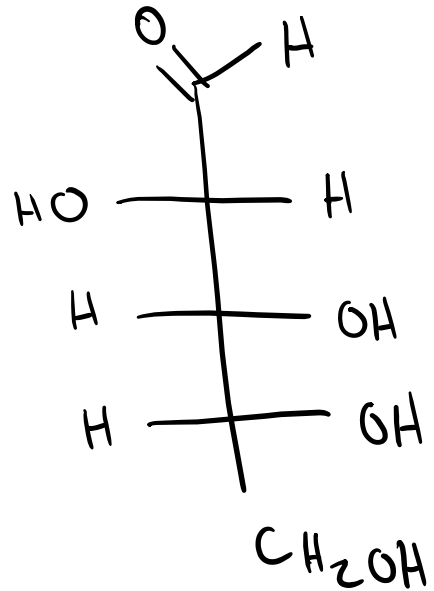


Mechanism:

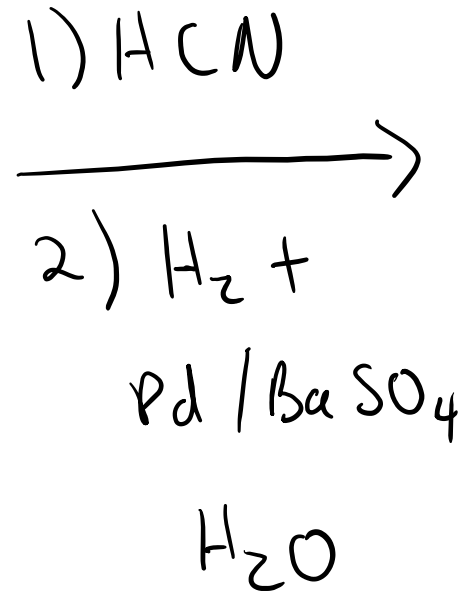
Chain Lengthening: Kiliani-Fischer Synthesis

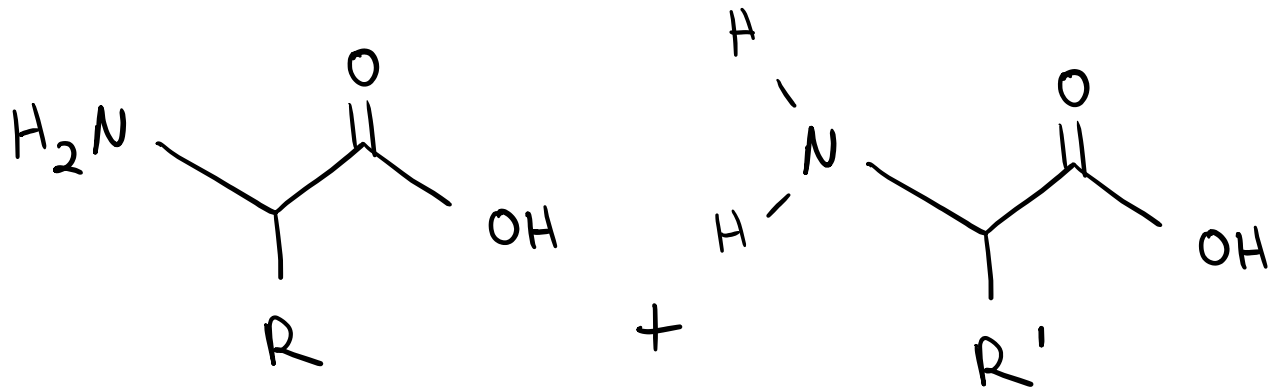
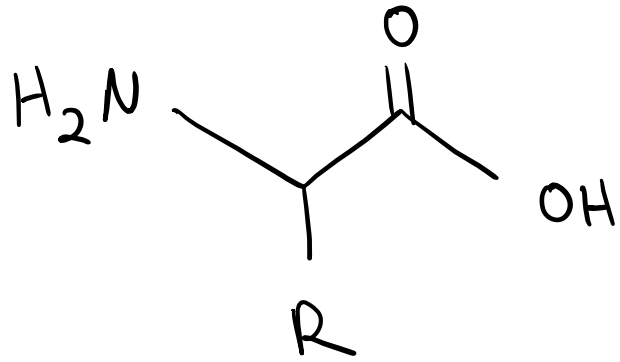


Chain Lengthening: Kiliani-Fischer Synthesis

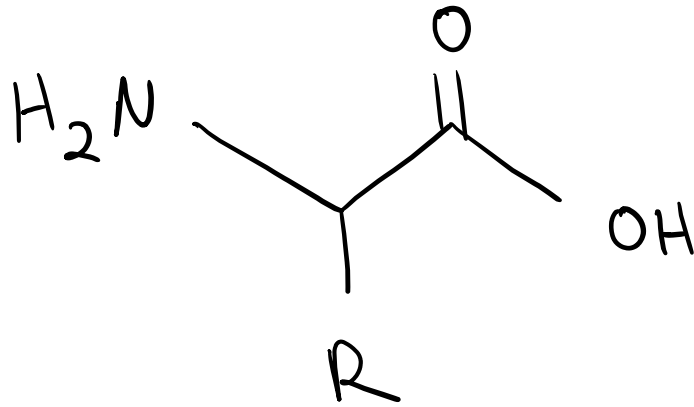


D-Arabinose



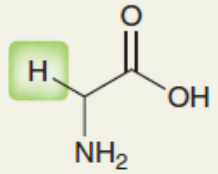


Amino Acid Side Chains



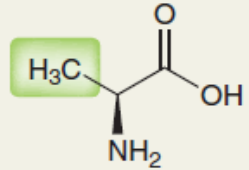
Amino Acid Side Chains

Glycine



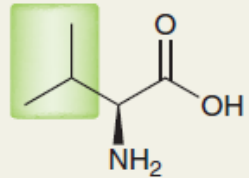
Gly G

Alanine



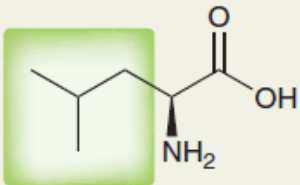
Ala A

Valine



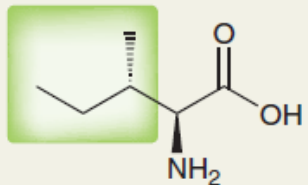
Val V

Leucine



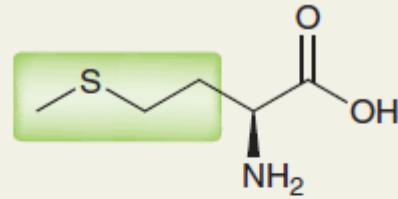
Leu L

Isoleucine



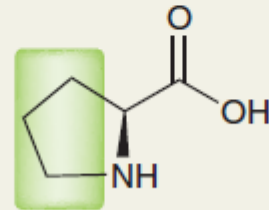
Ile I

Methionine



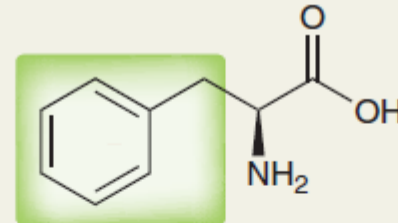
Met M

Proline



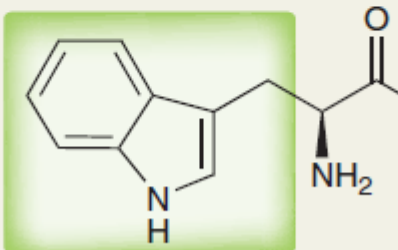
Pro P

Phenylalanine



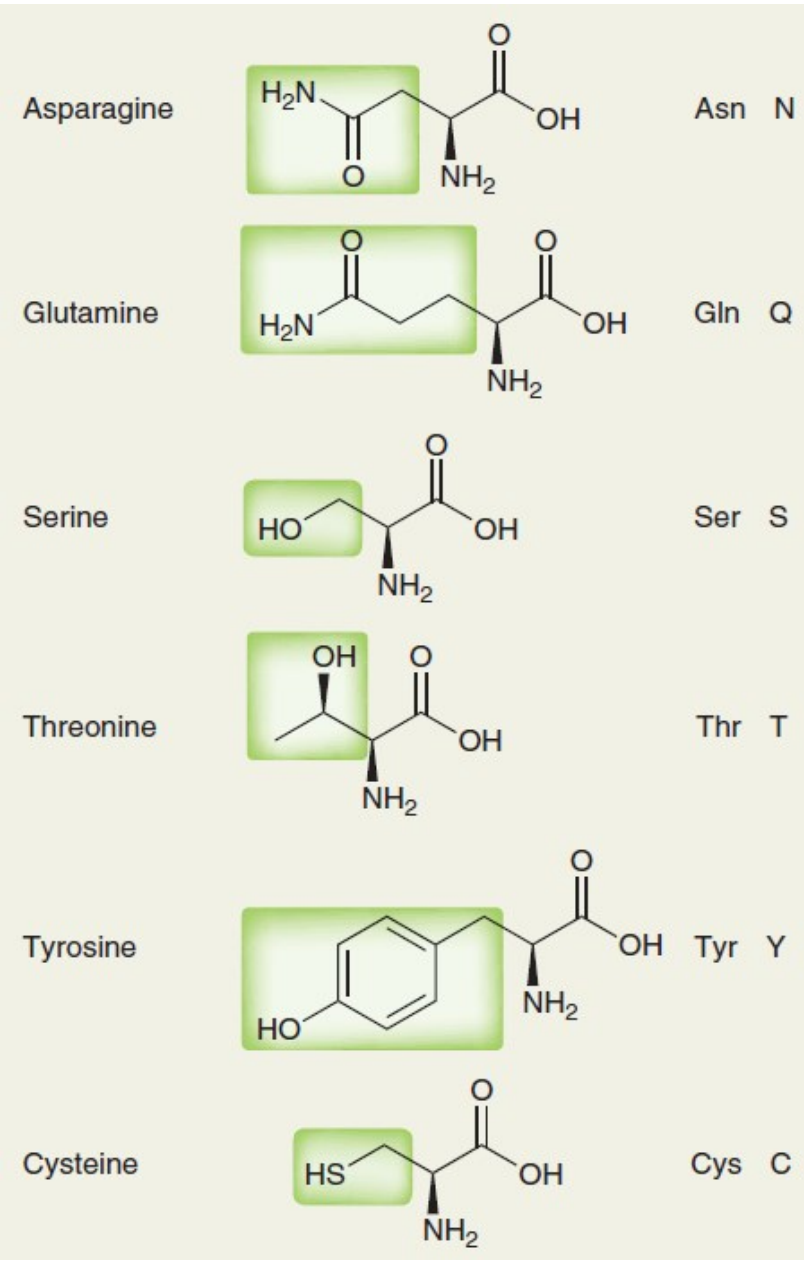
Phe F

Tryptophan

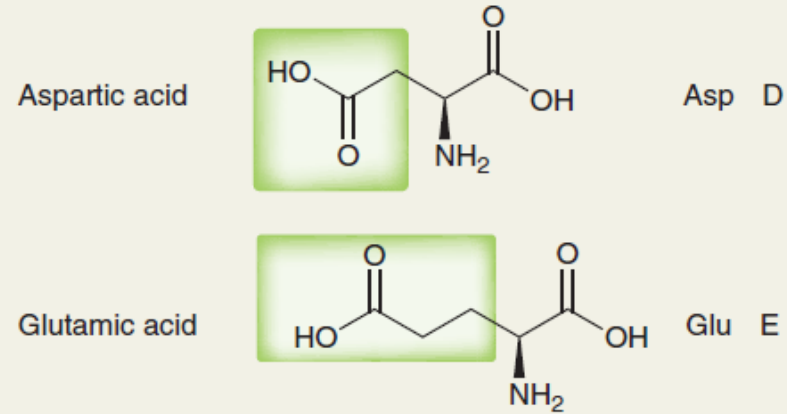


Trp W

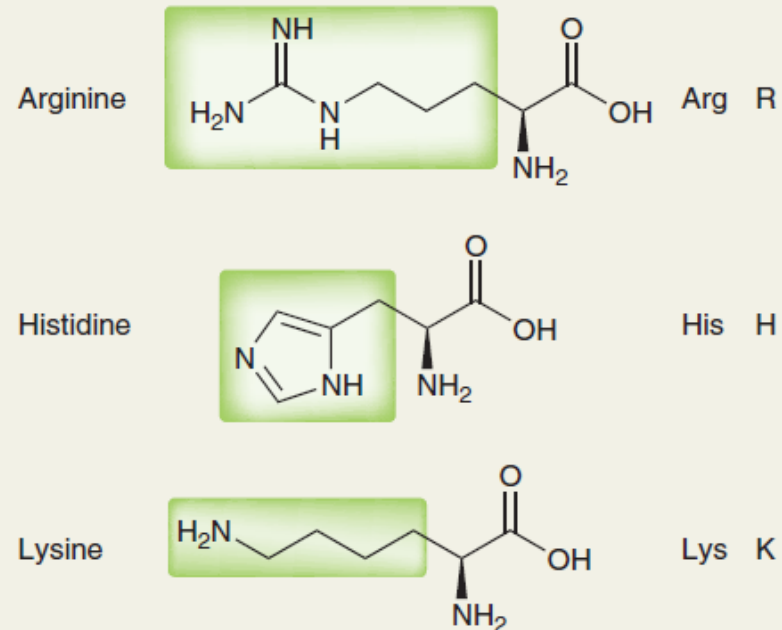
Amino Acid Side Chains



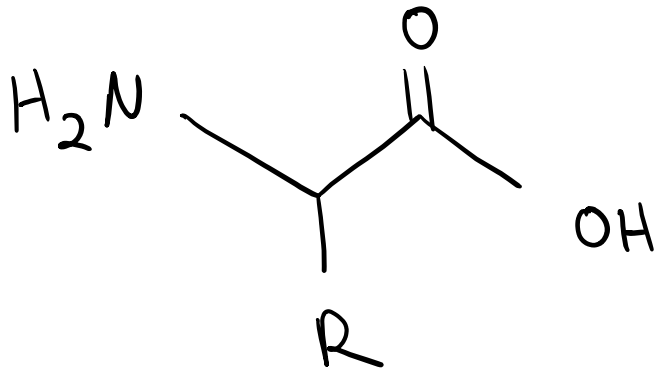
Amino acids with acidic side chains



Amino acids with basic side chains



Acid/Base Properties of Amino Acids



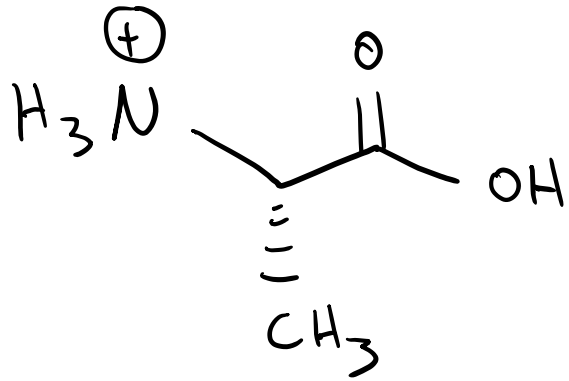
A Brief Reminder about pH and pKa

Amino Acid pKa Table

TABLE 25.2 THE pK_a VALUES FOR TWENTY NATURALLY OCCURRING AMINO ACIDS			
AMINO ACID	α -COOH	α -NH ₃ ⁺	SIDE CHAIN
Alanine	2.34	9.69	—
Arginine	2.17	9.04	12.48
Asparagine	2.02	8.80	—
Aspartic acid	1.88	9.60	3.65
Cysteine	1.96	10.28	8.18
Glutamic acid	2.19	9.67	4.25
Glutamine	2.17	9.13	—
Glycine	2.34	9.60	—
Histidine	1.82	9.17	6.00
Isoleucine	2.36	9.60	—
Leucine	2.36	9.60	—
Lysine	2.18	8.95	10.53
Methionine	2.28	9.21	—
Phenylalanine	1.83	9.13	—
Proline	1.99	10.60	—
Serine	2.21	9.15	—
Threonine	2.09	9.10	—
Tryptophan	2.83	9.39	—
Tyrosine	2.20	9.11	10.07
Valine	2.32	9.62	—

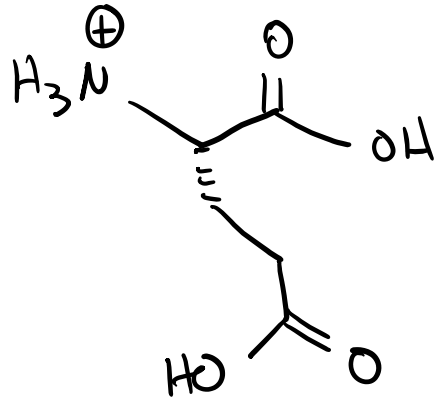
Isoelectric Point

Alanine



Isoelectric Point

Glutamic acid



Isoelectric Point

Lysine

