

# Chapter 12: Ingestive Behavior

Physiological Regulatory Mechanisms

Fluid Regulation

Nutrition and Metabolism

Obesity and Anorexia / Bulimia

Well, this isn't a cheerful sign!





seawater [salt] = 3.5% body [salt] = 0.9%

## Body Fluids.

"- "Water, water, everywhere, And all the board

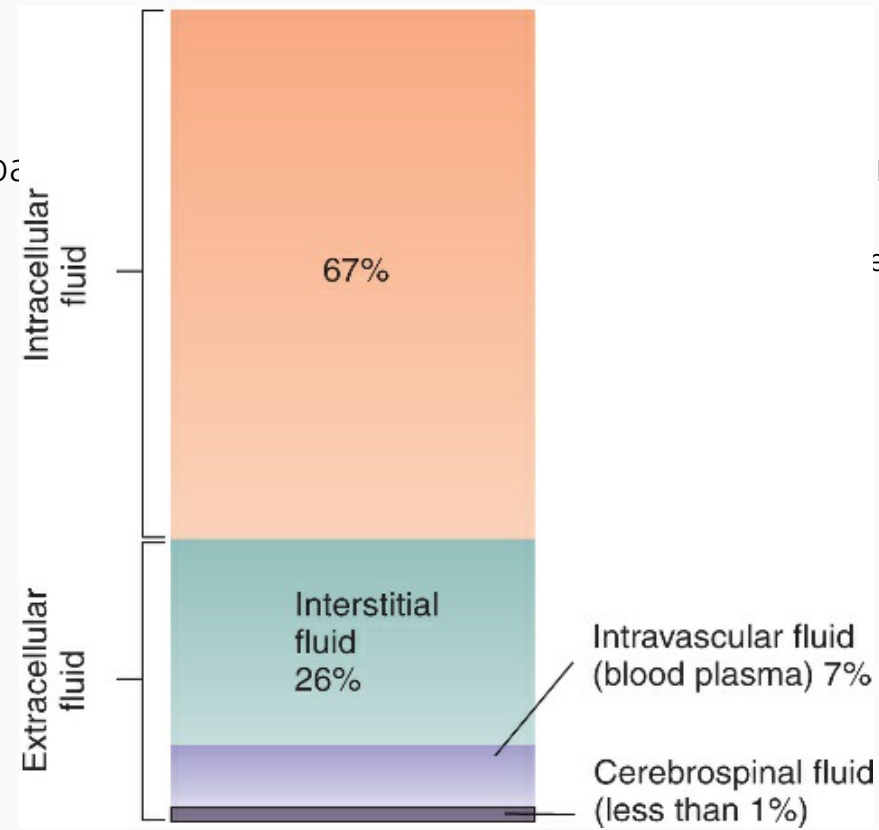


seawater [salt] = 3.5% body [salt] = 0.9%

## Body Fluids.

"- "Water, water, everywhere, And all the boats

ny drop to drink.



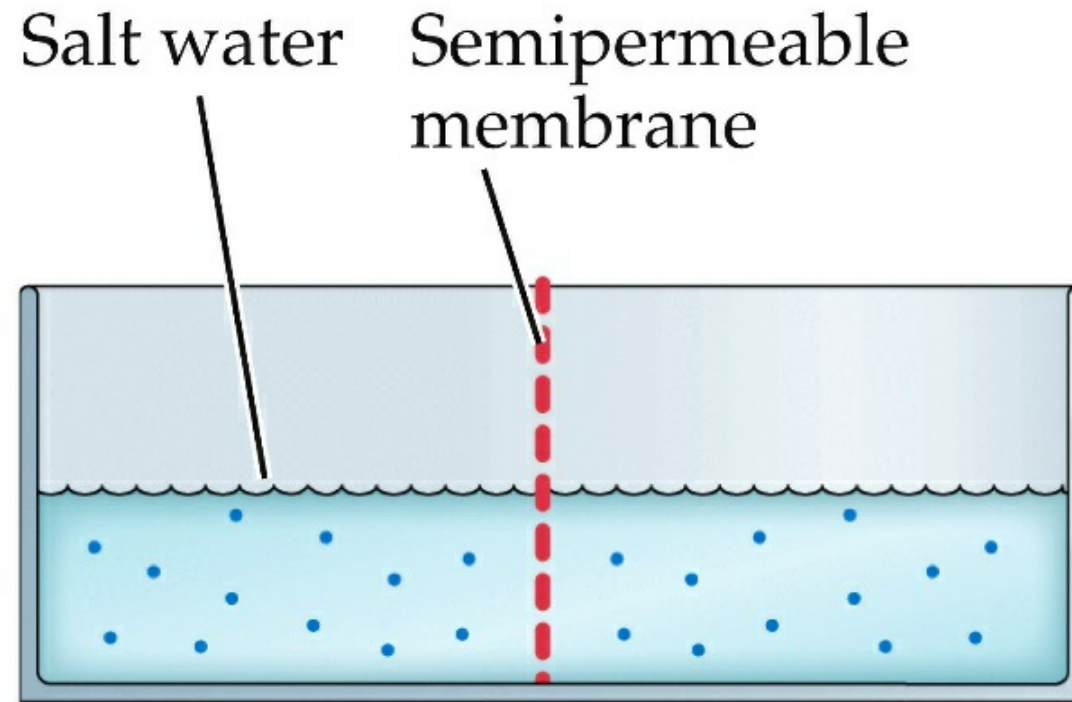
eridge



# Drinking

## Body Fluids.

- hypertonic: high salt concentration
- will draw fluid out of cells
- isotonic: equal in osmotic pressure to c
- cells neither gain or lose H<sub>2</sub>O
- hypotonic: low salt concentration
- cells will absorb H<sub>2</sub>O by osmosis

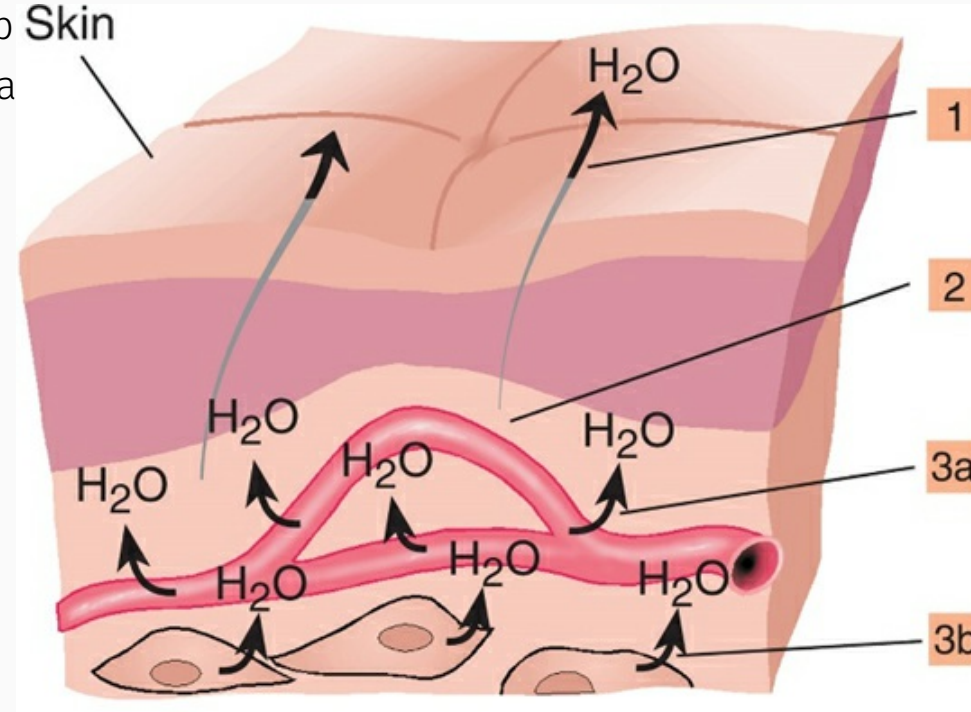


*BIOLOGICAL PSYCHOLOGY 7e, Figure 13.9 (Part 1)*  
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# Drinking

## Body Fluids.

- loss of H<sub>2</sub>O through evaporation, perspiration
- usually, replacement with excess H<sub>2</sub>O a



# Drinking

## Body Fluids.

- water deficit can impair circulation, and interfere with normal chemical reactions in cells
- water excess (rare) could increase circulatory pressure and rupture cell membranes

# Drinking

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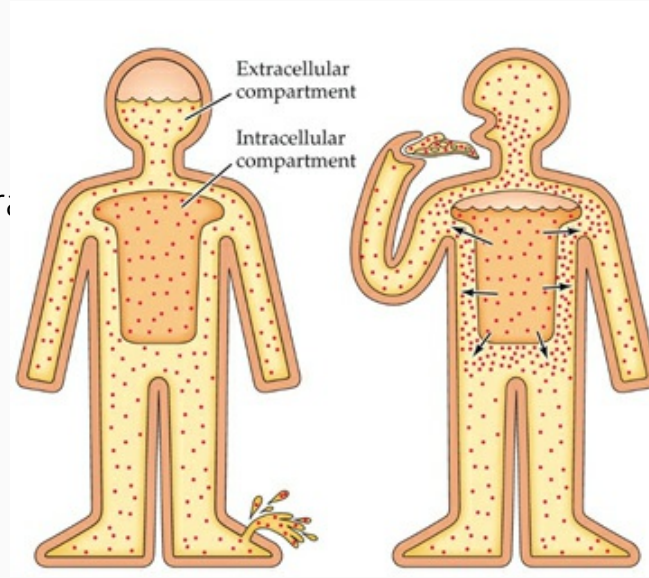
cells

# Drinking

## Osmotic and Hypovolemic Thirst.

- hypovolemic (volumetric) thirst:
- loss of fluid volume
- osmotic (osmometric) thirst:
- increased extracellular solute concentration

hypovolemic thirst osmotic thirst



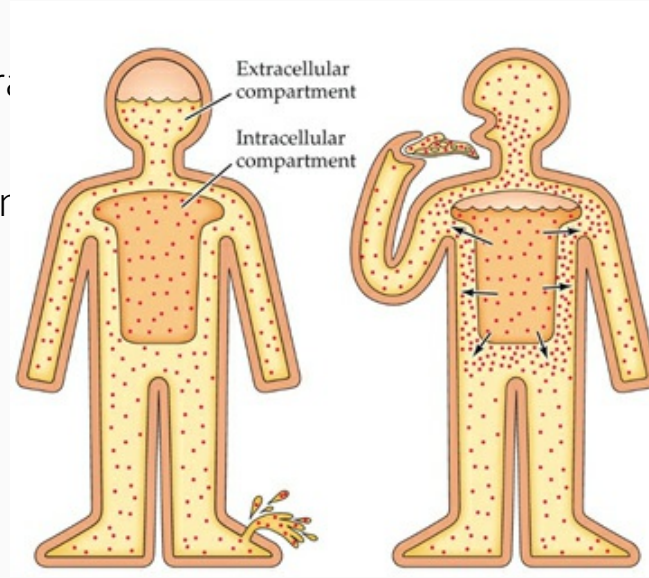


# Drinking

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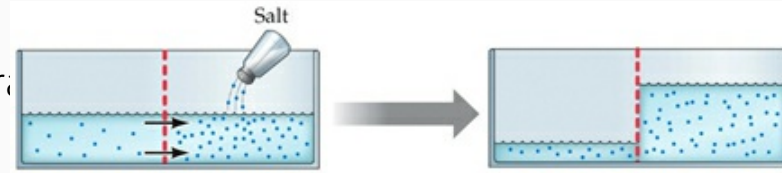
hypovolemic thirst osmotic thirst



# Drinking

## Osmotic and Hypovolemic Thirst.

- osmotic (osmometric) thirst:
- increased extracellular solute concentration
- draws H<sub>2</sub>O out of cells
- detected by specialized neurons, known as osmoreceptors

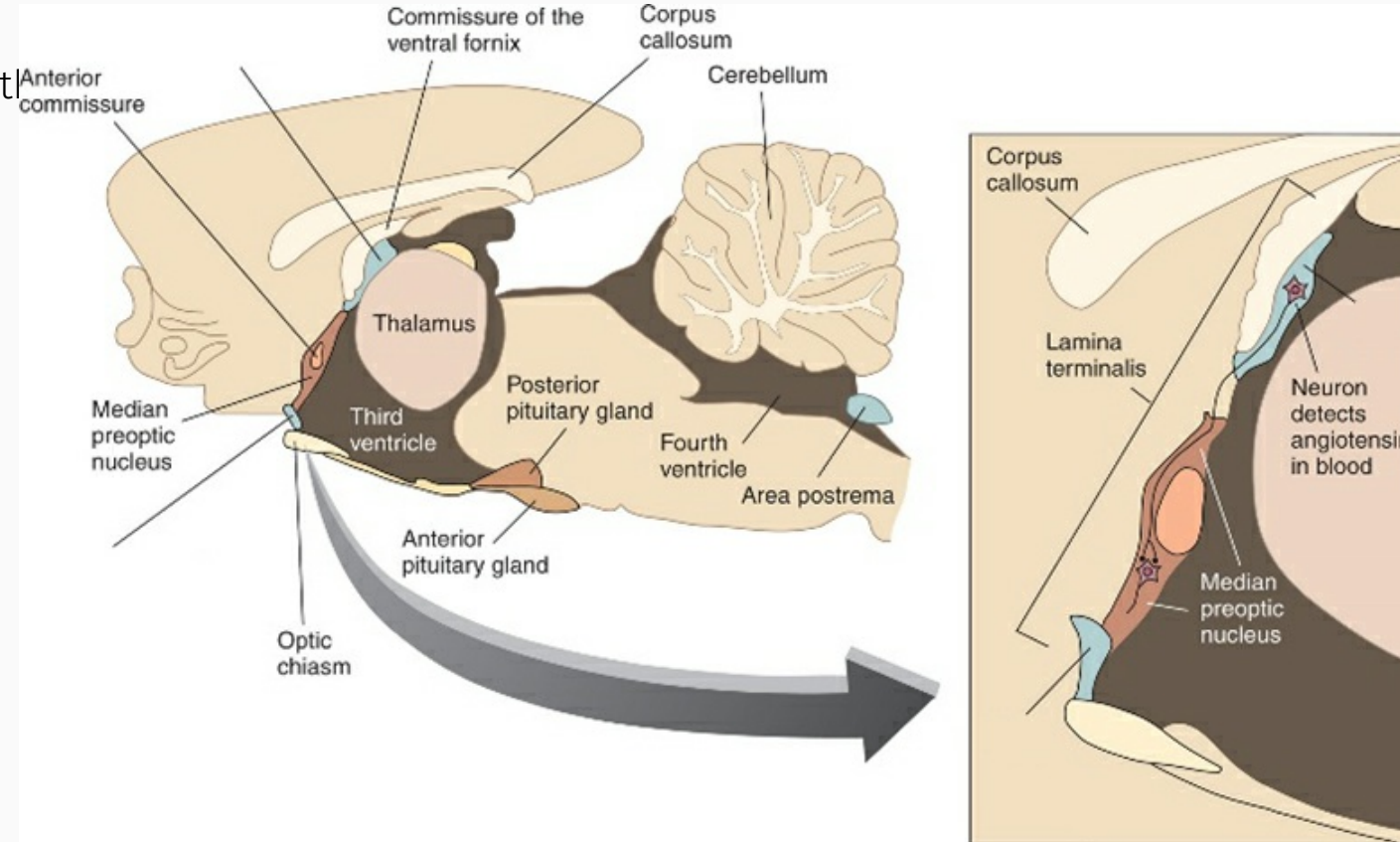


hypovolemic thirst osmotic thirst

# Drinking

## Osmotic and Hypovolemic Thirst.

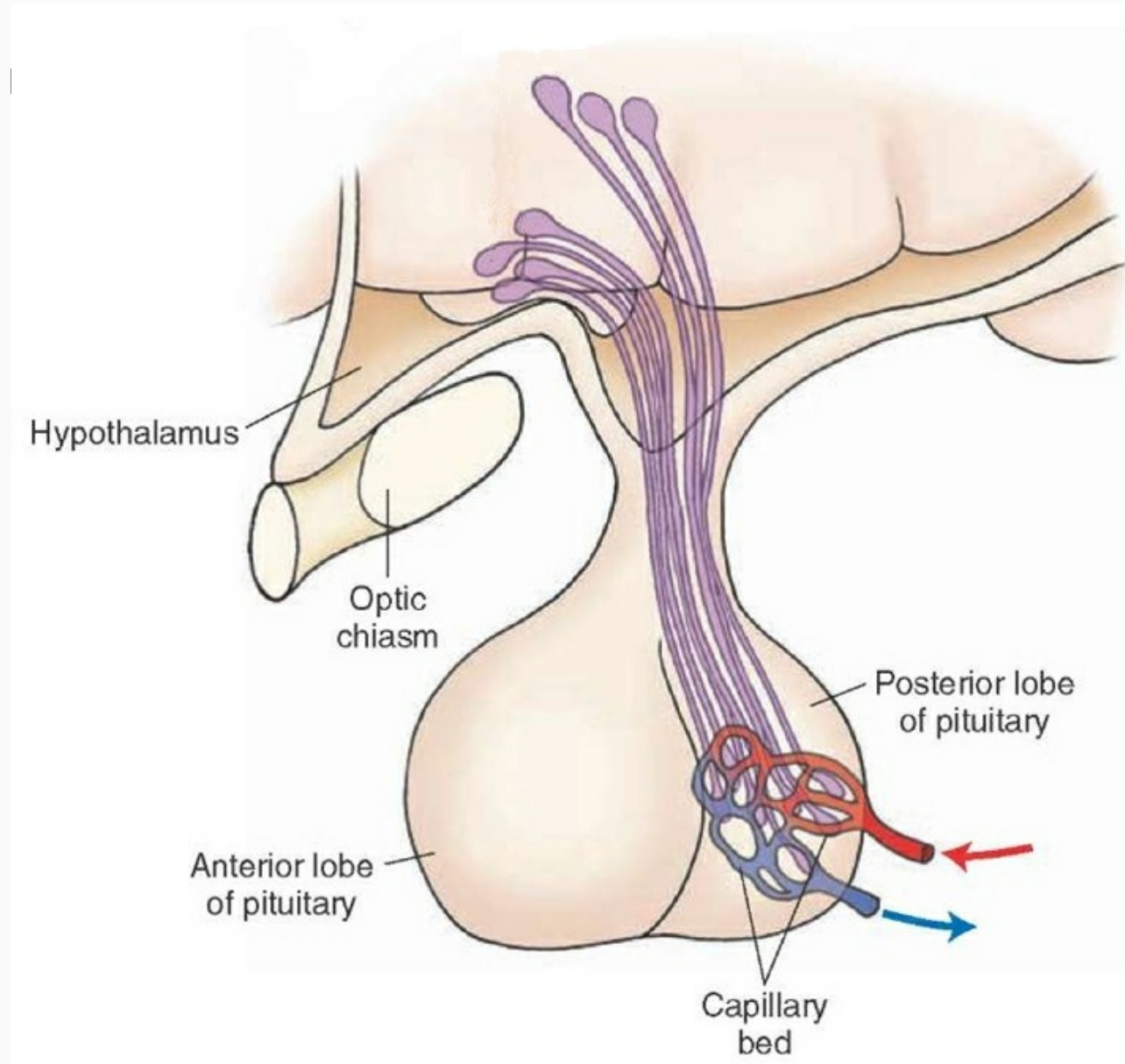
- osmotic (osmometric) thirst:
- osmoreceptors in OVLT and SFO (hypothalamus)



# Drinking

## Osmotic and Hypovolemic Thirst.

- osmotic (osmometric) thirst:
- osmoreceptors in SON (hypothalamus, |

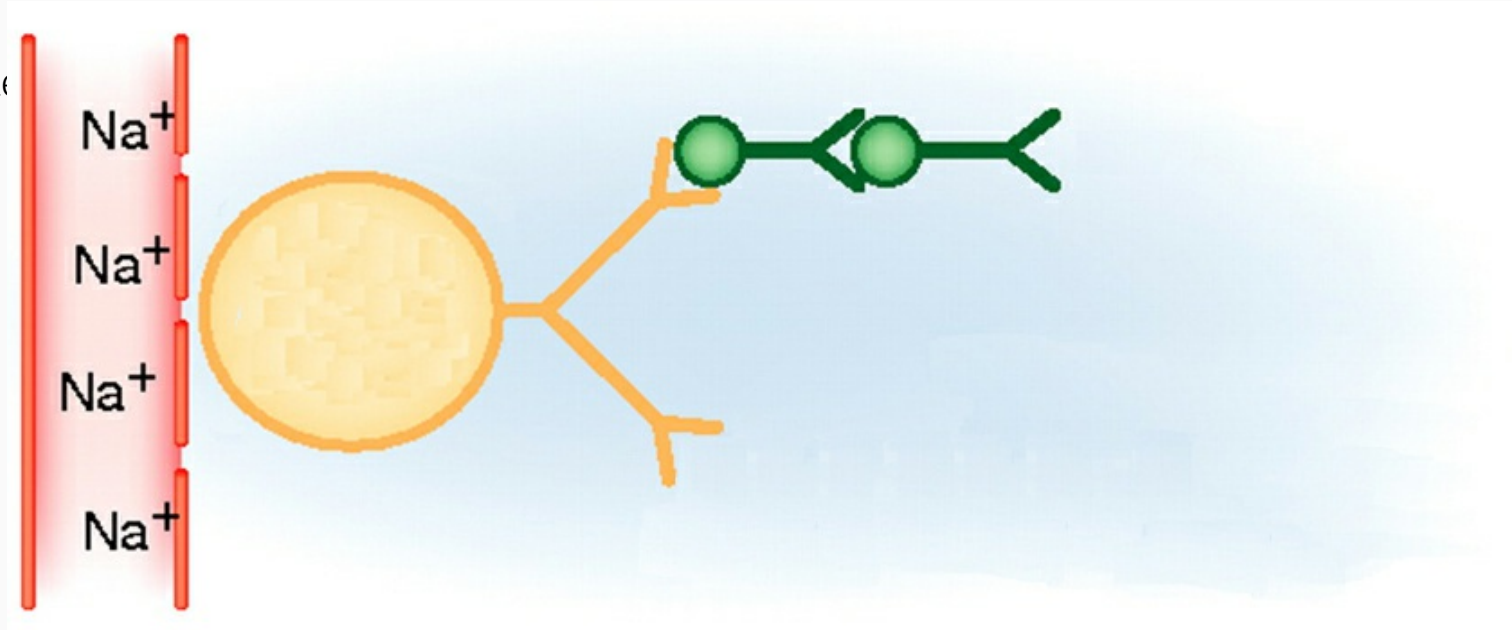




# Drinking

## Osmotic and Hypovolemic Thirst.

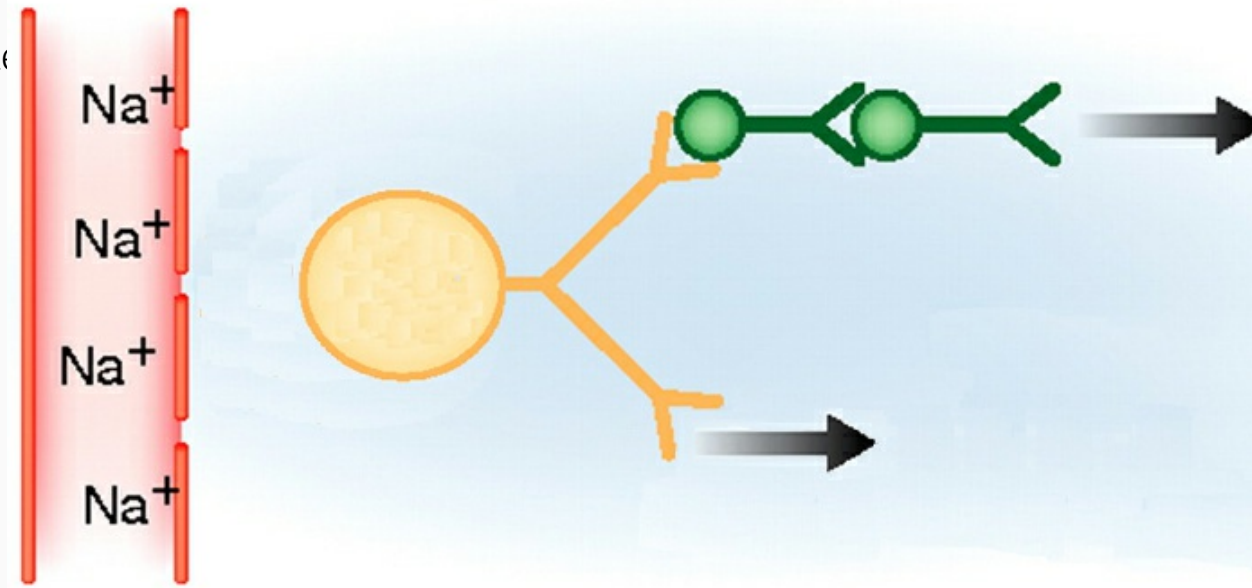
- osmotic (osmometric) thirst:
- shrinkage increases firing of action potentials



# Drinking

## Osmotic and Hypovolemic Thirst.

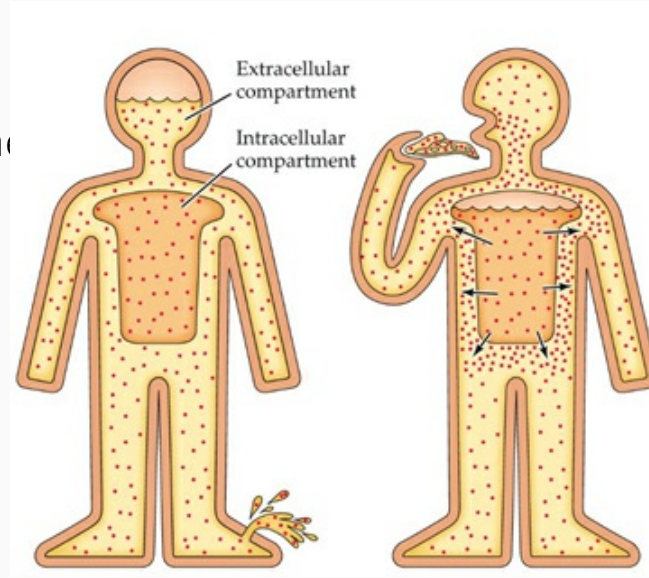
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# Drinking

## Osmotic and Hypovolemic Thirst.

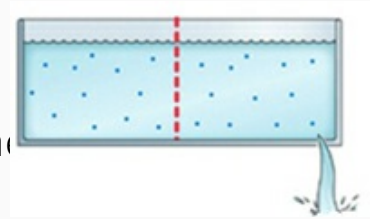
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- loss of fluid isotonic volume
- loss of vascular fluid does not affect th



# Drinking

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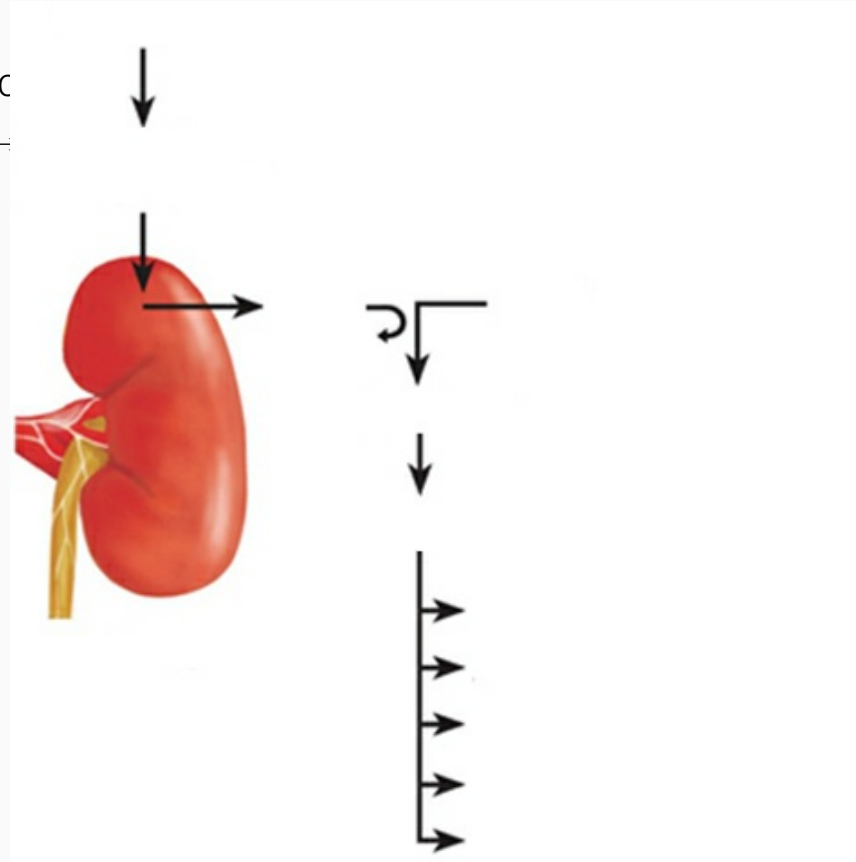
ompartment



# Drinking

## Osmotic and Hypovolemic Thirst.

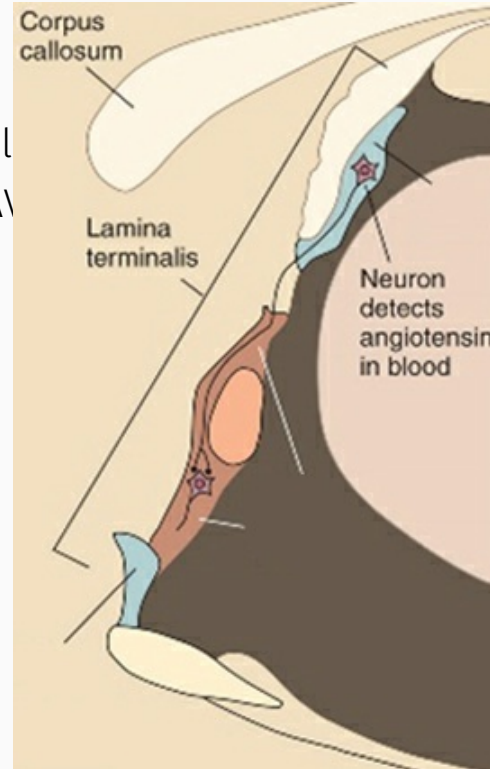
- hypovolemic (volumetric) thirst:
- kidneys detect decreases in vascular flow
- splits angiotensinogen → angiotensin I →



# Drinking

## Neural Mechanisms of Thirst.

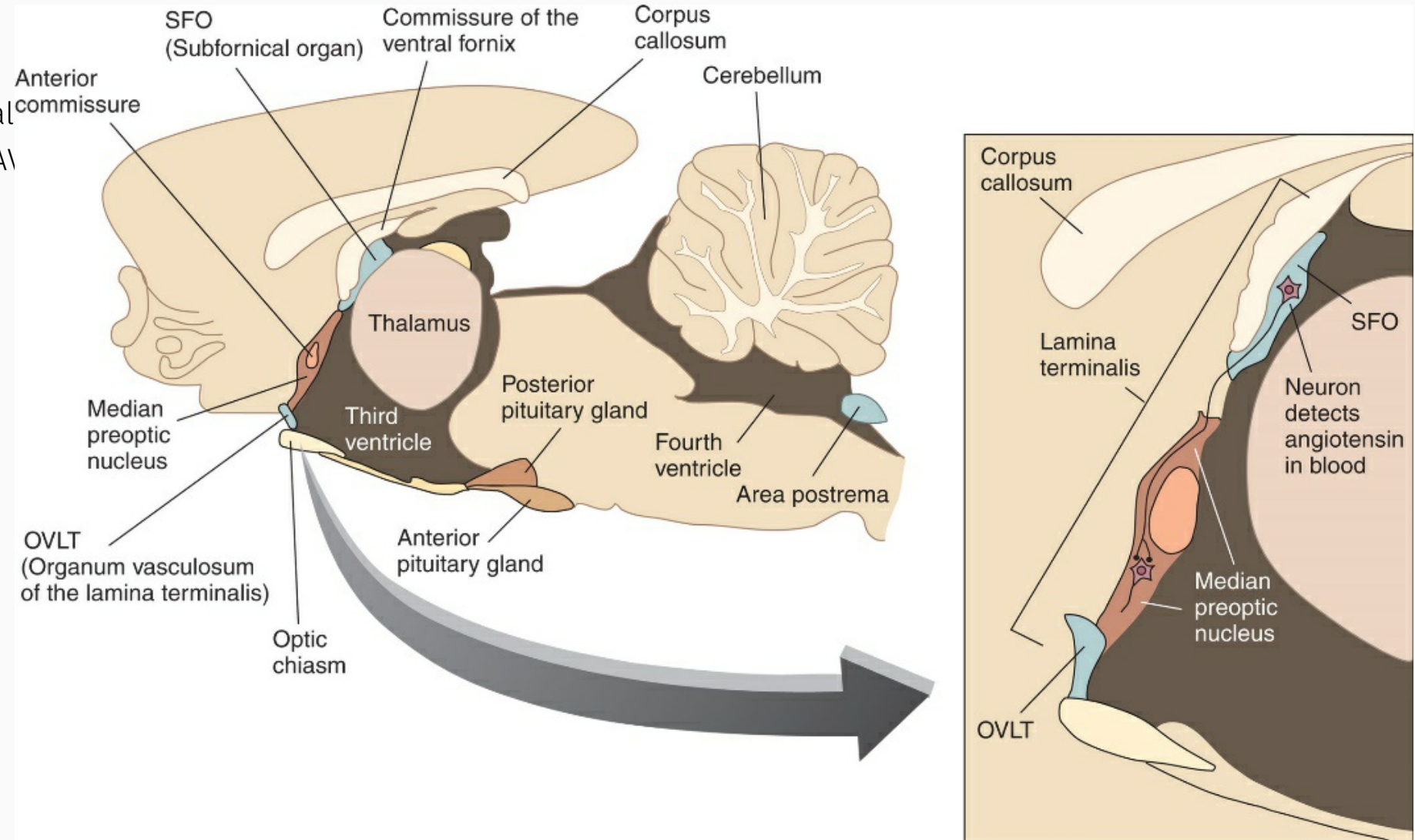
- osmoreceptors in SON, OVLT and SFO
- angiotensin receptors in SFO
- OVLT/SFO → median preoptic hypothal
- SON → posterior pituitary, to release AV



# Drinking

## Neural Mechanisms of Thirst.

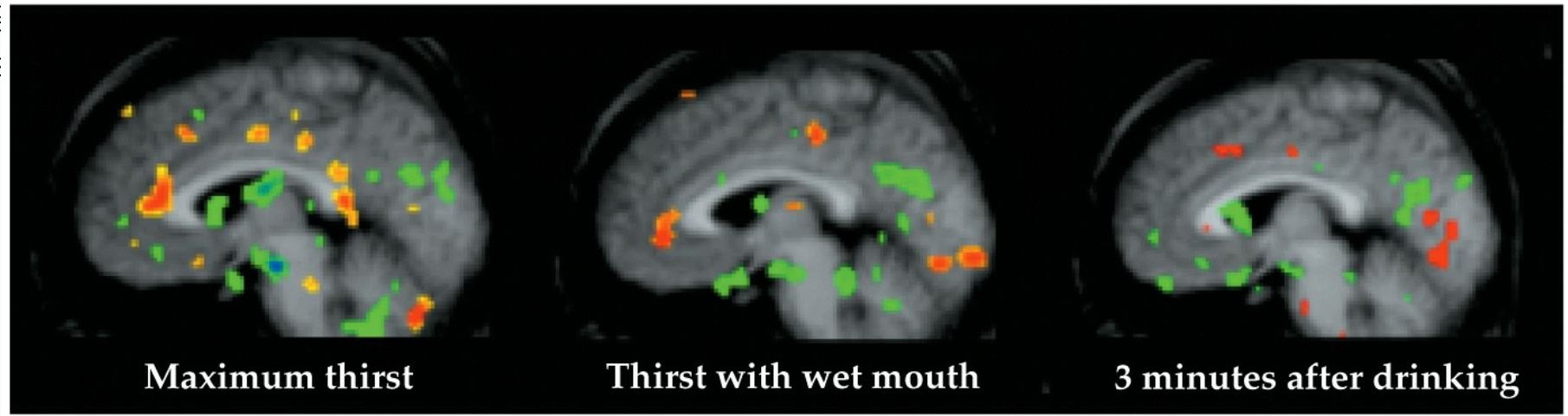
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- OVLT/SFO → median preoptic hypothalamus
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# Drinking

## Neural Mechanisms of Thirst.

- circumventricular organs indirectly trigger
- adequate drinking = immediate decrease
- activity remains elevated in neurons of



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