

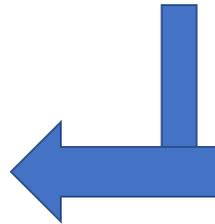
-Active transport:

1-need energy. 2-need carrier. 3-against electro-chemical gradient

The energy is taken from breakdown **ATP** by **ATPase**:

Break down  
**ATP**  **ADP + phosphate + energy**

(Which is require to transport the substances against electro-chemical gradient)



-types of active transport:

1-primary active transport.

$\text{Na}^+ - \text{K}^+$  pump  its primary so its congugated with (ATPase) so its Have own ATPase activity

صوديوم 3 تخرج  
بوتاسيوم 2 تدخل

يتبع....

- the ATPase is congugated with the carrier.
  - the  $\text{Ca}^{+2}$  should not be free in the cytoplasm.
  - the  $\text{H}^{+}$  is abundantly exist in stomach and urine.
  - $\text{H}^{+}$  determine the acidity.
  - parital cell excreted the  $\text{H}^{+}$  to the wall of stomach.
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## 2-secondary active transport.

- in this type the ATPase and the carrier is not congugated.

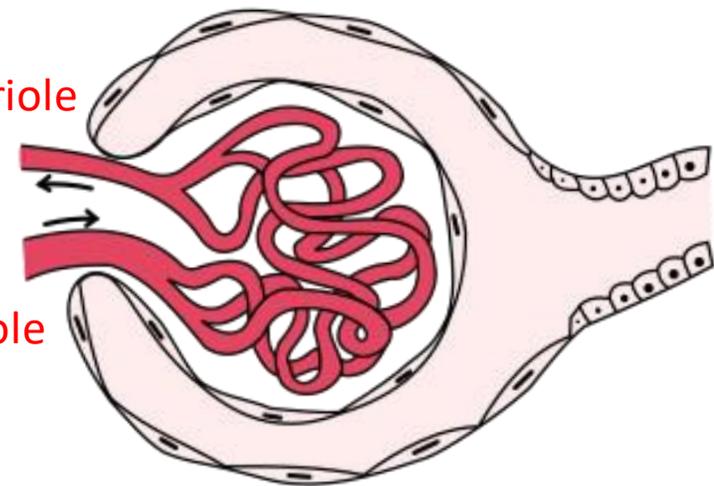
**A-co-transport**  transport in the same side.

Efferant artirirole

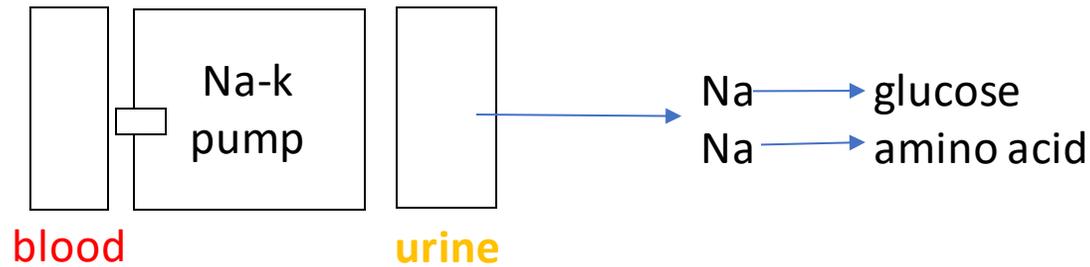
Bulk flow

فرق الضغط

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\*proximal convoluted tubule:



The Na-k pump transport 2Na with 3k

-the glucose transported against Na-k pump

\*distal convoluted tubule:

-H-Na counter transport

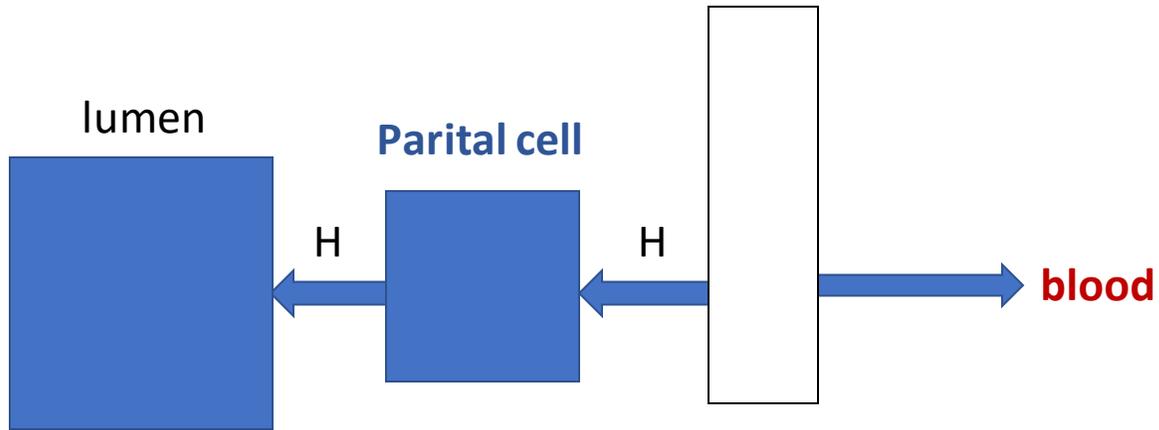
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-phagocytosis for macro molecules

Pit → حفرة → contain receptors

-after immune cell transport bacteria cell inside it by phagocytosis its transfer to pus

-damage of Na-k pump will lead to swelling or expanding the cell.



-acidoses  $\longrightarrow$  increasing the acidity in the blood.

$\searrow$   
Go to the urine

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Note: Na-k pump is considered electro-genic pump:

It keeps the size of the cell...how?

Because if the Na-k pump is disturbed the Na will accumulate in the cell and the water will be transported to the cell