

Practical: Physiology of Reproductive System



Animal Breeding
AAT 31022

Outline

- **Endocrine System**
- **Estrus Cycle**
- **Reproductive process in Mammals**
- **Reproductive process in Poultry**



Endocrine System

Endocrine System

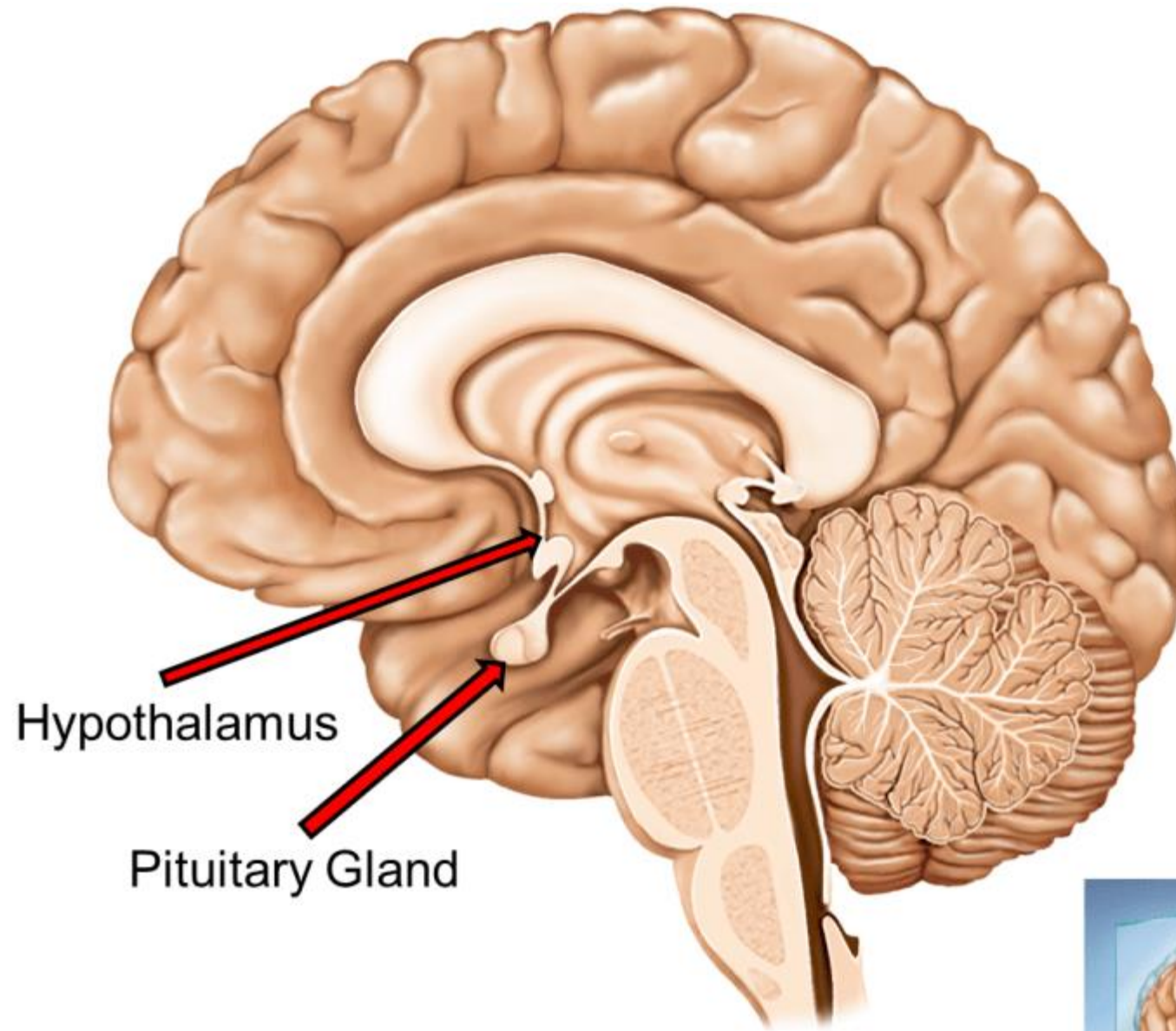
Communication within the body by Nervous and endocrine systems

Endocrine system communicates through its specialized chemical substances called **hormones**

Hormones reach the **target tissues** via the **blood** stream

Cont...

- Driven by the **hypothalamus** (located in the **CNS**)
- Hypothalamus, via its neural and hormonal signals controls the *master endocrine gland* – pituitary

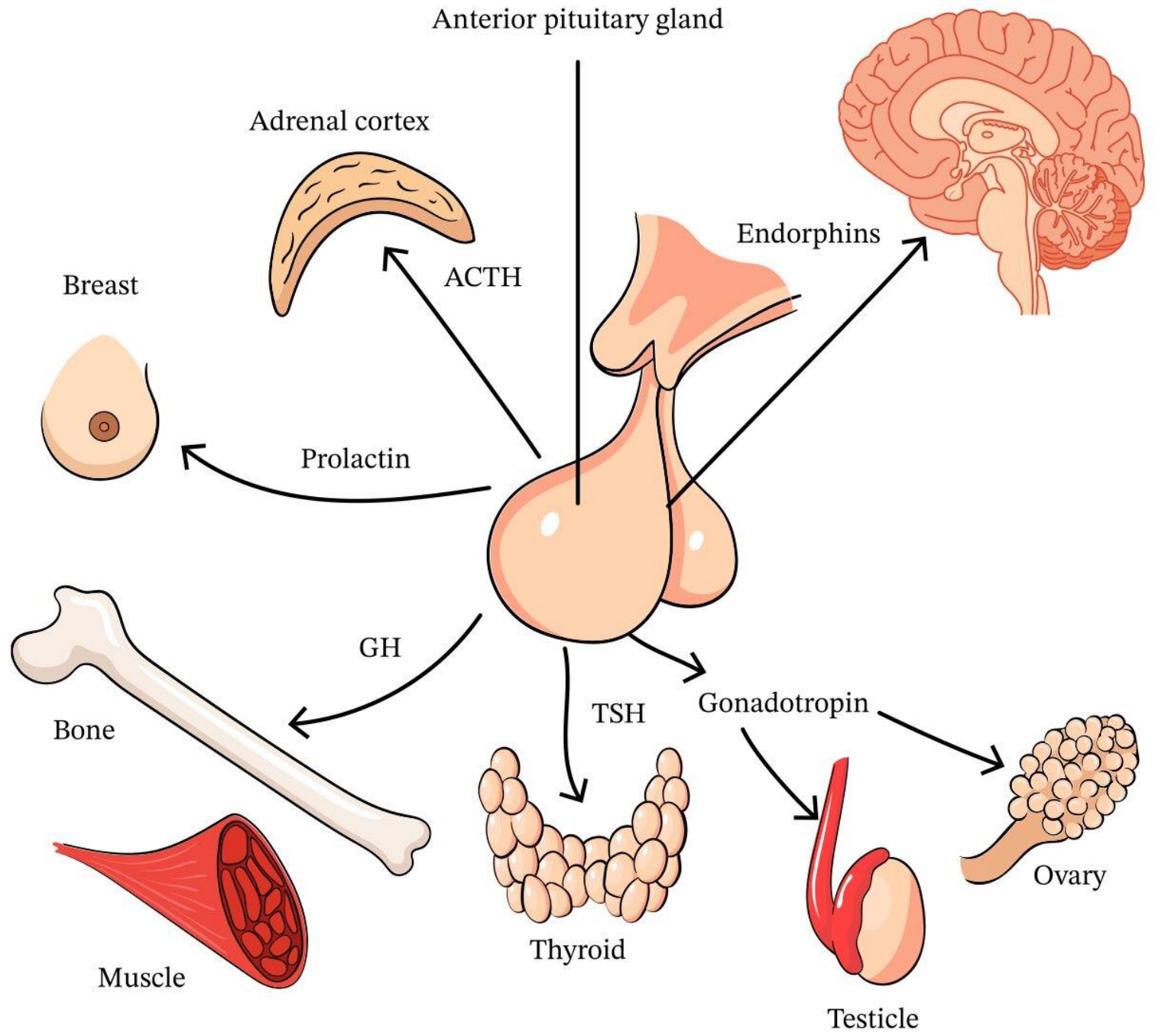


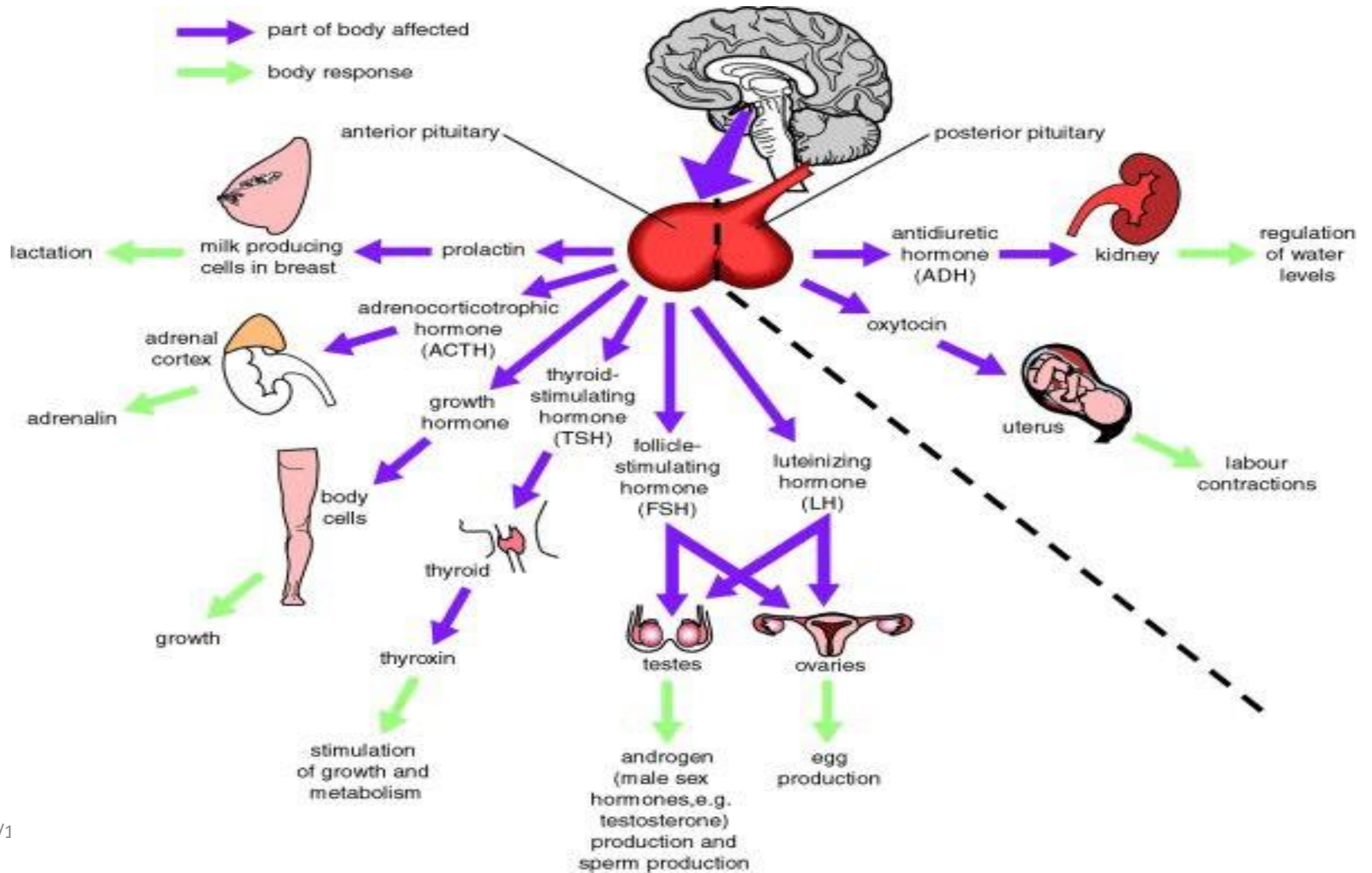
Hypothalamus

Pituitary Gland

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Hormones

- Chemical substances
- Synthesized and secreted by ductless endocrine glands
- Secreted in minute quantities
- Secrete directly in to the blood circulation
- Transported to target organs via blood
- Regulate the rate of specific biochemical processes

Reproduction Inducing Hormones

Gonadotrophin Releasing Hormone (GnRH) – *Hypothalamus*

(regulates both synthesis and release of FSH and LH)



Follicular Stimulating Hormone (FSH)

Luteinizing Hormone (LH)

(Secreted by Anterior **Pituitary gland**)

Works on Testicle or Ovaries

Functions of LH

❑ In the Female

- Stimulates the further growth of the developing **follicle**
- Stimulates synthesis of **oestrogen**
- Help for the **Ovulation**

❑ In the Male

- Acts on Leydig cells and causes **androgen / testosterone** production
- Help for **spermatogenesis** process

Functions of FSH

□ In the Female

- Causes multiple follicular growth
- Supports the production of Oestrogen

□ In the Male

- Stimulates spermatogenesis with androgens / testosterone

Functions of Oestrogen

- ✓ Stimulates secondary sex characteristics
- ✓ Prepare the uterus for sperm transport
- ✓ Stimulates the growth and activity of mammary gland
- ✓ Prepare the uterus for **progesterone** action
- ✓ Stimulates immune response and body defense mechanisms
- ✓ Induces sexual behavior
- ✓ Feedback control of gonadotrophins

Functions of Testosterone

- ✓ Stimulates the spermatogenesis
- ✓ Induces secondary sex characteristics of males.
- ✓ Induces differentiation and maintenance of accessory sex glands.
- ✓ Regulation of gonadotrophin secretion
- ✓ Influence the aggressive behavior of males
- ✓ Promotes protein anabolism
- ✓ *5 alpha androsterone* serves as a pheromone in pigs

Progesterone

- ❑ The hormone of pregnancy and mainly secreted by the corpus luteum (**CL**)
- ❑ In some species -- **Sheep, horses** progesterone is also secreted by the foetal placental units.
- ❑ But in **cattle , pigs and goats** CL is a important Progesterone source

Functions of Progesterone

- ❖ Prepare the uterus to receive the conceptus
- ❖ Maintain the uterus quiescence during the pregnancy
- ❖ Stimulates the growth of mammary glands
- ❖ Feedback control of gonadotrophin secretion
- ❖ Prevents uterine contractions

Folliculogenesis and Its Hormonal Control

Will Discuss in Next Session



Report Submission

- You have to write a report, including below content;
 1. Make a summary table for Hormones you studied, including
 - *Name, Secreted by, targeting organ, key functions*
 2. Write a short notes on
 - Spermatogenesis
 - Folliculogenesis
- Make your report as a soft copy
- Submit via **Turnitin Account and VLE**
- **Plagiarisms will be checked Strictly**
- **Due Date: On or before 17th of March - 2022**