Section B

Pubertal Regulation
Hypothalamic-Pituitary Axis
The Gonadostat

- Like a thermostat

The Gonadostat

Hypothalamus
The Gonadostat

- Transynaptic excitatory inputs (e.g., norepinephrine, neuropeptide Y)
- GABA inhibitory regulation
- In production of neuroactive substances (e.g., prostaglandin E₂)

Hypothalamus
The Gonadostat

- Transynaptic excitatory inputs (e.g., norepinephrine, neuropeptide Y)
- GABA inhibitory regulation
- In production of neuroactive substances (e.g., prostaglandin E$_2$)

Hypothalamus

GnRH
The Gonadostat

- Transynaptic excitatory inputs (e.g., norepinephrine, neuropeptide Y)
- GABA inhibitory regulation
- In production of neuroactive substances (e.g., prostaglandin E₂)
The Gonadostat

- Transynaptic excitatory inputs (e.g., norepinephrine, neuropeptide Y)
- GABA inhibitory regulation
- In production of neuroactive substances (e.g., prostaglandin E₂)

Hypothalamus

GnRH

Pituitary

LH

FSH
The Gonadostat

- Transynaptic excitatory inputs (e.g., norepinephrine, neuropeptide Y)
- GABA inhibitory regulation
- In production of neuroactive substances (e.g., prostaglandin E₂)

Hypothalamus

GnRH

Pituitary

LH
FSH

Gonad (Testes/Ovary)

Gonad
The Gonadostat

- Transynaptic excitatory inputs (e.g., norepinephrine, neuropeptide Y)
- GABA inhibitory regulation
- In production of neuroactive substances (e.g., prostaglandin E₂)
The Gonadostat

- Transynaptic excitatory inputs (e.g., norepinephrine, neuropeptide Y)
- GABA inhibitory regulation
- In production of neuroactive substances (e.g., prostaglandin E₂)
The Key Change of Puberty

- The key change of puberty is an increased sensitivity of receptor cells in the hypothalamus resulting in a 10 to 20 times increase of testosterone to turn off the gonadostat.
Factors that Influence the Onset of Puberty

- Genetics
- Social context
- Behavior
- Nutrition