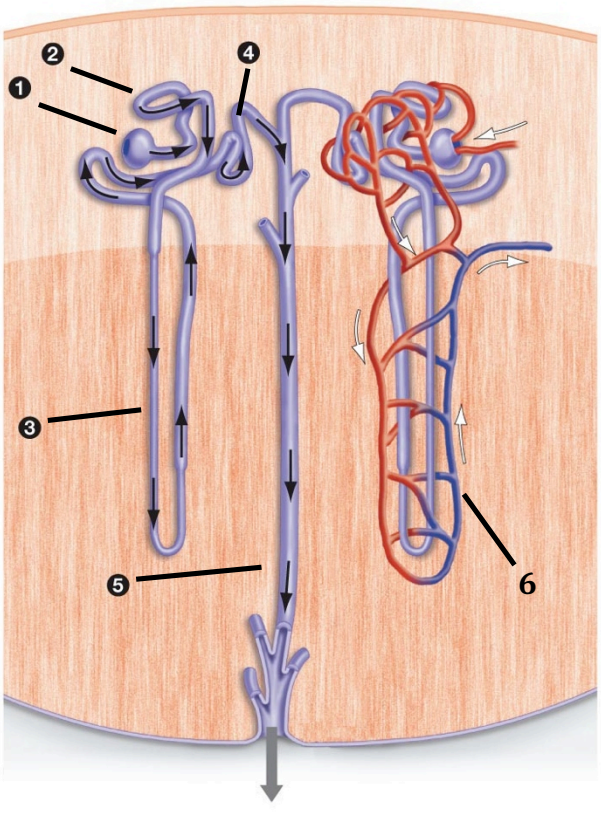
Please enter the following:
Class Time: 9:30 Team (Table) No. 18 Trio Letter (A, B, or C): B Recorder: Lindsey Wingate

ALA – KIDNEY FUNCTION

Please work on this **in trios**. Add your answers to this file (please keep it as a Word file if possible—convert to PDF if you are unable to save as a Word file. **Mac user? Please do NOT submit ALAs as a "Pages" file**.), **save to desktop or some other location**, then attach when submitting your assignment through Blackboard **(be sure you submit this assignment ONLY when you are asked to do so during class)**. Only one person **per trio** should submit. All team members should write a copy of your answers so you have them to study from (or the recorder might email the completed file to other members of your trio). You may use your book, internet, or any other resources you wish to answer these questions. Be sure to ask Dr. C or one of the teaching assistants if you need help!

NOTE: YOU MUST BE IN CLASS AND COMPLETE THE IN-CLASS SURVEY TO RECEIVE CREDIT.

1. Consider the nephrons below. Match the regions with their numbers.
   Distal tubule = 4
   Proximal tubule = 2
   Loop of Henle = 3
   Vasa Recta = 6
   Renal Corpuscle = 1
   Collecting Duct = 5



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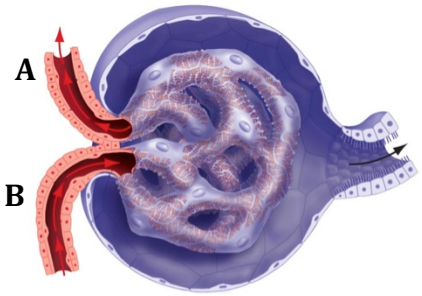
2. Consider the renal corpuscle below. Will filtration increase or decrease if blood vessel "A" were constricted? increase

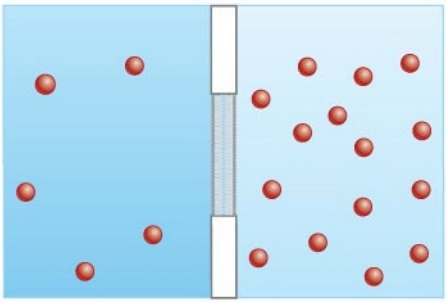
3. How about it blood vessel "B" were constricted? decrease



The two solutions below (A and B) are separated by a membrane. The red dots represent solutes.

4. Which direction will water tend to flow by osmosis? towards B

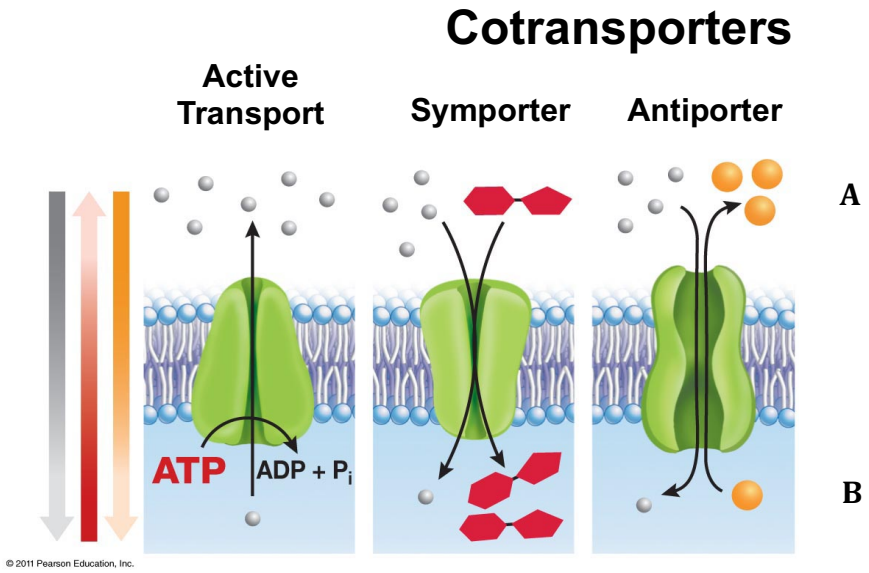
5. Which direction will the solutes tend to move by diffusion? towards A

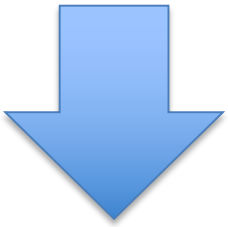


The image below illustrates active transport and cotransport.

6. As more active transport occurs below, what will tend to happen to the concentration of the red disaccharides in region "B"? The concentration will increase

7. As more active transport occurs below, what will tend to happen to the concentration of the yellow solutes in region "B"? They will decrease





Reabsorption occurs in the proximal tubule and results in nutrients moving from the filtrate (found in the tubule lumen) back into the bloodstream (via the vasa recta). Imagine a nephron being treated with a poison that **prevents active transport of Na^+ out of the tubule epithelium** (see step 1 below). Indicate whether the poison would increase or decrease each of the following:

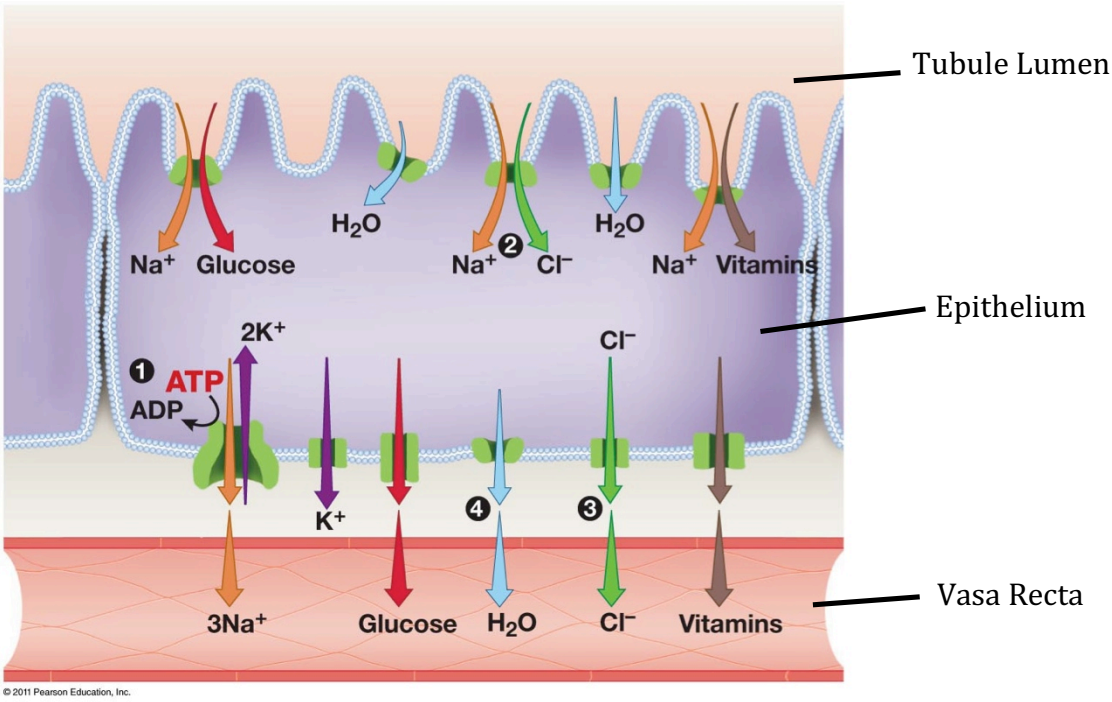
8. Amount of glucose retained in the bloodstream. decrease

9. Amount of vitamins retained in the bloodstream. decrease

10. Amount of water retained in the bloodstream. increase

11. Amount of Cl- moving from the filtrate into the epithelial cells. decrease

12. Which plays a larger role in reabsorption- **symporters** or **antiporters**? symporters



The diagram below illustrates a nephron and a collecting duct. Region "A" (descending limb) is permeable to water while region "B" is permeable to salt. The concentration of solutes (mostly salt) in the tissues **surrounding the nephron** is shown below toward the left (in milliosmoles). The filtrate begins its journey through the proximal tubule with a concentration of 300 milliosmoles.

13. Will water move into or out of "A" by osmosis? out
14. Will the filtrate become more or less concentrated as it travels through "A"? more
15. Will salt move into or out of "B"? out
16. Will the filtrate become more or less concentrated as it travels through "B"? less
17. Will water move into or out of "C" by osmosis? out
18. Will the urine become more or less concentrated as it travels through "C"? more
19. Antidiuretic hormone (ADH) makes "C" more permeable to water. Does ADH tend to increase or decrease urine production? decrease
20. Alcohol tends to inhibit ADH. What impact does this have on urine production? Many people experience this after having a bit too much to drink…. Increases production