

(2)

nucleophile: an atom that donates both e^- to a bond.

Heterocyclic amine: nitrogen is part of the ring.

Heterocyclic aromatic amine: aromatic ring containing nitrogen.

Physical Properties

1. weak bronsted-Lowry bases because they are proton acceptors.
2. 1° & 2° can form hydrogen bonds.
3. foul smelling
4. polar, hydrophilic
5. generally soluble in H_2O , however, solubility decreases as the size of the carbon chain increases.

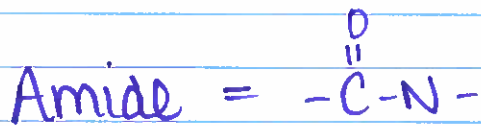
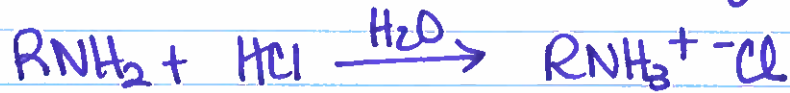
Reactivity:

Amines are generally proton acceptors, however, in the presence of a strong base they can be proton donors.

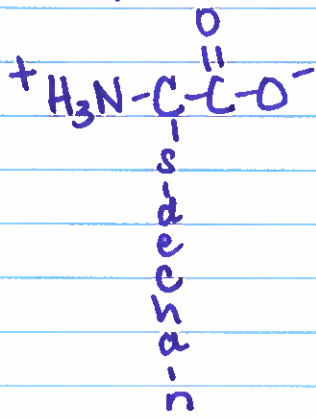
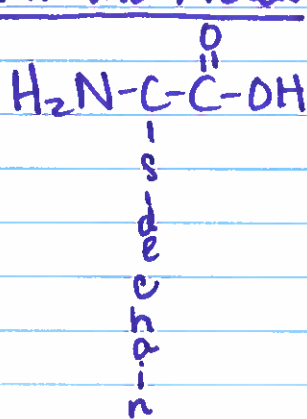
This makes them = amphiprotic (amphoteric)

(3)

If an amine reacts w/ a strong acid a water soluble salt will be formed.



Amino Acids (A.A.)



Zwitterion =
Compounds
that have
a net charge
of zero

- Basic structures for proteins
- 20 A.A. involved in proteins, called alpha amino acids
- Can be written as one letter or three letter codes

Classification

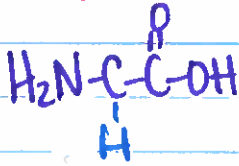
1. Non-polar side chain: don't \rightarrow bond, give off protons, participate in H-bonding, or ionic bonds
They are hydrophobic
2. Uncharged polar side chains: zero net charge at neutral pH. They do participate in H-bonding.
3. Acidic side chains: contain a proton donor, fully ionized at neutral pH

$$R-COO^-$$
Hydrophilic
4. basic side chains: contain a proton acceptor, fully ionized at neutral pH

$$R-NH_3^+$$
Hydrophilic

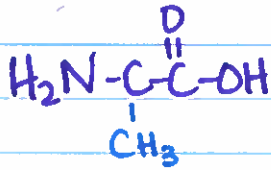
Thiol = sulfur present

Glycine (gly)



Sweet & simple
"glyce" to meet
you!

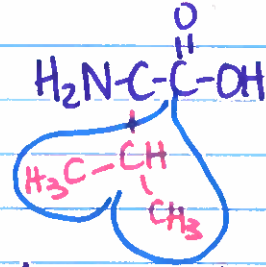
Alanine (ala)



Alan Mach₃

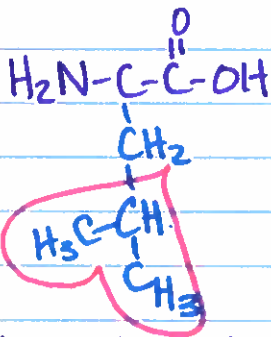
almost the
nice one

Valine (val)



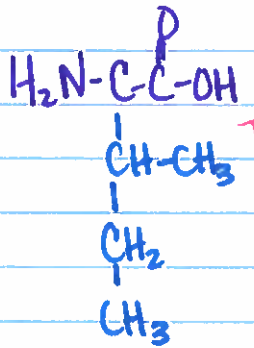
Val keeps her "V"
close

Leucine (leu)



Leucine plays
loose w/ his
heart.

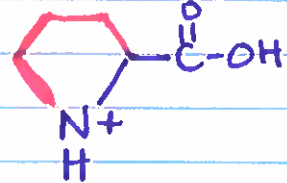
Isoleucine (Ile)



2nd leucine w/
sec-butyl

ISO-lated looser

Proline (Pro)

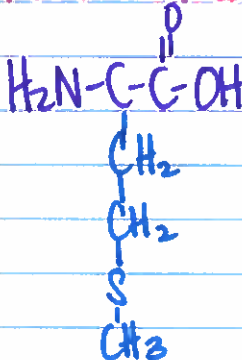


Pro-league b-ball

Pro-lean

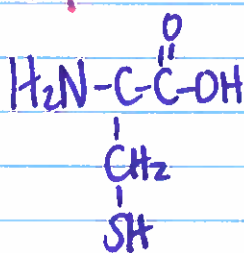
lean protein

Methionine (Met)



Meth-thiol
Meet in the middle

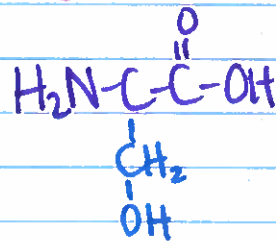
Cysteine (cys)



Sh, some can
hear the bells

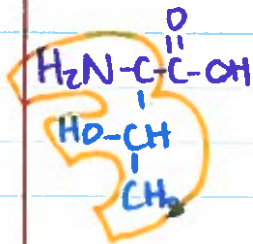
C
|
Cysteine

Serine (ser)



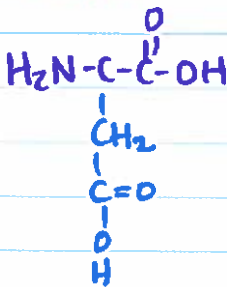
Ser-OH-man

Threonine (Thr)



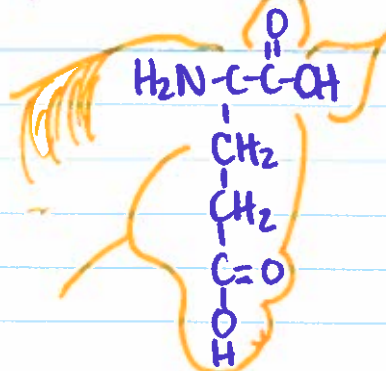
Three - "O"

Aspartate
Aspartic Acid (Asp)



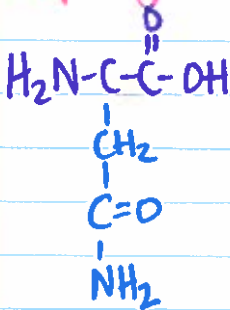
"I am sparticus"
2 y.O. asparagus

Glutamic Acid (Glu)



it "glu"ed on
another CH₂
"OH" no - Glu!

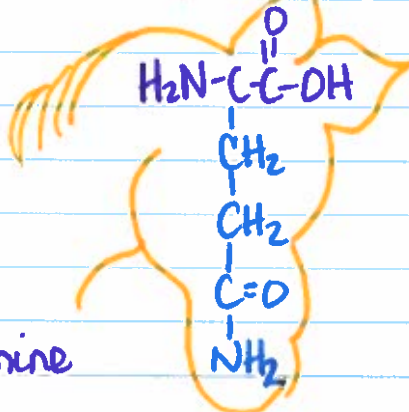
Asparagine (Asn)



stick Asp on amine

holey jeans

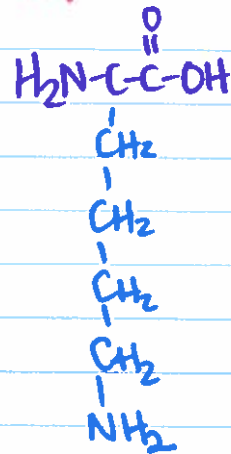
Glutamine (Gln)



Glen needs
longer jeans

Glen the horse
says "Nhhh"

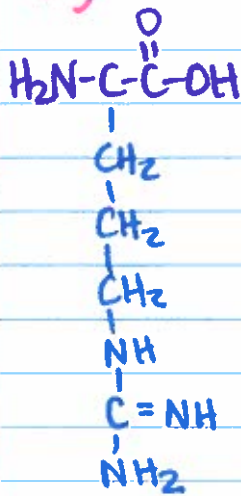
Lysine (Lys)



Straight + clean
w/ Lysine

Y are there so
many carbon?

Arginine (Arg)

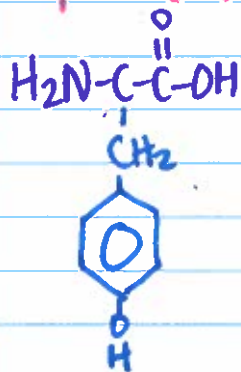


"Arg" walk the plank

3N x 3 bonds = nine

shaped like Argentina

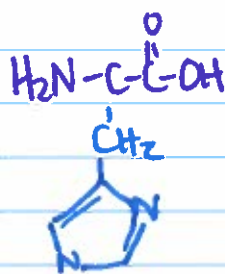
Tyrosine (Tyr)



"Tyr" drop

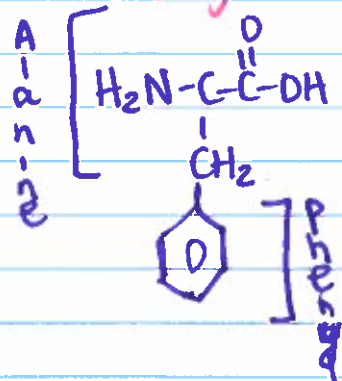
Tyr "OH, my hard!"

Histidine (His)



history repeats
at C₂ + C₄
di NNER plate
his-ring

Phenylalanine (Phe)



Tryptophan (Trp)

