

BCH 258 lecture notes Wed. Aug 27, 2008

In class work: "sticks" brass Kendrew model parts:

di-ala-tripeptide, extra to make asn sidechain, extra to make leu sidechain

Ideally, work in pairs (helps to have 2 people to manipulate these articulated models).

Points: planar peptides, tetrahedral Calphas, handed sidechain attachment.

distinguish planar and tetrahedral sidechains (asn vs leu).

DO NOT BEND THE BRASS

Refer to c1Basics kinemage 1 (B&T chapt. 1 Basics, c1Basics.kin esp #1) shown in class.

Homework: Worksheet 2: Handedness & Amino Acid Roles

Kinemage file – c1Basics-A-KiNG.kin

Polypeptide: amino acids condense to residues, forming peptide bond

peptide bond (C--N) and C--O are partial double bonds, so planar & shorter
entire C α ---C α peptide unit is planar and trans

C α is tetrahedral, handed: L amino acid = biological

"CORN crib" mnemonic for L vs D

Gly not handed, since R = H; special properties

dihedral angles define conformation:

atom distance angle dihedral

measured around central bond of 4 atoms; + = CW, - = CCW

ω is dihedral for peptide; always $\sim 180^\circ$ unless cis ($\sim 0^\circ$),

cis happens ~ 5 - 10% of the time for X-Pro; very rarely otherwise

ϕ (phi) & ψ (psi) dihedrals describe backbone conformation

[chain direction named N-term to C-term, as synthesized,

so ϕ (N--C α bond) listed first,

then ψ (C α --C bond)]