

Hypovolemic Thirst

(Ingestive Behavior)

- loss of blood volume without depleting intracellular fluid
- dizziness, nausea, very thirsty

Osmotic Thirst

(Ingestive Behavior)

- cellular dehydration
- caused by increase in osmotic pressure from pressure of interstitial fluid in relation to intracellular fluid

Hypothalamus-Control of Feeding

(Ingestive Behavior)

- if you stop eating, no procreation
- info comes in from stomach --> neurotrans ghrelin tells brain stomach is distended, stop eating --> leptin comes from adipose tissue in pancreas, tells you can stop eating
- both routinely ignored, b/c if you carry more body fat, more likely to survive and pass on genes

Ghrelin

(Ingestive Behavior)

- goes to the Agrp/Npy neuronal group
- gives positive signal to start/keep eating
- peptide hormone
- stimulates both appetite and general thoughts about food

Leptin

(Ingestive Behavior)

- goes to Pomc/Cart neuronal group, tells brain to stop
- lesion of Pomc neurons lead to uncontrollable eating --> with overeating, you gain weight but eventually plateau (due to fact that w/ plasticity, brain thinks 3-4,000 calories a day is necessary/normal)

Oxygen: Pro-Aging Molecule

(Ingestive Behavior)

- direct tie to hypothalamus and respiration
- 2% of oxygen intake while you eat and breathe-accumulates and causes free radical damage to cell DNA

Weight and Mortality

(Ingestive Behavior)

- cancer related to obesity, but degenerative disease related to intake of O₂ and free radicals
- fat carried subcutaneously; after 50 yrs old, moves closer to internal organs (big problem)
- BMI isn't always good indicator of health, doesn't take into account muscle weight

Weight and Mortality [cont.]

(Ingestive Behavior)

- matters what/when you eat it in relation to mortality --> past age 65, goal is to put on weight to offset degenerative diseases that can cause harm to metabolism/weight degradation (before dementia/traumatic age-related illness, there is a severe drop-off in weight)

Hypothalamus

- integrates autonomic, endocrine, and behavioral responses
- homeostasis
- survival/reproduction made more likely
- combo of neural and endocrine inputs/outputs
- plays major role in: feeding, drinking, temp regulation, sexual responses, determining "how you feel"

Hypothalamus and Homeostasis

- small change in blood pH, body temp, or electrolytes can cause death
- Endocrine system, ANS --> activation of the sympathetic and parasympathetic nervous systems (I am in fear vs. I am safe/ok)

Hypothalamus and Body Temperature

- involves ANS, endocrine, and skeletomotor systems
- peripheral detectors: skin, spinal cord, viscera
- central detector: anterior hypothalamus
- Body temp effectors: Heat retention/generation (posterior hypo) and heat dissipation (anterior hypo)
- lower temp=longer life span

Hypothalamus and Body Temperature [cont.]

- heat dissipating mechs.- dilation of blood vessels in skin, inhibition of shivering
- heat conserving mechs.- vasoconstriction of blood vessels in skin, shivering, increased secretion of certain hormones

Thermogenesis

- production of an uncoupling protein 1 (UCP-1)
- allows mitochondria in brown adipose tissue to convert ATP into heat
- muscles can do same thing in response to testosterone

Disorders of Thermo-Regulation

- lesions of heat conserving mechs.-lesion of posterior hypo causes hypothermia
- lesions of heat dissipating mechs.- lesion of anterior hypo causes hyperthermia
- disconnection syndrome: occurs during REM sleep, causes "poikilothermia" (cold-blooded)

Thirst

- determined by serum osmolality and blood volume
- osmotic receptors in hypothalamus
- volume receptors in R. atrium of heart --> vasopressin releases from hypo, increases water reabsorption from kidney, inhibited by alcohol consumption