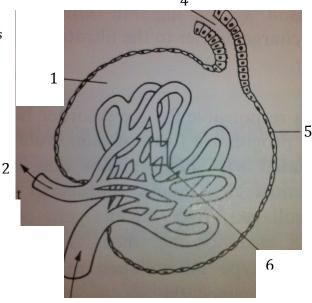
## **Burton David Rose pp 15-28**

- 1) Osmotic pressure generated by solution is proportional to
  - a) The number of particles per weight of solvent
  - b) The number of particles per dissolved cation concentration in solvent
  - c) The number of particles per volume of solvent
  - d) The total molecular weight of dissolved particles
- 2) The discrepancy between the measured osmolality vs. effective osmolality is due to
  - a) Measured osmolality does not account for variability by temperature
  - b) Measured osmolality includes solutes freely permeable to the cell membrane
  - c) Measured osmolality does not account for pH differences
  - d) Measured osmolality does not account for contribution from red blood cells
- 3) The concept of electrochemical equivalence refers to
  - a) The presence of electrochemical gradient across the glomerular basement membrane
  - b) The net negative charge across the cellular membrane
  - c) Ability of ions to combine based on their valence
  - d) Net weight of cations equals net weight of anions in plasma fluids
- 4) Name the three layers of the glomerlular capillary wall
  - a) The fenestrated endothelium
  - b) Glomerular basement membrane
  - c) Epithelial cells
    - i) Attach by the foot processes
- 5) Place the following labels on the diagram to the right:
  - a) Glomerulus-6
  - b) Efferent arteriole-2
  - c) Afferent arteriole-3
  - d) Proximal tubule-4
  - e) Bowman's space-1
  - f) Epithelial cells of Bowman's capsule-5
- 6) Glomerular filtration is
  - a) Size dependent with molecules smaller in size than inulin freely filtering
    - i) Inulin is freely filtered
  - b) Charge selective with anionic molecules freely filtering
    - i) Cationic molecules more likely to be filtered
  - c) Limited by the electronegativity of the glomerular capillary wall
    - i) Predominantly due to the heparin sulfate proteoglycans
  - d) Limited by the pore size of the endothelium
    - i) Endothelium fenestrate are wide, mostly limited by the glomerular basement membrane
- 7) Intrinsic mesangial cells
  - a) Synthesize prostaglandin in the cycle of activation of RAAS
  - b) Have significant phagocytic activity to remove macromolecules entering the capillary wall
    - i) Mostly done by circulating monocytes/macrophages
  - c) Produce large amounts of angiotensin II as response to decreased renal hypoperfusion which acts locally to regulate glomerular hemodynamics
    - i) Respond to angiotensin but not significant producer
  - d) Play a protective role in immune mediated glomerular disease with production of anti-inflammatory mediators limiting expansion of the mesangium



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