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

Neural control

Endocrine 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 hormone
- Prolactin - mammary glands, behavior

Neurohypophysis
- Oxytocin

Looking within the ovary...

Primary follicle

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.

**Fertilization**

If fertilization: blastocyst $\rightarrow$ 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 mammarys
  – 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