6. Here's a slightly more complex and interesting version of Problem 5:

(The membrane of a canine red blood cell has a surface area of about 195 μ^2, is about 75 Å thick and contains 0.7 picograms (1 pg = 10^{-12}g) of lipid and 0.8 pg of protein. The lipid consists of approximately equal numbers of phospholipid and cholesterol, which have molecular weights of about 800 and 380 respectively. In a tightly compacted, model monolayer in a Langmuir trough, each phospholipid occupies a surface area of 0.55 nm^2 and each cholesterol, 0.38 nm^2. **In answering the questions below, show all calculations**.

A. (5 pts) If one assumes an average molecular weight of 60,000 for RBC membrane protein, how many protein molecules are there associated with a single canine RBC membrane?

B. (8 pts) What is the ratio of lipid to protein, on a weight basis? On a molecular basis?

C. (5 pts) What proportion of the total canine RBC surface area is occupied by lipids?

D. (8 pts) What assumption(s) did you make in calculating your answer to C. above? How does your model of membrane organization change if the assumption(s) change?