Reading Assignments for Weeks 12

- Monday, April 7: Sections 11.1.1 and 11.2 (pp. 427–430 and 440–448)
- Wednesday, April 9: Section 11.3 (pp. 448–458)
- Friday, April 11: Section 11.6 (pp. 467–475). Section 11.5 has some interesting discussion on membrane shapes that you might want to scan.

Homework #9 — due Friday, April 11

From lecture of Friday, April 4

- 1. Problem 10.5
- 2. Problem 10.8abc

From lecture of Monday, April 7

- 3. Problem 11.3
- 4. Problem 11.4

From lecture of Wednesday, April 9

5. Problem 11.5

- 6. Problem M: Membrane Free Energy in *E. Coli.* Model the shape of an *E. Coli* as a spherocylinder with spherical cap radius $0.5 \,\mu$ m and cylinder length $1 \,\mu$ m.
 - (a) Using a bending modulus $K_{\rm b} \approx 20 k_B T$, calculate the amount of bending free energy in the membrane.
 - (b) Using an surface tension $\tau \approx 15 \text{ pN}/\mu\text{m}$, calculate the amount of a real or surface energy in the membrane.
 - (c) Based on your answer to part (b), estimate the amount of osmotic pressure that an *E. coli* can withstand. Compare your answer to the estimates on p. 266.