Endocrine glands - ductless
  • Hormones released to circulation
    – Specific to target tissues

Endocrine control

Neural control

Pituitary (hypophysis) - vertebrates

  • Neurohypophysis (posterior) - from the floor of brain (infundibulum)
  • Adenohypophysis (anterior) from pocket of embryonic mouth cavity
• ADH - Anti-diuretic hormone  
  – increased permeability in collecting ducts

• Oxytocin - (mammals)  
  – uterine contractions, milk ejection
Reproductive hormones

Adenohypophysis -
  • LH - Lutenizing hormone
  • FSH - Follicle-stimulating horm.
  • Prolactin - mammarys, behavior

Neurohypophysis
  • Oxytocin

Looking within the ovary...

Primary follicle

Follicle cells

FSH - causes follicle to mature, grow
Follicle cells secrete estrogen

Estrogen
  - Estrogen promotes development of endometrium
  - promotes LH release when estrogen is high – positive feedback
**Induced Ovulators**

- LH not promoted by estrogen
- Act of breeding stimulates pituitary gland to release LH

Llamas: Levels of LH in the blood begin to rise 15 minutes after the beginning of breeding.

**Follicle remains as corpus luteum** (mammals, reptiles, sharks)
- releases progesterone and estrogen
- Progesterone continues growth of endometrium blood vessels, decrease contractions
  - Promotes egg layers, shell in reptiles

**Fertilization**

If fertilization: blastocyst → chorionic gonadotropin which maintains c. luteum
Eventually, placenta takes over

- Progesterone and estrogen also inhibit FSH, LH and prepare mammary glands
- At birth, decreased levels of progesterone promotes oxytocin, prolactin
- Feedback from mammaries
  - Stimulates prolactin release
  - Inhibits GnRH and FSH

Marsupials
- Suckling feedback allows for embryonic diapause
  - Mother has blastocyst, yet prolactin inhibits corpus luteum, thus progesterone

Marsupials
- After weaning (or young dies), suckling decreases, blastocyst can implant

Marsupials - most development during lactation
  - Easier to terminate parental care

Placentals cannot readily terminate