VO

1. Cooperativity: how cells are activated
2. Partial volume
3. Monolayer/Bilayer: main difference, why pressure required?
4. Transport: different types of movement, <x>, α-coefficient which movement can be explained?

UE

1. Using an osmotic chamber the height differences h=10 cm of the two water columns of the chamber. Determine the protein concentration. Neglect virial-coefficients and mind the units!

2. A lazy dog owner walks his dog by putting a GPS-device around the dog's neck and observes the dog's trajectory on his mobile device. After long-term observations, he determined that his dog walks nearly straight with a speed of ~ 15km/h for 5 seconds, followed by ~5 seconds of waiting on the same place in order to sniffle or mark. After that the dog continues his journey by walking straight into a random direction and repeating the process of sniffling and marking. Determine the distance the dog travelled within one hour! Which distance has the dog owner to cover in order to pick up his dog after this hour?

3.

32. The simplest way to describe an ion channel is as a transition between two states: C ⟷ O, where C is the closed and O is the open state. By measuring the current through a single channel, the open and closed times can be directly determined:
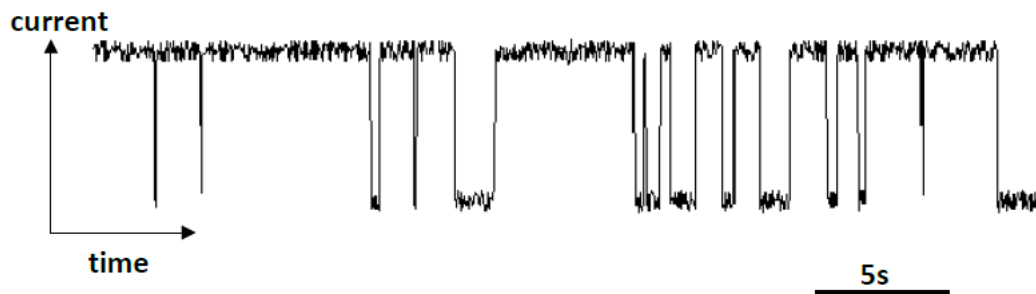
a) Determine the distribution function of the "open-state lifetimes". What is the relationship between the rate and the "open" time? Does the rate describe the transition C → O or O → C?
b) Calculate the probability that the channel closes in less than 3 seconds!
c) Calculate the probability that the channel remains opened for more than 3 seconds!
d) Determine the probability that the channel is opened for a time interval of 3 to 4 seconds! (see chapter 11 and basics about probability density functions (→ exercises))

Super close to this exercise but for (sorry a bit mixed up)
   a) relationship between rate and close time + draw a graph
   b) probability that channel closes for more than 7 ms
   c) also determine CDF
   d) forgot