

Biochemistry: Amino acids
Homework for video (2)
Answers in video (3)

8. There are seven amino acids with side chains that can take two different forms. For each of these seven, write down both forms of the side chain, and the ballpark pK_a of the side chain. You don't need to include the main chain portions for this problem.
9. Draw arginine at (a) $pH = 1$, (b) $pH = 6$, (c) $pH = 10$, (d) $pH = 14$. Label the net charge for each picture.
10. What is interesting about histidine? What is interesting about glycine? What is interesting about proline?
7. Memorize the names, structures, and three-letter abbreviations of the 20 amino acids. Write all of these out on a blank piece of paper, **from memory**, as they look at physiological pH . Group them into the four categories from problem 6 (below).
3. The pK_a of HNO_2 is 3.4. In a solution with $pH=3.4$, what is the ratio of the protonated to the deprotonated forms of HNO_2 ?
4. What are the four types of large biological molecules?
5. What are names for protein polymers? What is the general name for a protein monomer?
6. In the tutoring session we discussed the four categories of side chain used by your textbook. What are these four categories?