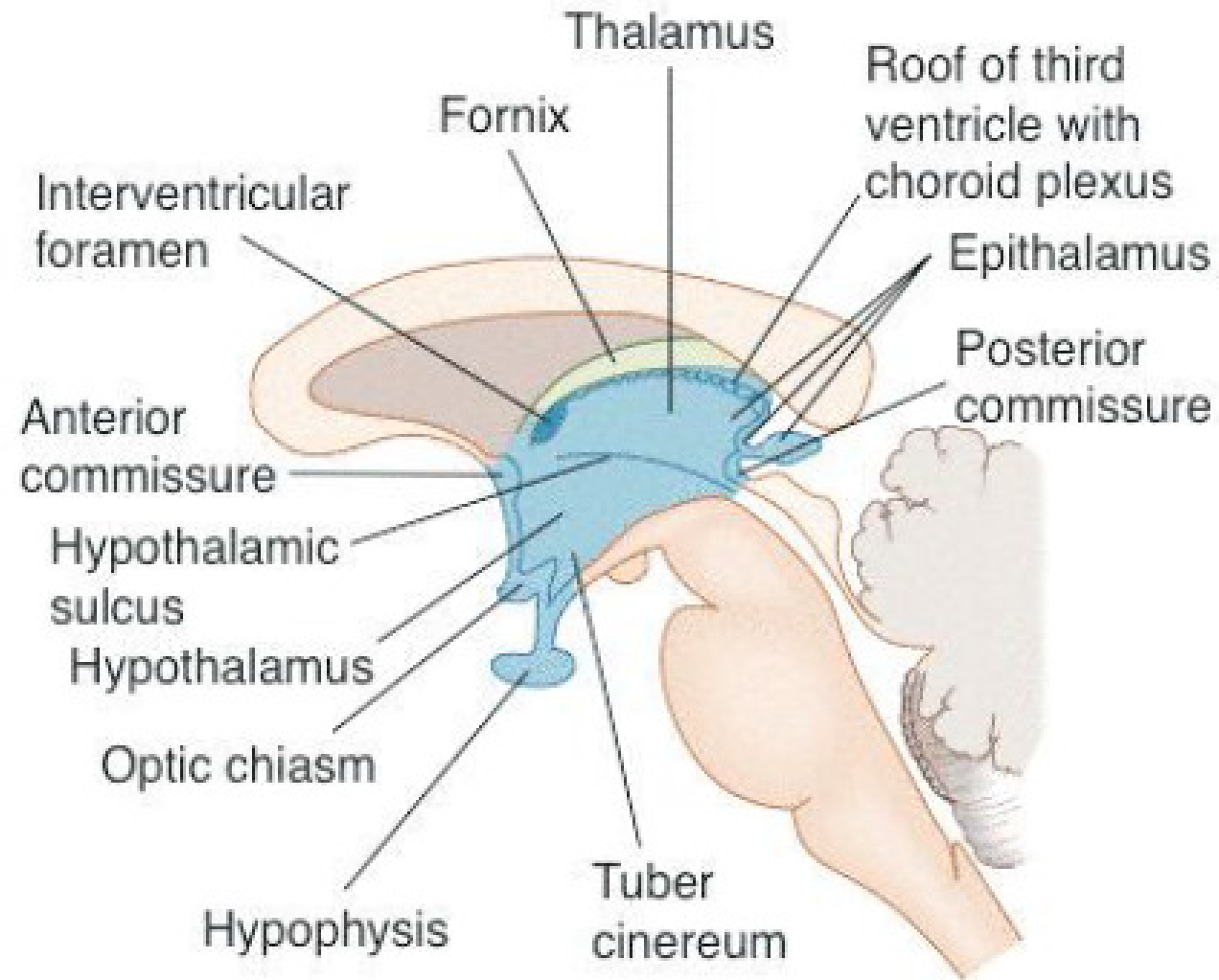
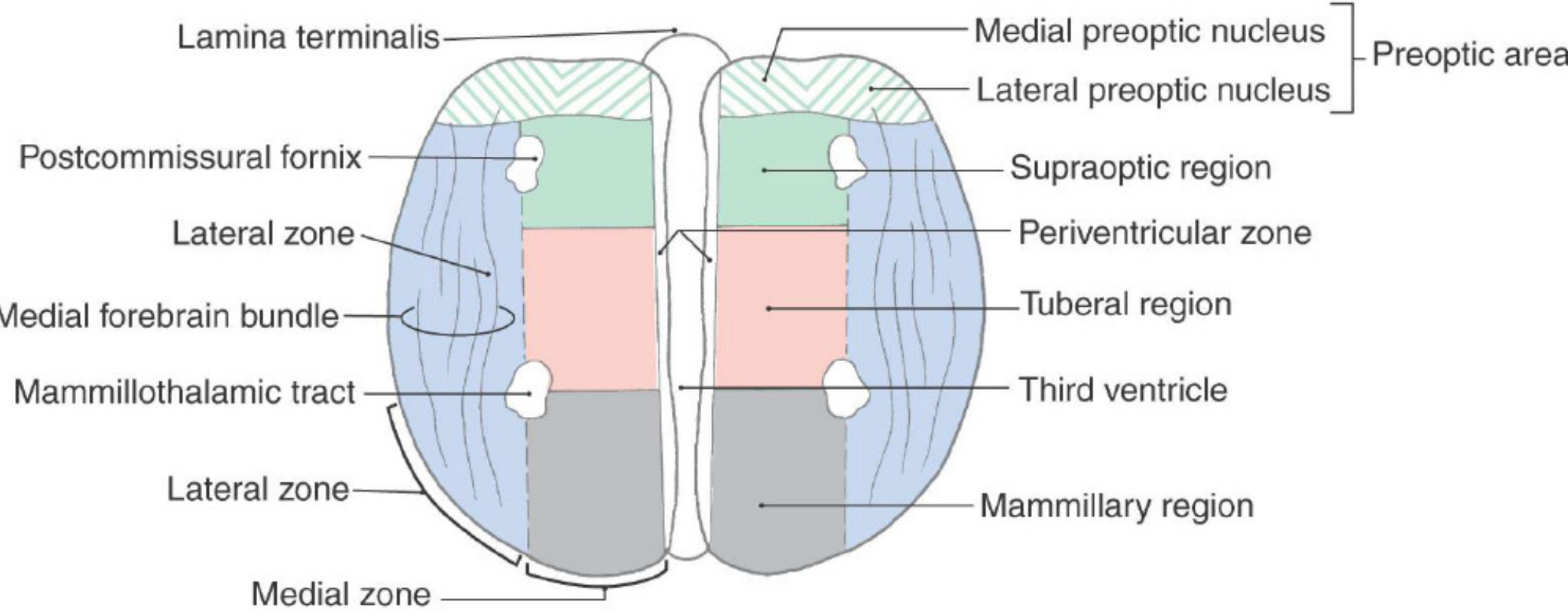


Hypothalamus

- Part of the diencephalon
- Below the thalamus
- Floor and the inferior part of the lateral walls of 3rd ventricle
- Boundaries
 - **Anterior:** lamina terminalis
 - **Superior:** hypothalamic sulcus
 - **Lateral:** internal capsule
 - **Posterior:** posterior edge of the mammillary body
 - **Medial:** Cavity of third ventricle



Divisions of Hypothalamus



➤ **Preoptic area**

- Medial preoptic nucleus
- Lateral preoptic nucleus

➤ **Lateral zone**

- Lateral hypothalamic nucleus
- Tuberal nuclei

➤ **Medial zone**

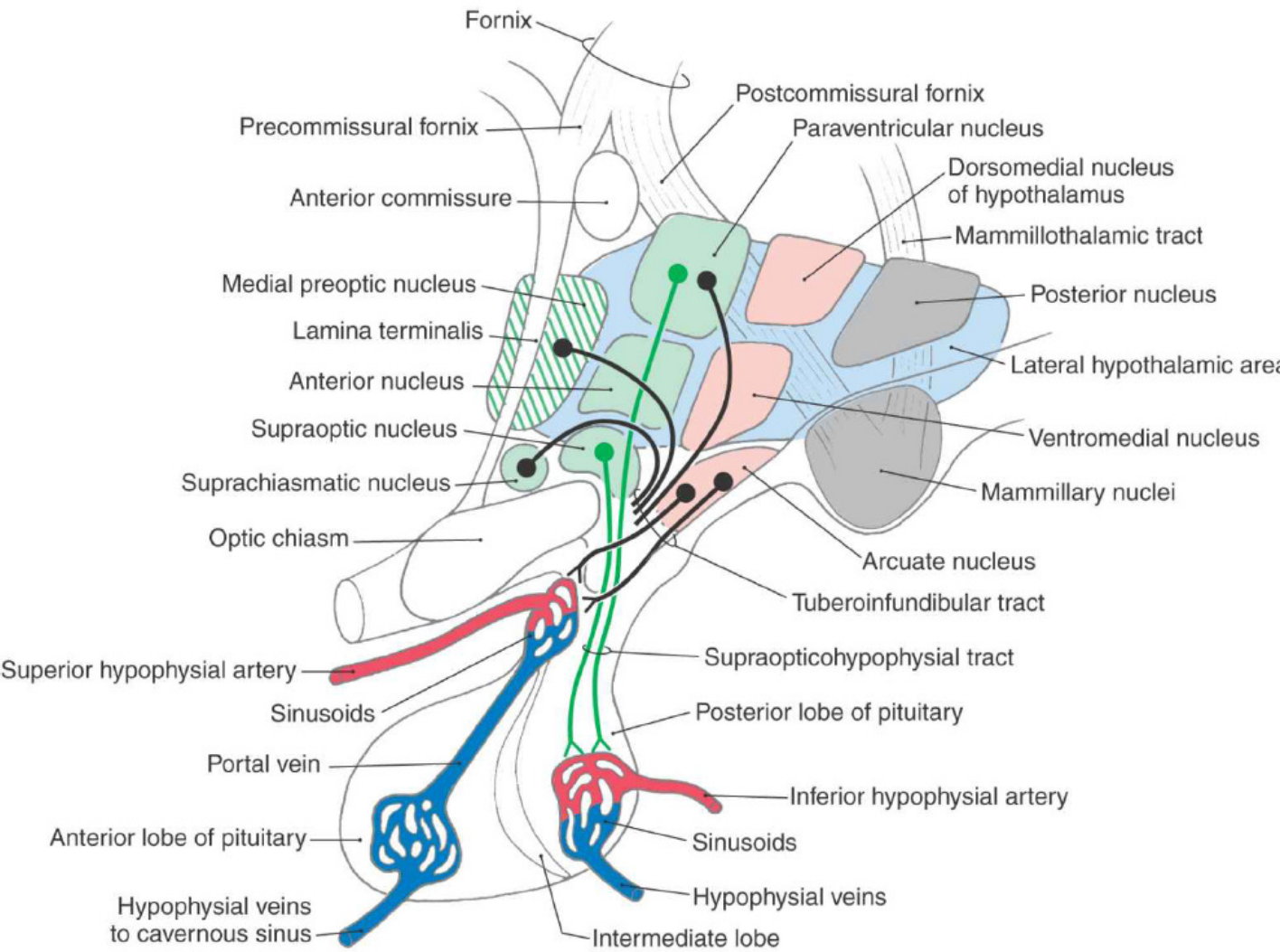
- Supraoptic (chiasmatic) region
- Tuberal region
- Mammillary region

➤ **Periventricular zone**

Preoptic area

➤ Medial preoptic nucleus

- Manufacture gonadotropin-releasing hormone (GnRH).
- Tuberoinfundibular tract to capillaries of the hypophysial portal system
- causes the release of gonadotropins from Ant pituitary
 - Luteinizing hormone (LH)
 - Follicle-stimulating hormone (FSH)



➔ **Sexually dimorphic nucleus**

➤ **Lateral preoptic nucleus: ??**

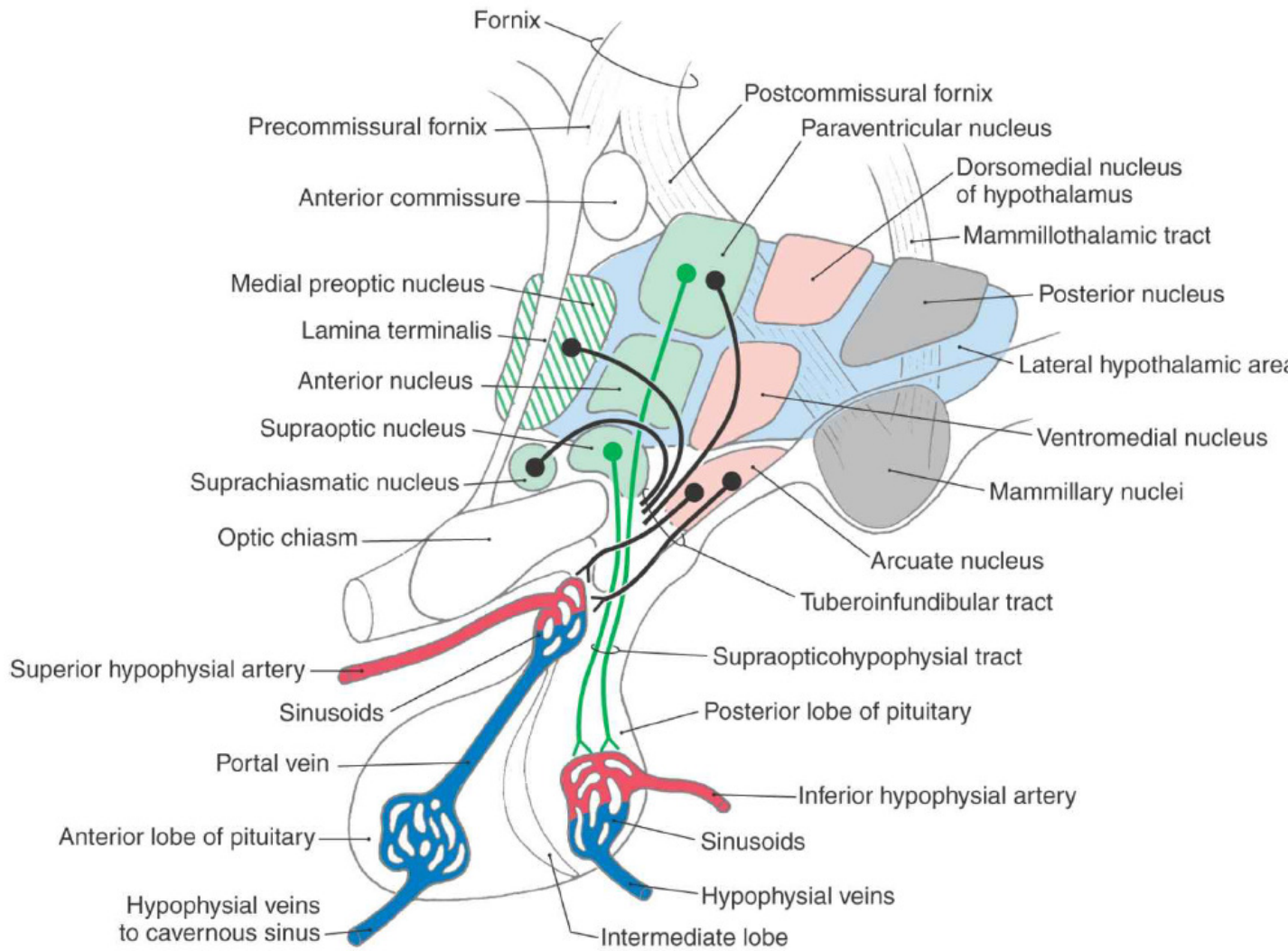
Lateral zone

➤ Lateral hypothalamic nucleus

- Feeding center
- Stimulation: promotes feeding
- Destruction: attenuate feeding

➤ Tuberal nuclei

- Via tuberoinfundibular tract influence releasing of:
 - Thyrotropin-releasing hormone
 - Growth hormone-releasing hormone
 - Growth hormone release-inhibiting hormone (somatostatin)



Medial zone

➤ Supraoptic region:

- Supraoptic
- Paraventricular
- Suprachiasmatic
- Anterior nuclei

❖ Supraoptic

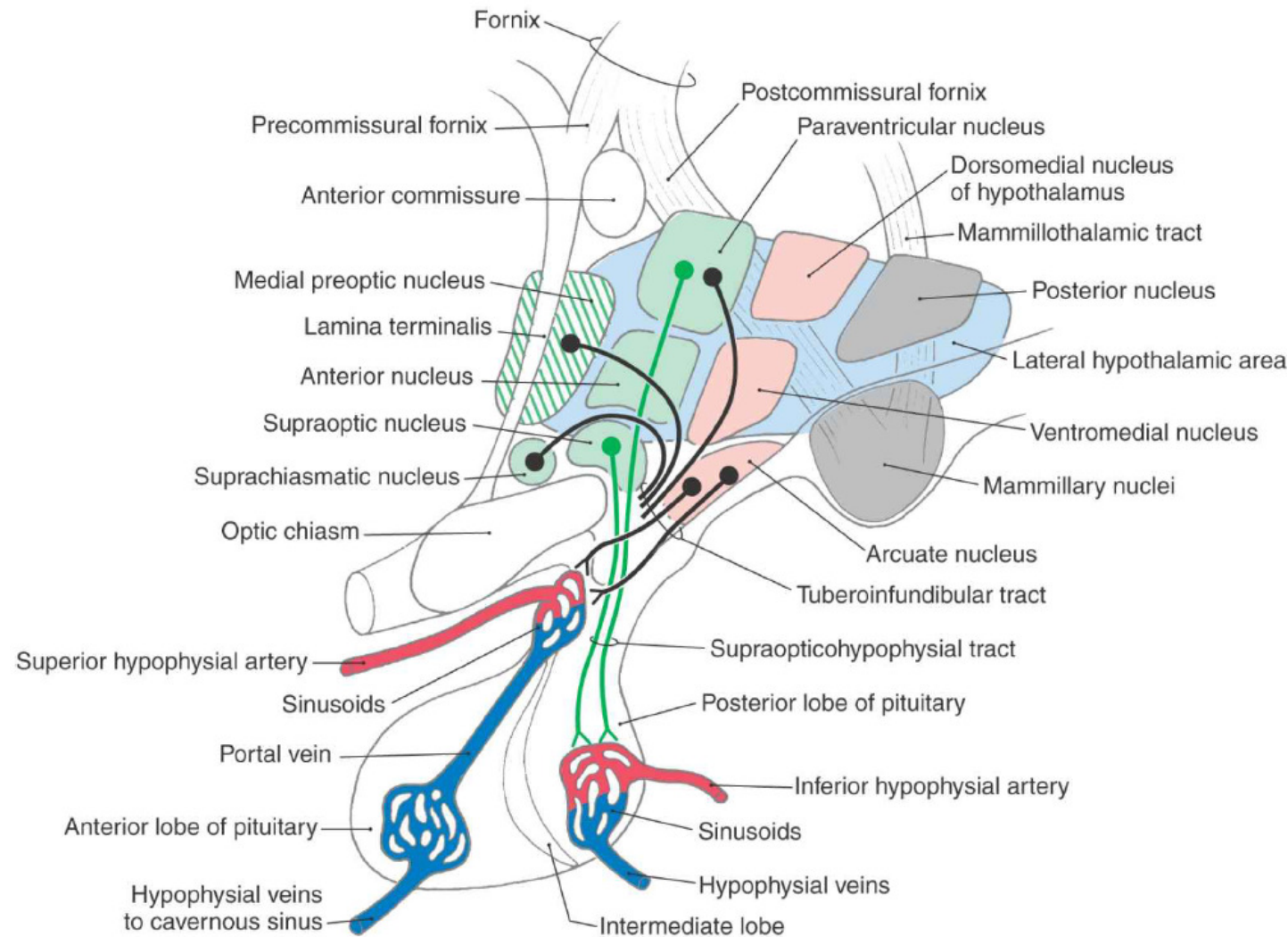
and

❖ Paraventricular

nuclei contain **oxytocin** and antidiuretic hormone (**ADH**) to the posterior pituitary by supraopticohypophysial tract

❖ Suprachiasmatic nucleus

- Receives direct input from retina
- **Circadian rhythms**



❖ Anterior nucleus

- Maintenance of body temperature (cooling)

Medial zone

➤ Tuberal region:

❖ Ventromedial

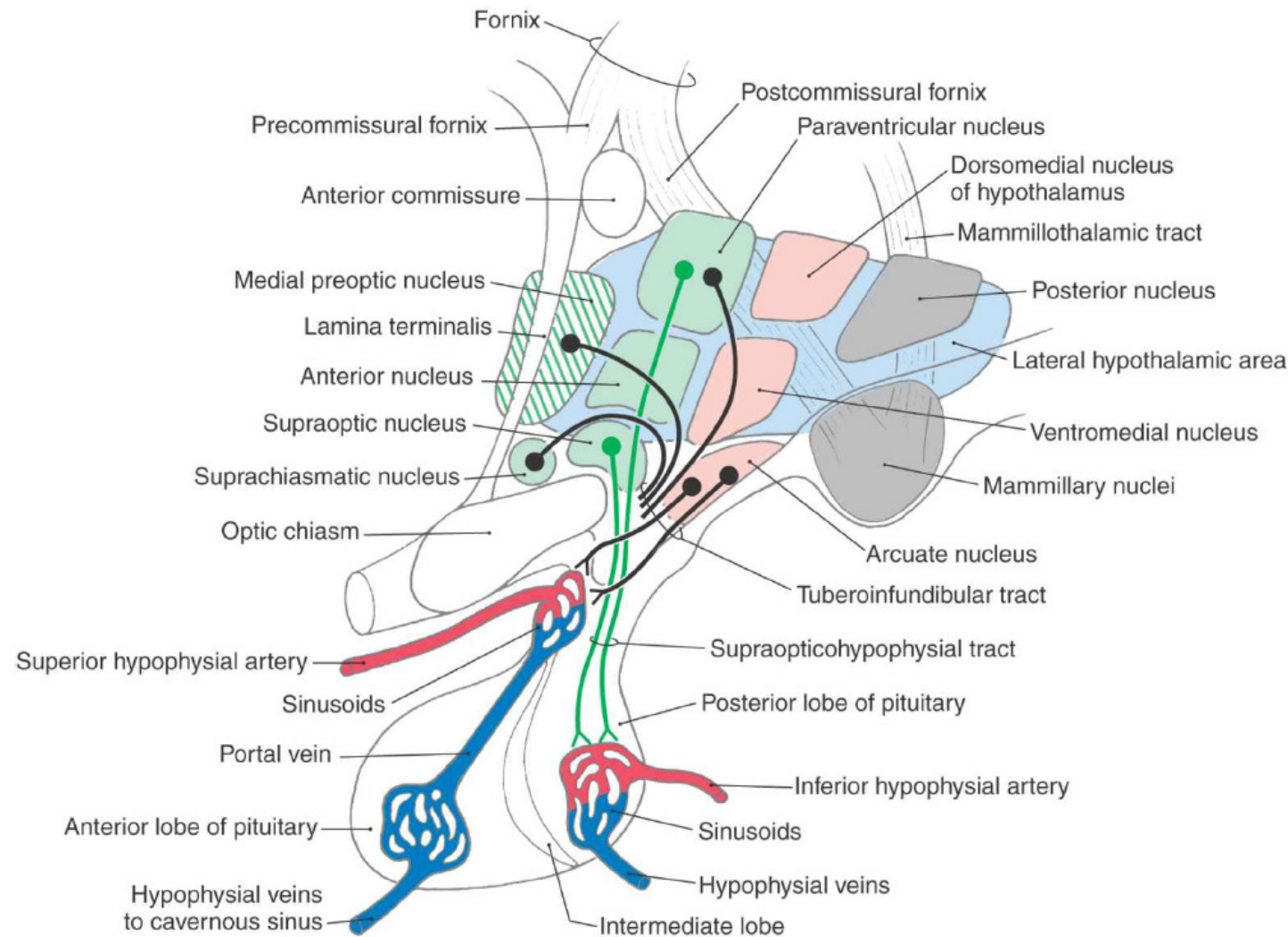
- Satiety center

❖ Dorsomedial

- Aggressive behavior

❖ Arcuate nucleus:

- Tuberoinfundibular tract and hypophysial Portal system
- Neurons that contain releasing hormones
 - Gonadotropin-releasing hormone
 - Growth hormone-releasing hormone
 - Prolactin release-inhibiting hormone



Medial zone

➤ Mammillary region:

❖ Medial mammillary

- Termination of fornix
- Origin of mammillothalamic tract

❖ Intermediate

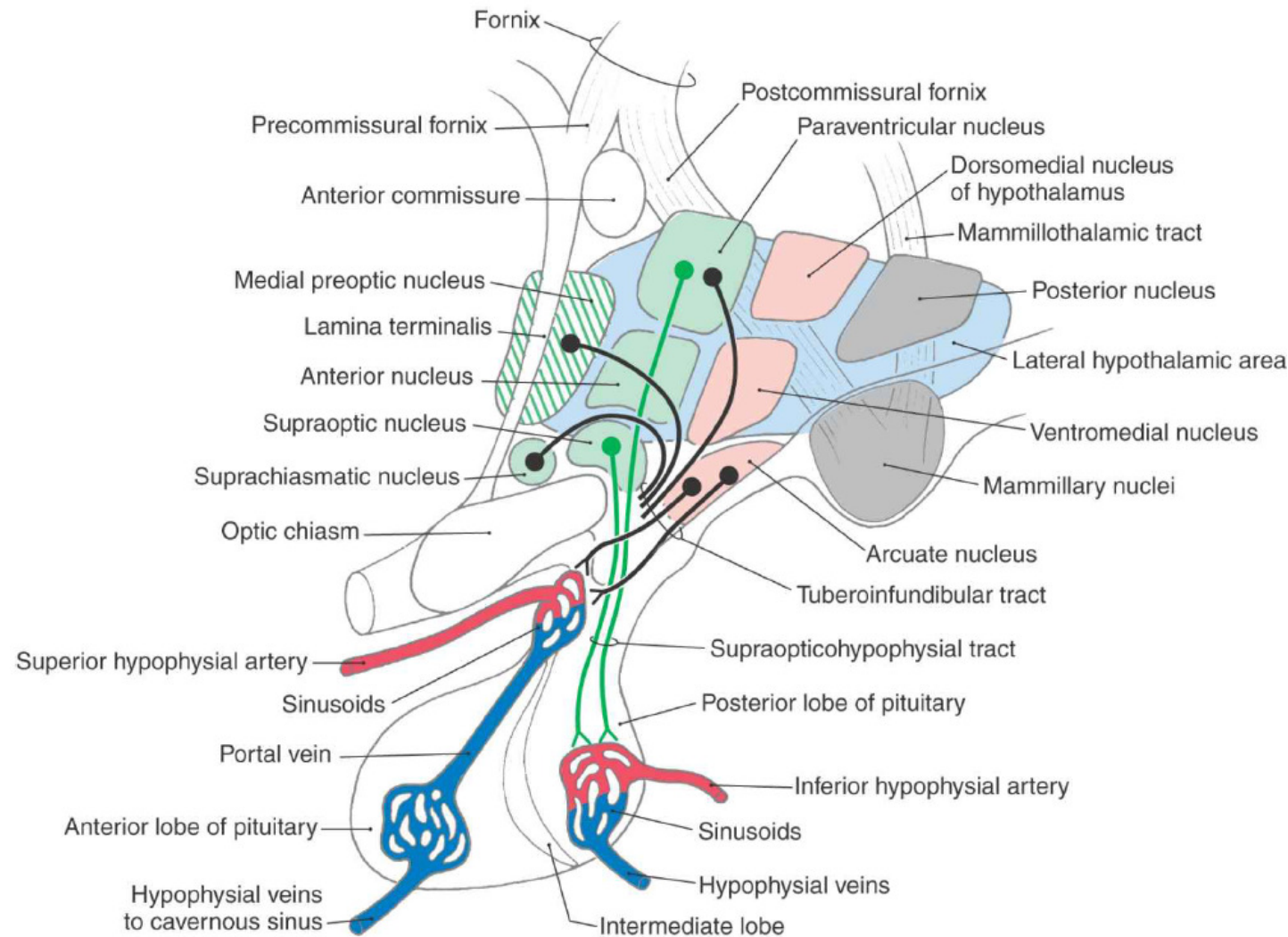
and

❖ Lateral mammillary nuclei:

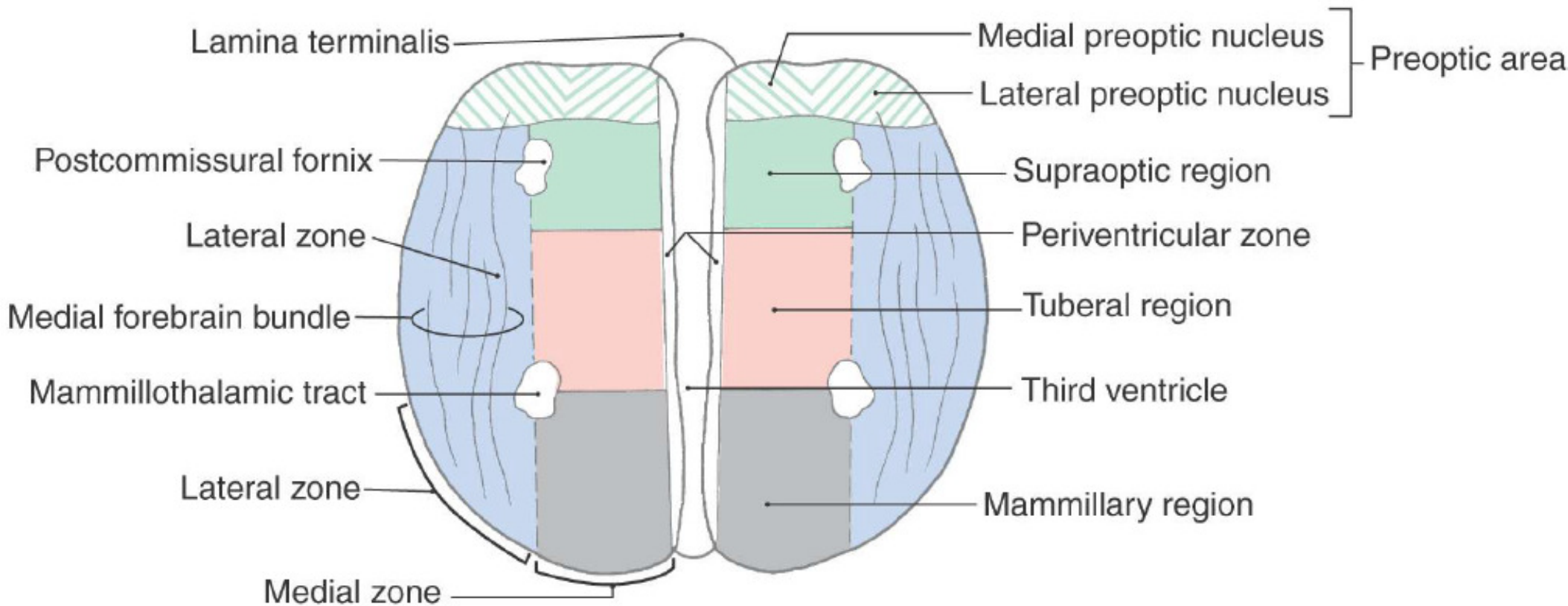
- Receives input from midbrain via mammillary peduncle

❖ Posterior hypothalamic nucleus:

- Maintenance of body temperature (heating)



Periventricular zone



➤ **Periventricular zone**

- Synthesize releasing hormones
- Tuberoinfundibular tract to the hypophysial portal system
- Similar to arcuate nucleus

Effect of Stimulation or Lesion of the Hypothalamic Nuclei

NUCLEUS	STIMULATION OF	LESION OF
Suprachiasmatic nucleus	Adjusts the circadian clock phase	Abolishes circadian rhythms
Supraoptic or paraventricular nuclei	Increased blood volume, blood pressure, and metabolism	Diabetes insipidus
Lateral hypothalamic nucleus	Increased feeding	Decreased feeding
Ventromedial nucleus	Decreased feeding	Increased feeding
Dorsomedial nucleus	Sham rage	Decreased aggression and decreased feeding
Mammillary body	?	Short-term memory is not processed into long-term memory