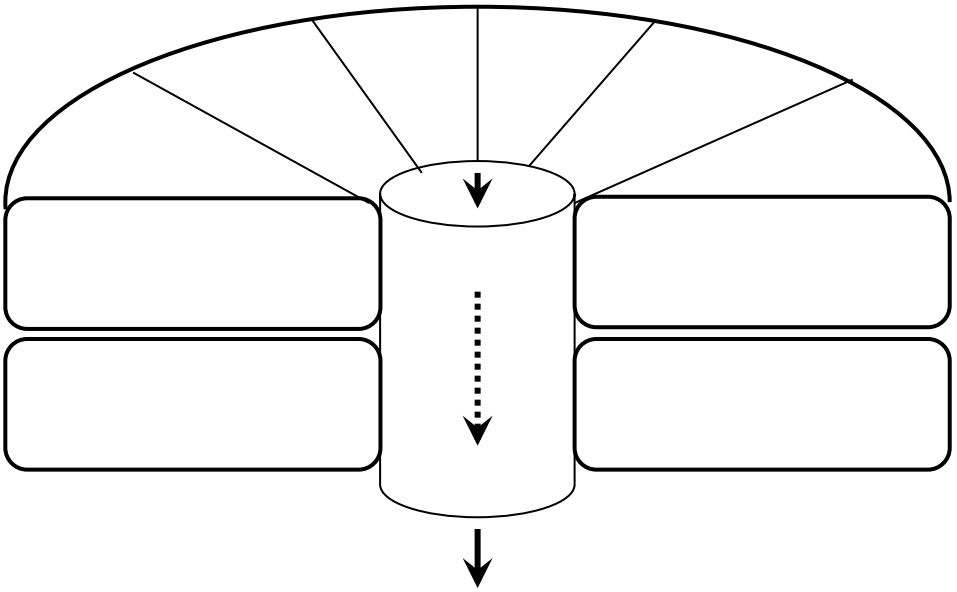
Transport Properties of Specific Nephron Segments

Proximal Tubule

- Reabsorbs 65% of the H_2O and Na^+ leaving the glomerulus

1. Draw the transporters/channels of the proximal tubule



- The tubule epithelial cells of the proximal tubule are permeable to sodium due to the channels found on the luminal cell membranes
    - Na^+/amino acid symporter on luminal membrane → non-regulated
    - Na^+/H^+ exchanger on the luminal membrane → regulated
    - Na^+/K^+ ATPase on basolateral membrane → regulated
- Once sodium enters the tubule epithelial cells due to its concentration gradient, the filtrate becomes more dilute. Therefore, there becomes a concentration gradient for water moving out of the filtrate. Water can move paracellularly or transcellularly
    - Water channel (Aquaporin I) found on the luminal and basolateral membranes → non-regulated
- Almost all of the glucose in the filtrate is reabsorbed in the proximal tubule
    - Na^+/glucose symporter on luminal membrane → non-regulated
    - A glucose uniporter and an amino acid uniporter on basolateral membrane→ non-regulated
- K^+ and Cl^- are also reabsorbed in the proximal tubule via paracellular transport