

### osmoregulation

about preventing dehydration

- for terrestrial animals

### why does osmoregulation work?

endocrine-mediated regulation of excretory system

antidiuretic hormone (ADH) or vasopressin (AVP)

triggered by increase in osmolarity

makes collecting duct of nephrons more permeable to water

increase water retention

variation in urine

- remove water, retain salt  
hypotonic

-hyper- retain water, remove salt  
tonic

### excretory system and osmoregulation

excretory system: regulate solute movement between internal fluids and environment

**filtration** filtering body fluids

**reabsorption** reclaiming water & valuable solutes

**secretion** adding nonessential solutes and wastes from the body fluids to filtrate

**excretion** processed filtrate containing nitrogenous wastes released from the body

### kidneys

**nephrons** function excretory unit in kidney

interfaces w/ circ system  
(bowman's capsule)

collecting ducts pass filtrate to the ureter

**filtrate** includes water, NaCl, ions (H bicarbonate), urea, glucose, amino acids, drugs/poisons

**reabsorption** active&passive transport

water, NaCl, bicarbonate, glucose, amino acids

- of water and NaCl occurs along loop of henle

-solute [ ] (osmolarity) of interstitial fluid increases towards the center of kidney

*overall filtrate is:*

highly reduces in volume  
(water is retained by the body)

highly reduced in important solute [NaCl]

highly concentrated in waste solutes (urea)



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