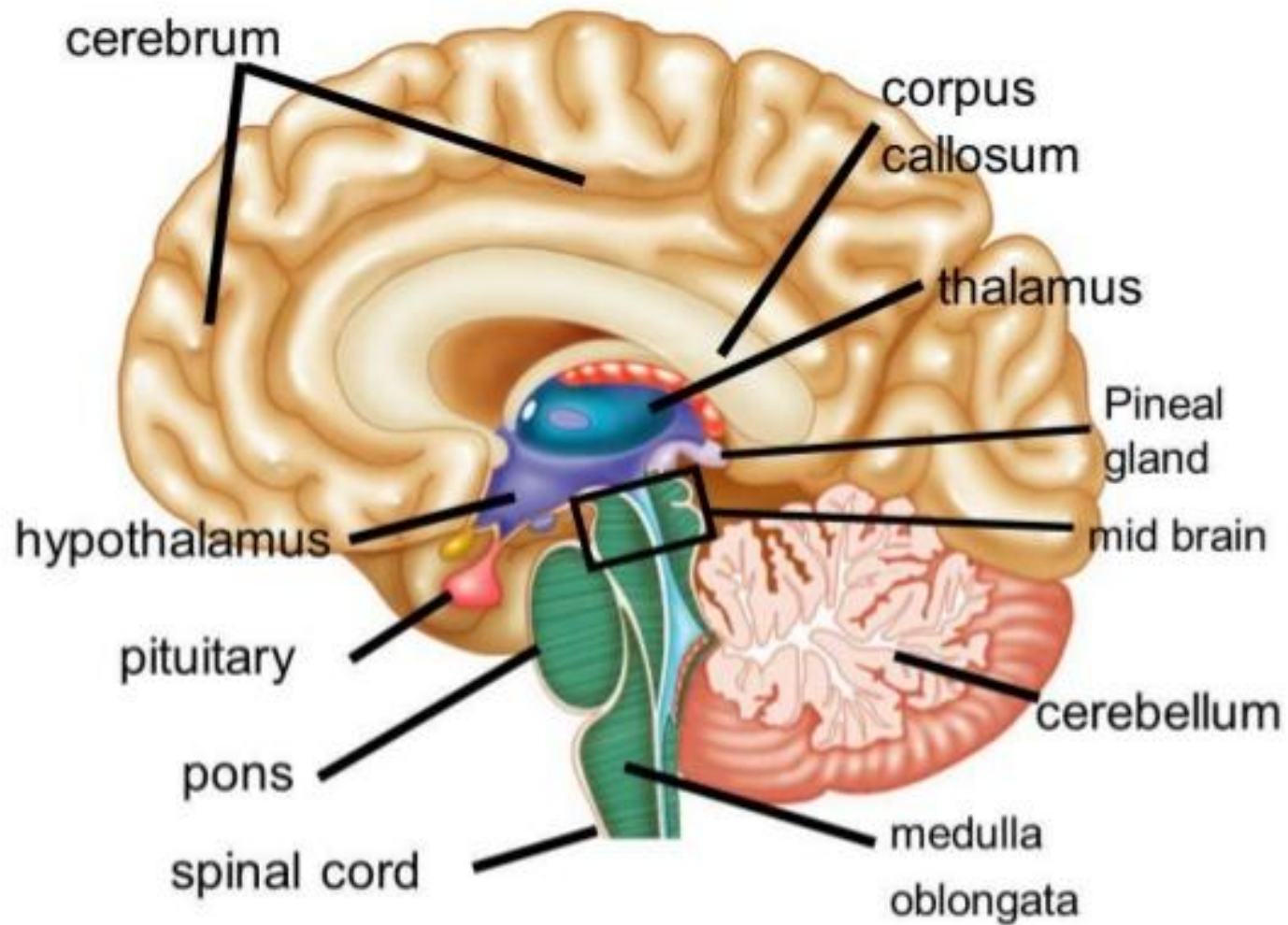


Hypothalamus and Hypothalamo-pituitary axis

Dr Jayanti Pant

Location of hypothalamus



Hypothalamus- Master of endocrine Orchestra

- Hypothalamo-pituitary-thyroid axis
- Hypothalamo-pituitary – adreno-cortical axis
- Hypothalamo-pituitary-gonadal axis
- Hypothalamo-sympatho-adrenal axis

Hypophysiotropic hormones

- TRH
- CRH
- GnRH
- GRH
- GIH/Somatostatin
- PIH
- PRH

Releasing hormones

- **Thyrotropin Releasing hormones (TRH)**
 - Secreted from paraventricular nucleus of hypothalamus
 - Stimulates TSH
 - Also promotes GH and Prolactin
- **Gonadotropin Releasing Hormone (GnRH)**
 - Secreted by Arcuate nucleus of hypothalamus
 - Stimulates LH, FSH

Releasing hormones

- **Corticotropin Releasing Hormone (CRH)**
 - Secreted from Paraventricular nuclei of hypothalamus
 - Stimulates ACTH
 - Promotes POMC gene in corticotrophs
 - Also promotes endorphins and lipotrophins secretion
- **Growth hormone releasing hormone (GHRH)**
 - Secreted from arcuate nucleus of hypothalamus
 - Stimulates secretion of GH
- **Prolactin releasing hormone (PRH)**
 - Stimulates prolactin secretion

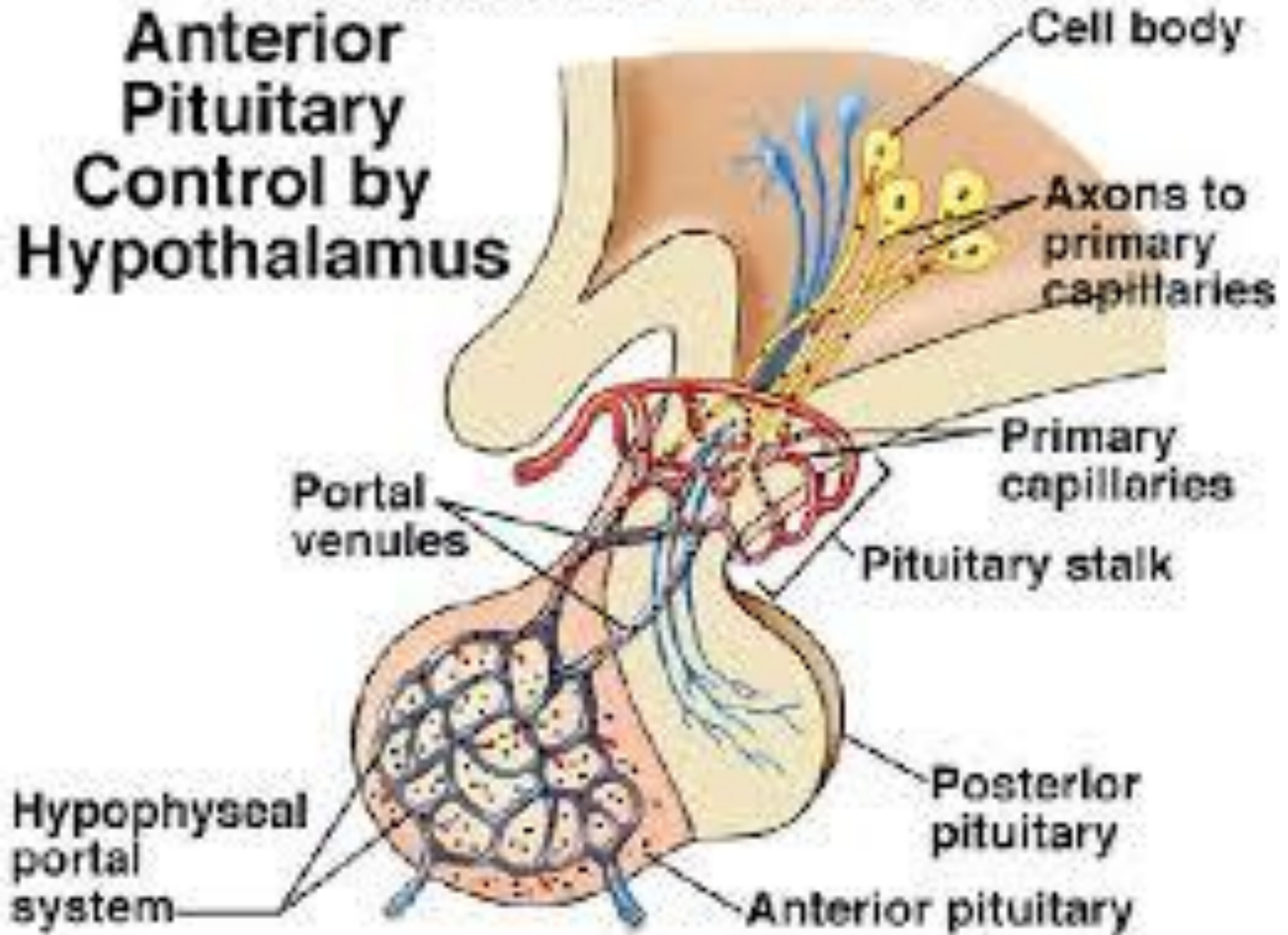
Inhibiting Hormones

- **Growth hormone inhibiting hormone (GHIH)**
 - Secreted from anterior periventricular nucleus
 - Inhibits growth hormone, prolactin, TSH
- **Prolactin Inhibiting hormone (PIH)**
 - Dopamine secreted from arcuate nucleus
 - Inhibits Prolactin, TSH, GH

Kallaman's syndrome

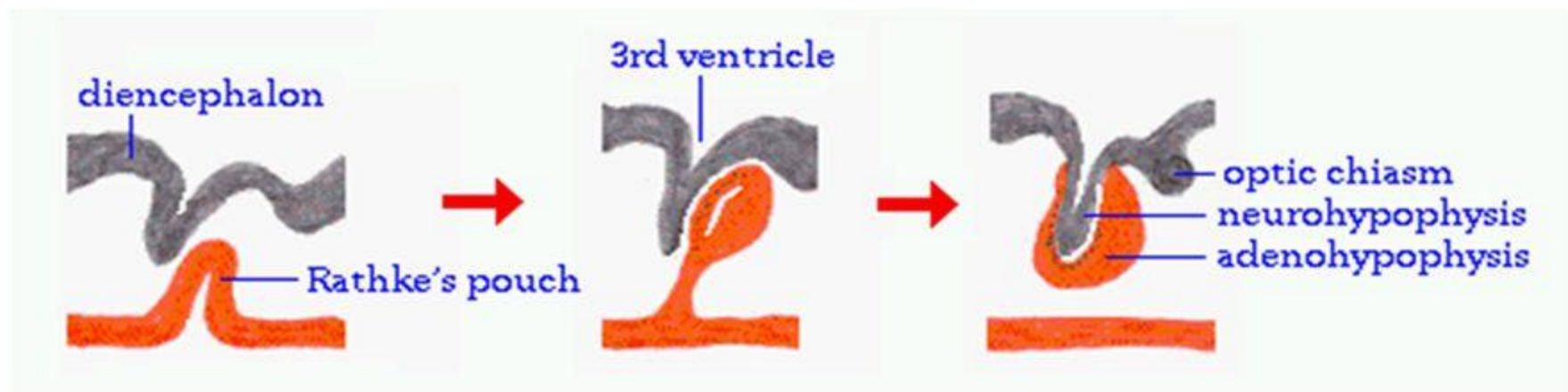
- Hypogonadotropic hypogonadism
- Hyposmia or anosmia
- Common in men
- Mutation of KALIG1 gene on X chromosome

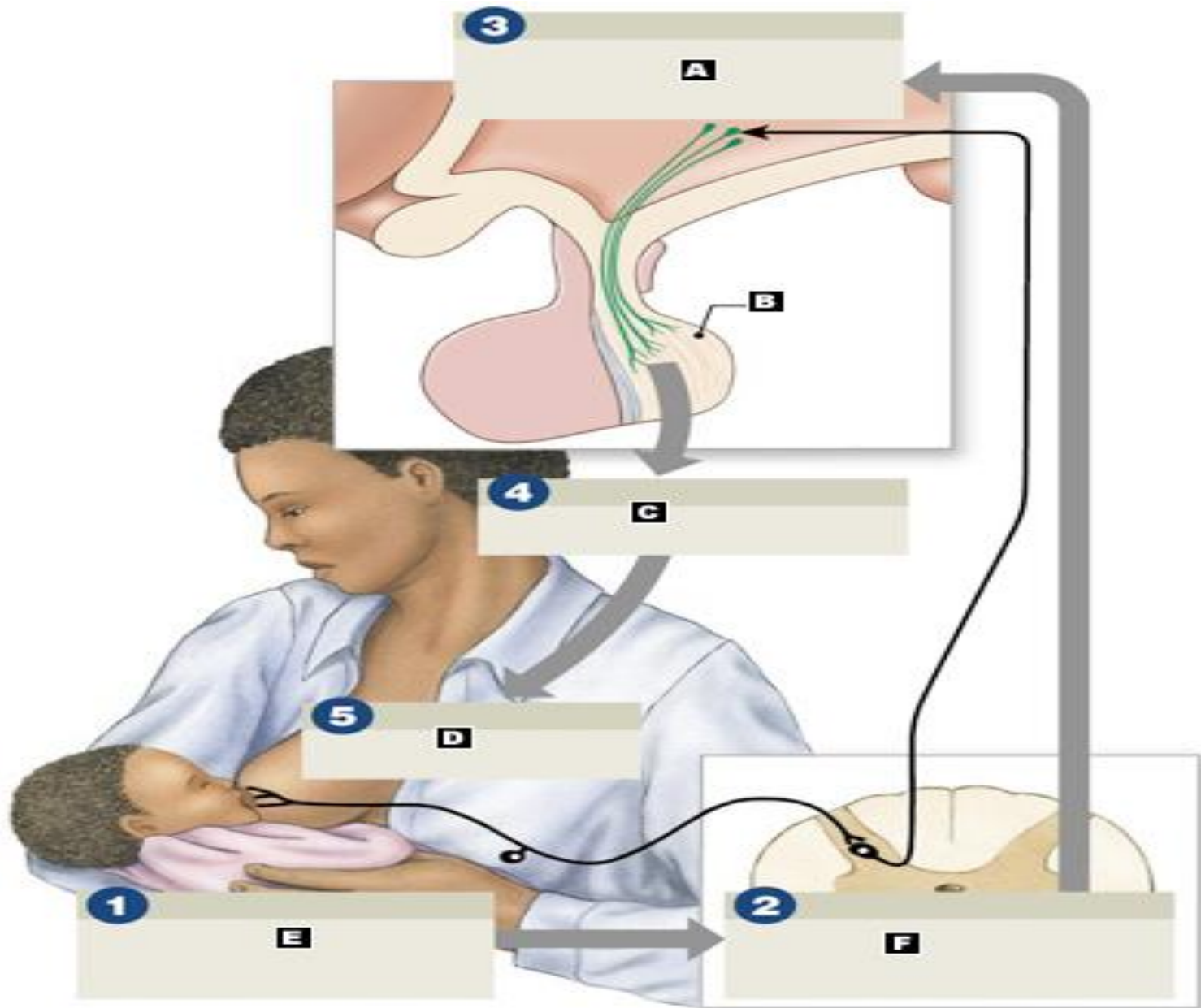
Anterior Pituitary Control by Hypothalamus



Pituitary Development

- ❑ Anterior Pituitary developed from Rathke's pouch, Ectodermal evagination of oropharynx & Migrate to join neurohypophysis
- ❑ Posterior pituitary from neural cells as an outpouching from the floor of 3rd ventricle
- ❑ Pituitary stalk in midline joins the pituitary gland with hypothalamus that is below 3rd ventricle





Cell types in anterior pituitary

- Somatotropes
- Corticotropes
- Thyrotropes
- Gonadotropes
- Lactotropes/Mammotropes

- Hypopituitarism is marked by abnormal pallor
- Hyperpigmentation in adrenal insufficiency

Effects of Pituitary insufficiency

- Destroyed by disease- Supracellar cysts
- Pituitary tumors
- Postpartum necrosis – Sheehan syndrome
- Remnants of Rathke pouch enlargement and compression of pituitary

Hypopituitarism

- Adrenal cortex atrophies
- Stress induced aldosterone secretion is absent
- Growth is inhibited
- Thyroid function is depressed
- Gonads atrophy
- Hypophysectomy ameliorates diabetes mellitus
- Diabetes Insipidus