

# Biochemistry 3

- send answer to iClicker Question 15A now.

Exam I comments

Proteins II: "Anatomy"

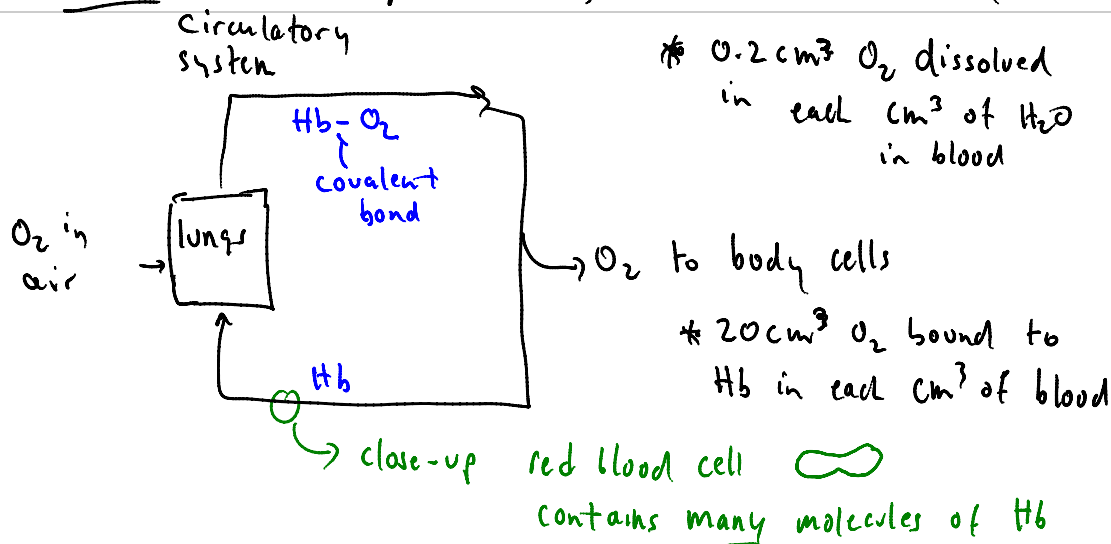
Hemoglobin

- intro
- levels of structure: 1°, 2°, 3°, & 4°
- example bonds
  - ionic
  - Hydrogen
  - hydrophobic interaction
- iClicker Question 15B

⇒ Due in lab THIS week:

- Pre-lab for Chemical Properties Lab  
(Lab Manual p 85 & on-line)

Proteins ex. hemoglobin (Hb) - carries  $O_2$  in blood



Hemoglobin = 4 protein chains (2 "α chains" + 2 "β-chains")  
+ 4 heme groups (red)  $O_2$  binds here  
~ 4,400 atoms

## Levels of protein structure (ways to look at a protein)

① primary ( $1^\circ$ ) structure = sequence of amino acids in protein chain ex N-val-his ...

② secondary ( $2^\circ$ ) structure = major structural elements formed by H-bonds between parts of backbone

\* 4 types ①  $\alpha$  helix - coiled

②  $\beta$  sheet - parallel backbone segments

③ turns

④ random coil (misc)

③ tertiary ( $3^\circ$ ) structure - fully-folded shape determined by interactions between side-chains

all proteins have all ③

④ quaternary ( $4^\circ$ ) structure - interactions between different protein chains (via side chains)

\* not all proteins have this (Hb does)

=> multi-protein complexes

ex. hemoglobin = 4 protein molecules per unit

