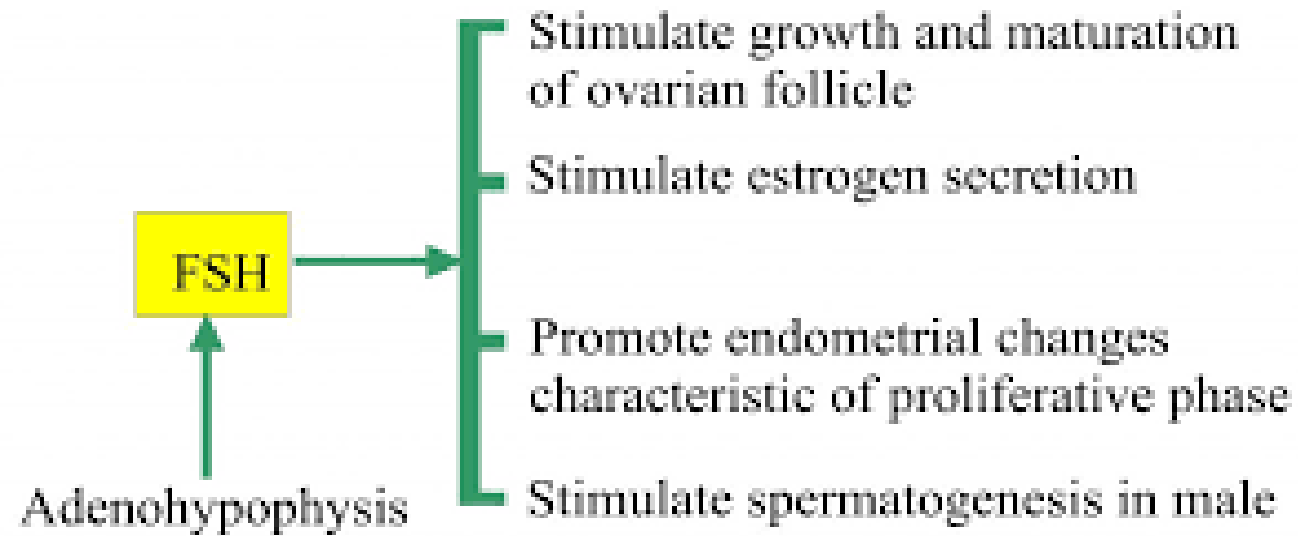


فیزولوژی سه، جلسه پنجم:

۱- گنادوتروپین های هیپوفیزی

۲- آندروژن ها، استروژن ها و آثار زیستی آنها



labpedia.net

LH Functions

1. Promote the secretion of estrogen from the follicle
2. Release the ovum from the ovarian follicle
3. Corpus luteum produces progesteron and estradiol
4. Produce the testosterone from the leydig cells of testes.

labpedia.net

Testosterone

- Five functions:
 1. Stimulates spermatogenesis and promotes functional maturation of spermatozoa
 2. Affects CNS function, including libido (sexual drive) and related behaviors
 3. Stimulate metabolism throughout the body
 4. Establishing and maintaining male secondary sex characteristics (facial hair, increased muscle mass and body size)
 5. Maintaining accessory glands and organs of the reproductive tract

4. Estrogens

Physiological Role:

1. Development of genital tract and breast.
2. Secondary sex characters. Menstrual cycle
3. During follicular phase it cause endometrium to grow
4. Metabolic effects:
 - Increase bone mass and prevent bone resorption.
 - Increase blood glucose.
 - Increase serum TGs and decrease cholesterol.
 - Salt and water retention.
5. Increase blood coagulation and platelet adhesiveness.

Functions of Progesterone

- Initially secreted by the Corpus Luteum in moderate quantities
- Subsequently, secreted mostly by the placenta.
- Action:
 - Development of the uterine endometrium – essential for the early nutrition of the embryo.
 - Decrease contractility of the gravid uterus
 - Contributes to the development of the ovum prior to implantation.
 - Prepares the breast for lactation.

Effects of estradiole & progesterone on:

1- Endometrium

2- Myometrium

3- Oviduct

فیزیولوژی سه، جلسه ششم:

۱- چرخه فحلی

۲- رفتار فحلی

Estrous cycle? menstrual cycle?

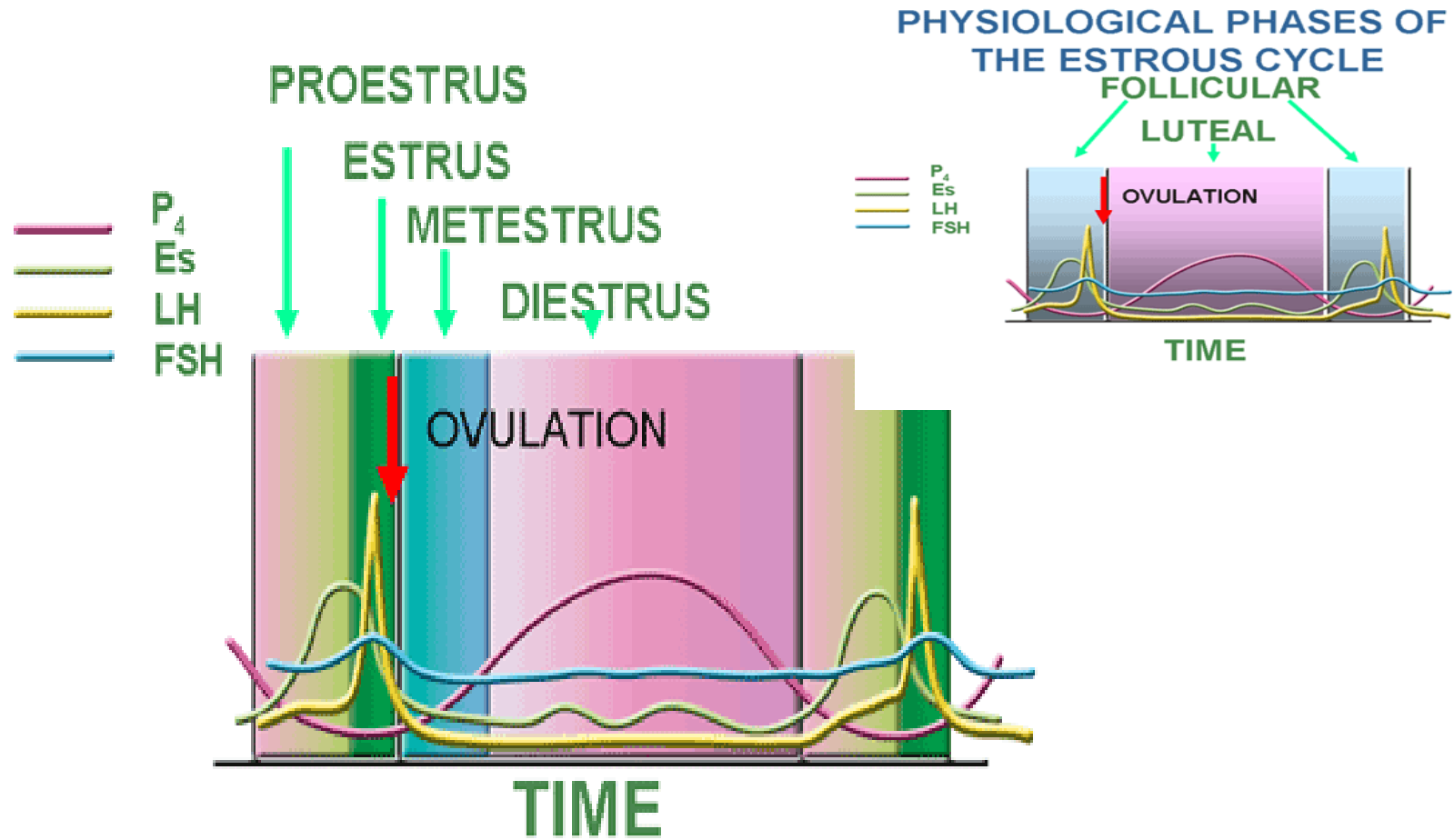
- ❑ In estrous cycles, reabsorption of the endometrium occurs if conception does not occur during that cycle.
- ❑ Animals that have menstrual cycles shed the endometrium through menstruation instead.
- ❑ In animals with estrous cycles, females are generally only sexually active during the estrus phase of their cycle.
- ❑ This is also referred to as being "in heat."
- ❑ Females of species with menstrual cycles can be sexually active at any time in their cycle, even when they are not about to ovulate.



STAGES OF ESTROUS CYCLE

- **Four stages:**
 - **Proestrus**
 - **Estrus**
 - **Metestrus**
 - **Diestrus**
 - **Follicular phase = Proestrus + Estrus**
 - **Luteal phase = Metestrus + Diestrus**

PHYSIOLOGICAL STAGES OF THE ESTROUS CYCLE



Estrous Cycle Intervals

- Polyestrous: animals that cycle continuously throughout the year if they are not pregnant (cattle and swine)
- Seasonally polyestrous: animals with seasonal variations in estrous cycles (horse, sheep, cat)
- Diestrous: animals with two cycles per year, usually spring and fall (dog)
- Monoestrous: animals with one cycle per year (fox and mink)

Reproductive Process

Estrous Cycle

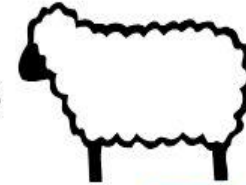
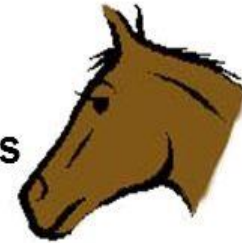
- Is categorized by frequency of occurrence throughout the year
 - ≧ *seasonally polyestrous*— cycles occur only during certain times of the year

Long-day breeders

↳ cycle when day length increases

Short-day breeders

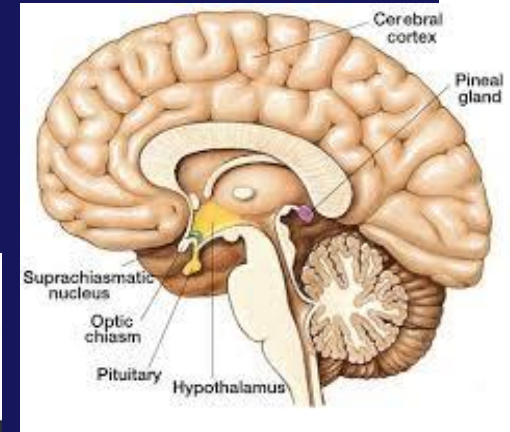
↳ cycle when day length decreases



CEV



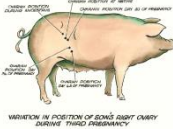



Pineal Gland





- The pineal gland secretes melatonin
- Melatonin secretion inhibited by light entering retina (lower in day than night)
- May regulate sleep and daily rhythms
- Melatonin regulates reproductive cycles in some vertebrates

Average Reproductive Cycles

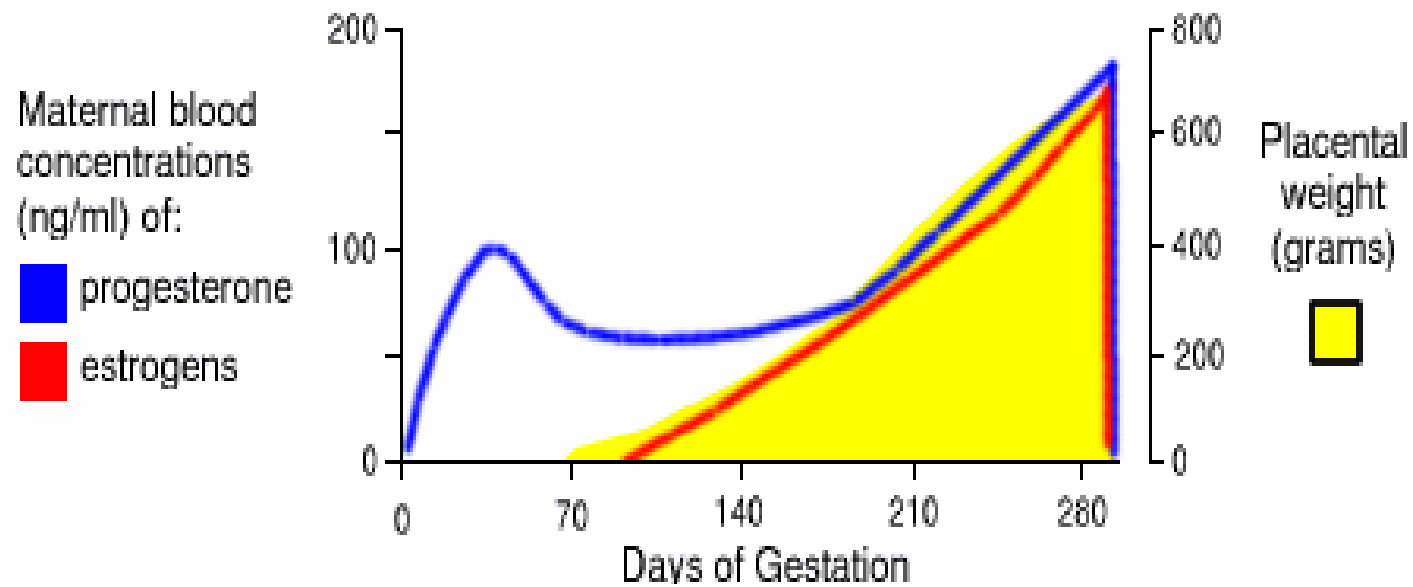
Species	Length of Estrous Cycle	Length of Estrus	Ovulation	Length of Pregnancy
cow 	21 days polyestrus	18 hr	11 hr after end estrus	282 days
ewe 	17 days seasonal (fall)	29 hr	near end estrus	148 days
sow 	21 days polyestrus	48-72 hr	35-45 hr after start estrus	115 days
mare 	21 days seasonal (spring) polyestrus	4-8 days	3-6 day of estrus (1-2 days before end of estrus)	335 days

Average Reproductive Cycles

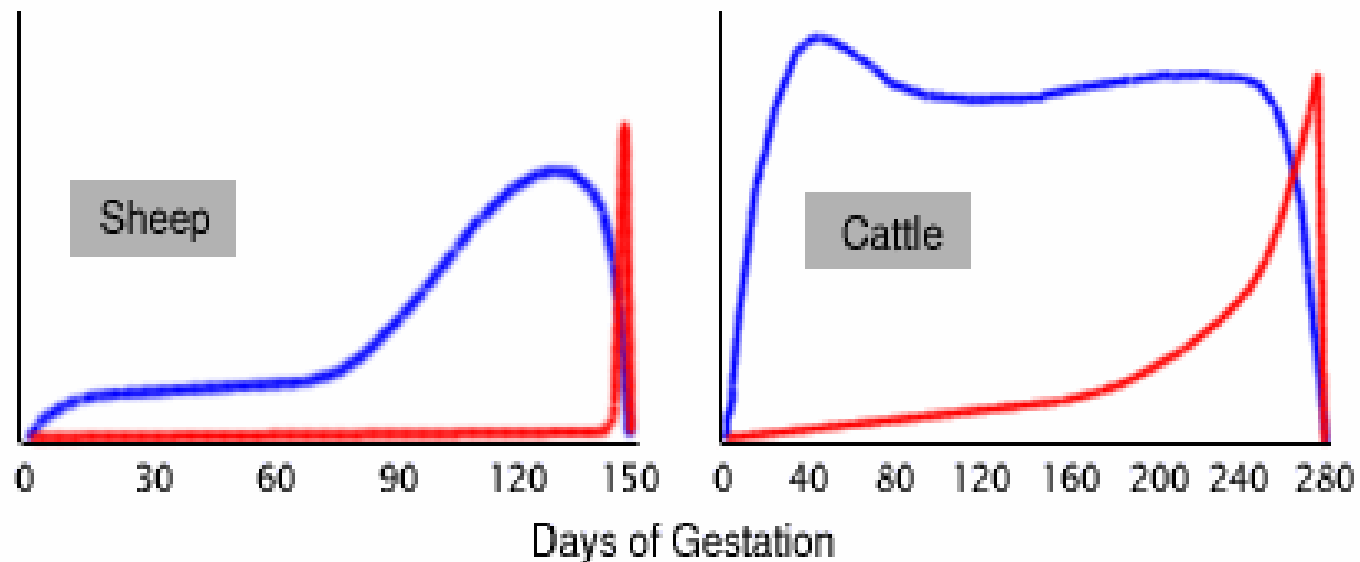
Species	Length of Estrous Cycle	Length of Estrus	Ovulation	Length of Pregnancy
Bitch 	6 months	9 days	4 - 24 days after start of estrus	63 days
Queen 	17 days	9 days	Induced	63 days

فیزیولوژی سه، جلسه هفتم

آبستنی و تغییرات هورمونی مرتبط با آن



Relative concentrations of progesterone (●) and estrogens (●) in maternal serum
 (Adapted from Bedford, et al. J Reprod Fert, Suppl 16:1-23, 1972.)



فیزیولوژی سه، جلسه هشتم:

۲- جفت و نقش های فیزیولوژیکی آن

۳- مقایسه نوع و ساختمان جفت در برخی حیوانات

Functions of Placenta

Nutritive function:

Glucose, iron, calcium, phosphorus, aminoacids, water, NaCl , vitamins and fatty acids

Excretory Function:

products like urea, uric acid diffuse from foetal to maternal blood

Waste

Immunological function:

foetus is antigenically a foreign body, the placenta protects the embryo and foetus from rejection. The MHC class I and II are not present on the placental trophoblast.

The

Barrier Function:

large molecular weight substances cannot cross the placenta

Though

Respiratory Function:

of oxygen and CO₂ between fetus and mother. It is facilitated by three factors: HbF, Large quantity of Hb, Bohr effect

Exchange

PLACENTAL FUNCTIONS

Endocrine function

Steroid Hormones:

- 1- Estrogens
- 2- Progesterone

Protein hormones:

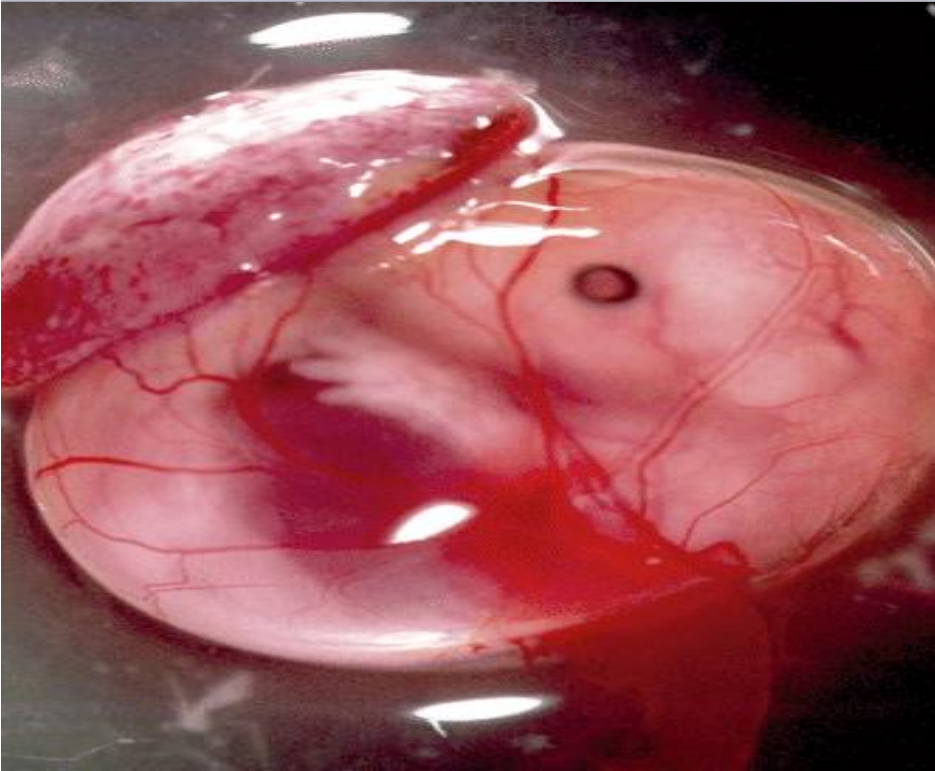
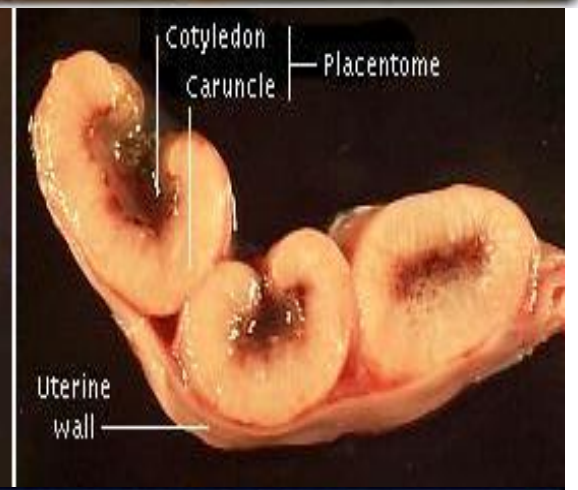
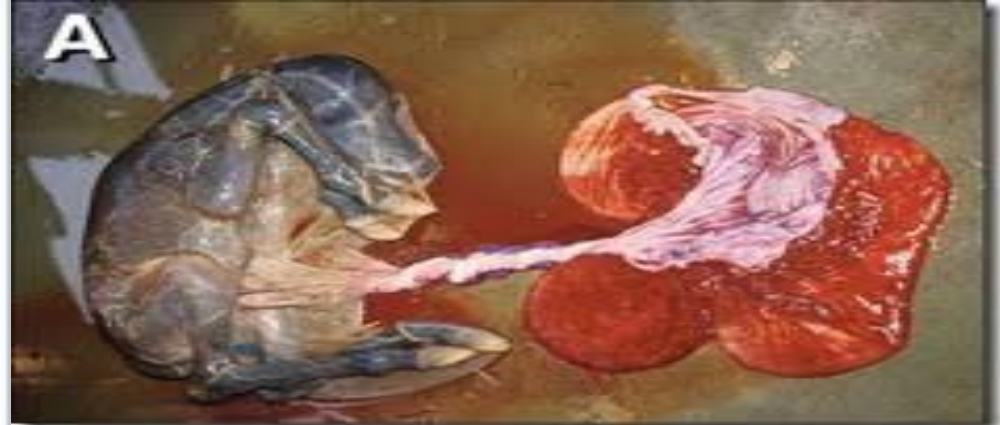
- 1- Human chorionic gonadotrophin (hCG)
- 2- Human placental lactogen (hPL)
- 3- Human chorionic thyrotrophin (hCT)
- 4- Hypothalamic and pituitary like hormones
- 5- Others: inhibin, relaxin and beta endorphins.

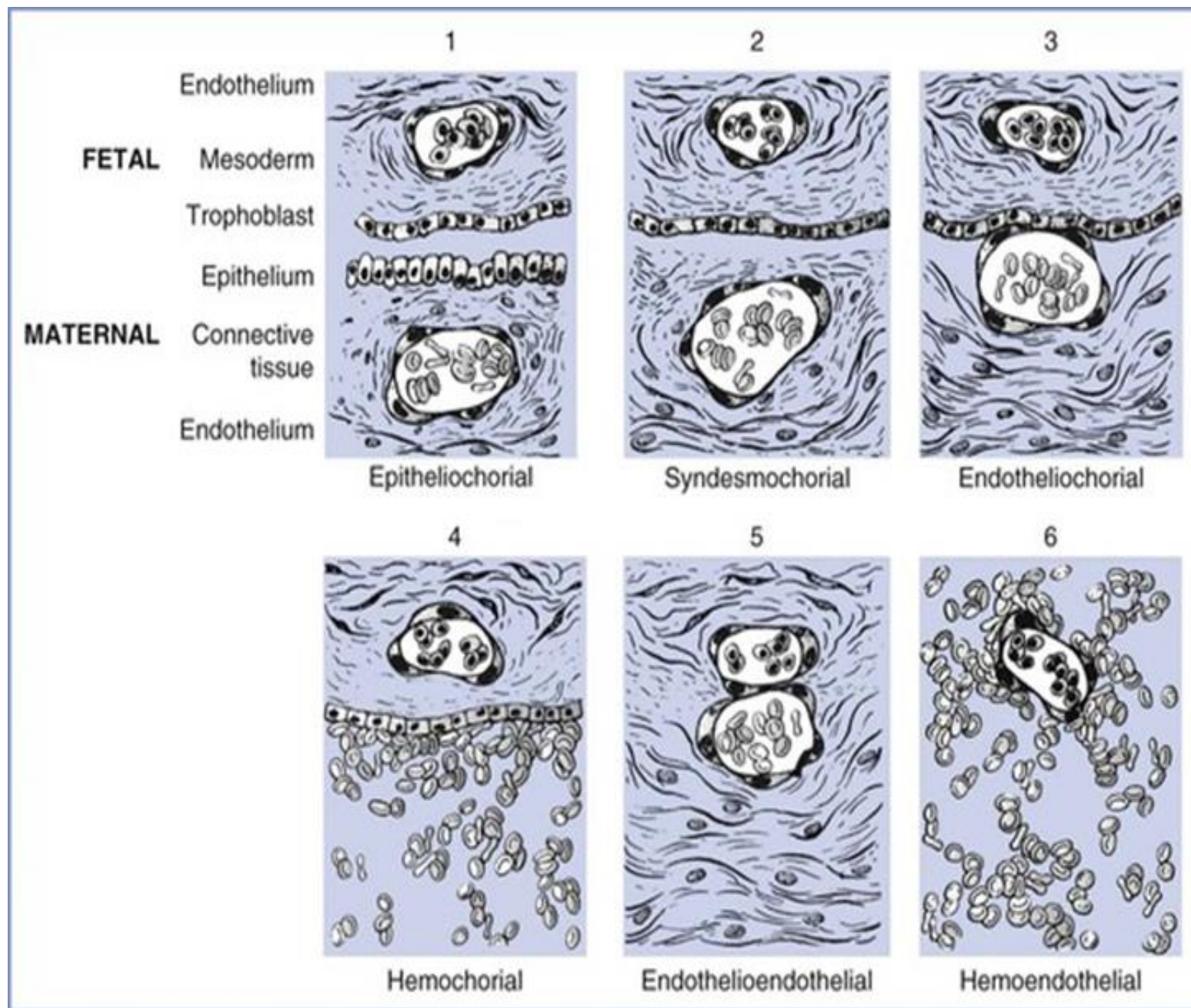
Gonadotropins

- eCG or PMSG (equine chorionic gonadotropin or pregnant mare serum gonadotropin)
- FSH (follicle stimulating hormone)
- hCG (human chorionic gonadotropin)

PLACENTAL HORMONES

- Hypothalamic like hormones
 - CRH
 - GnRH
 - TRH (thyrotrophin releasing)
 - GHRH
- Pituitary like hormones
 - ACTH
 - hCG
 - hCT (human chorionic thyrotrophin).
 - hPL



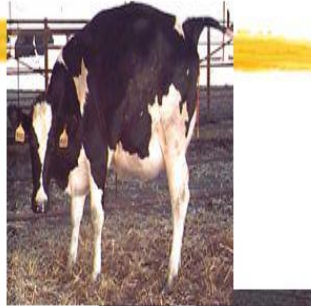


فیزیولوژی سه، جلسه نهم:

زایمان و شیرواری

Stages of Parturition

⌘ Stage 1 - Preparatory Stage (Labor)



⌘ Stage 2 – Delivery of Fetus



⌘ Stage 3 - Expulsion of the placenta

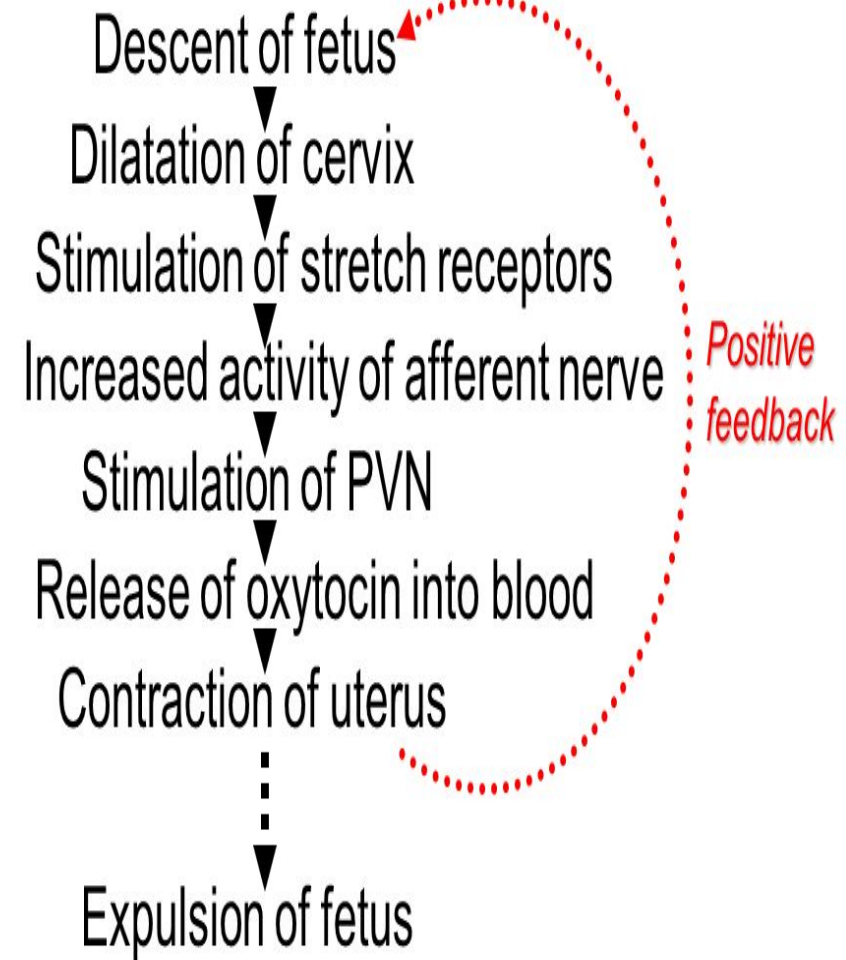


⌘ Stage 4 - Period of Rest



Video

Parturition Reflex





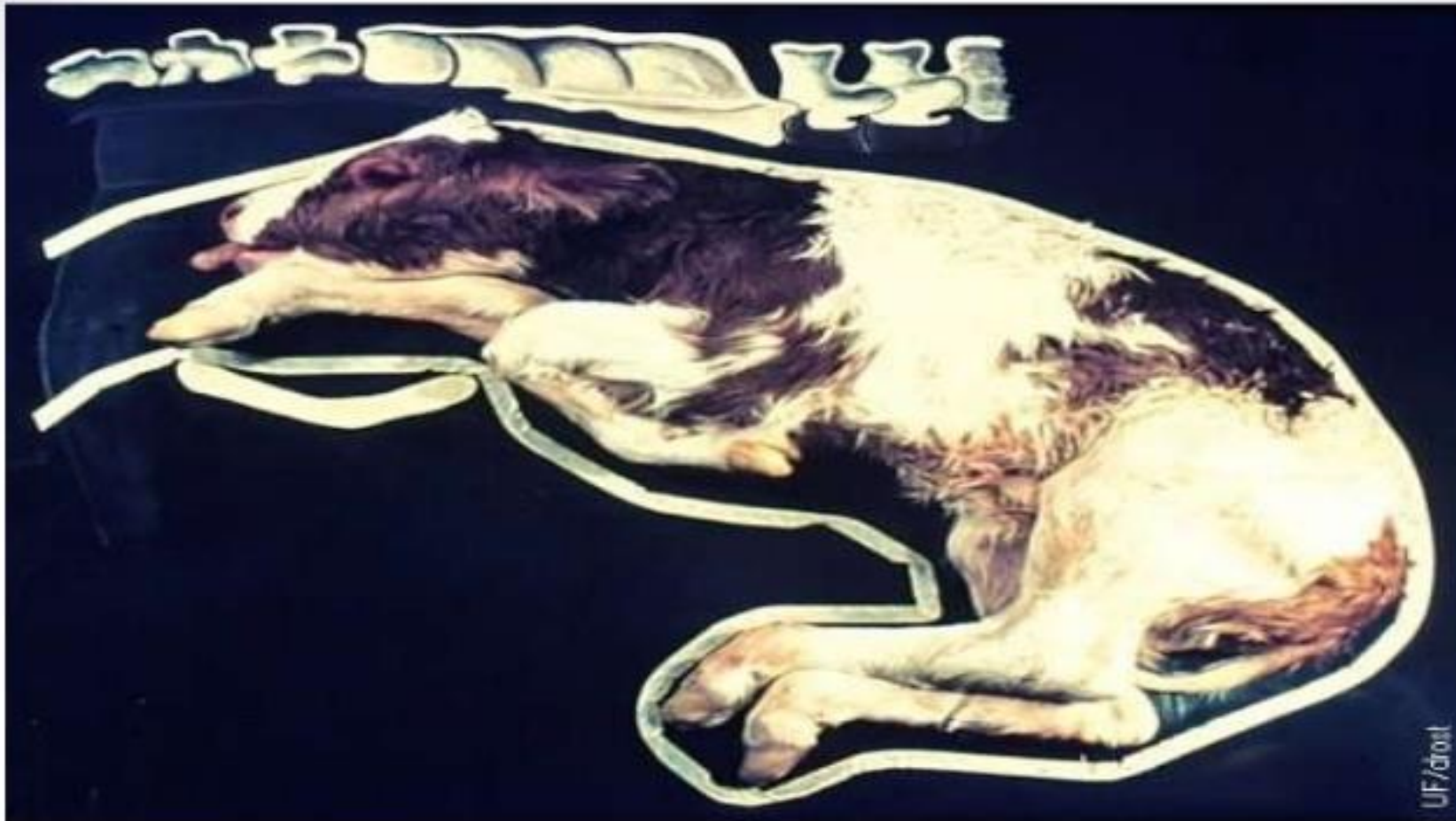
Normal P.P.P

If you have time:

Presentation: Anterior longitudinal

Position: Dorsal (Dorso-sacral)

Posture: Complete extension of head & fore limbs



Left Carpal Flexion (N.B. Left according to fetus NOT Dam)

If you have time:

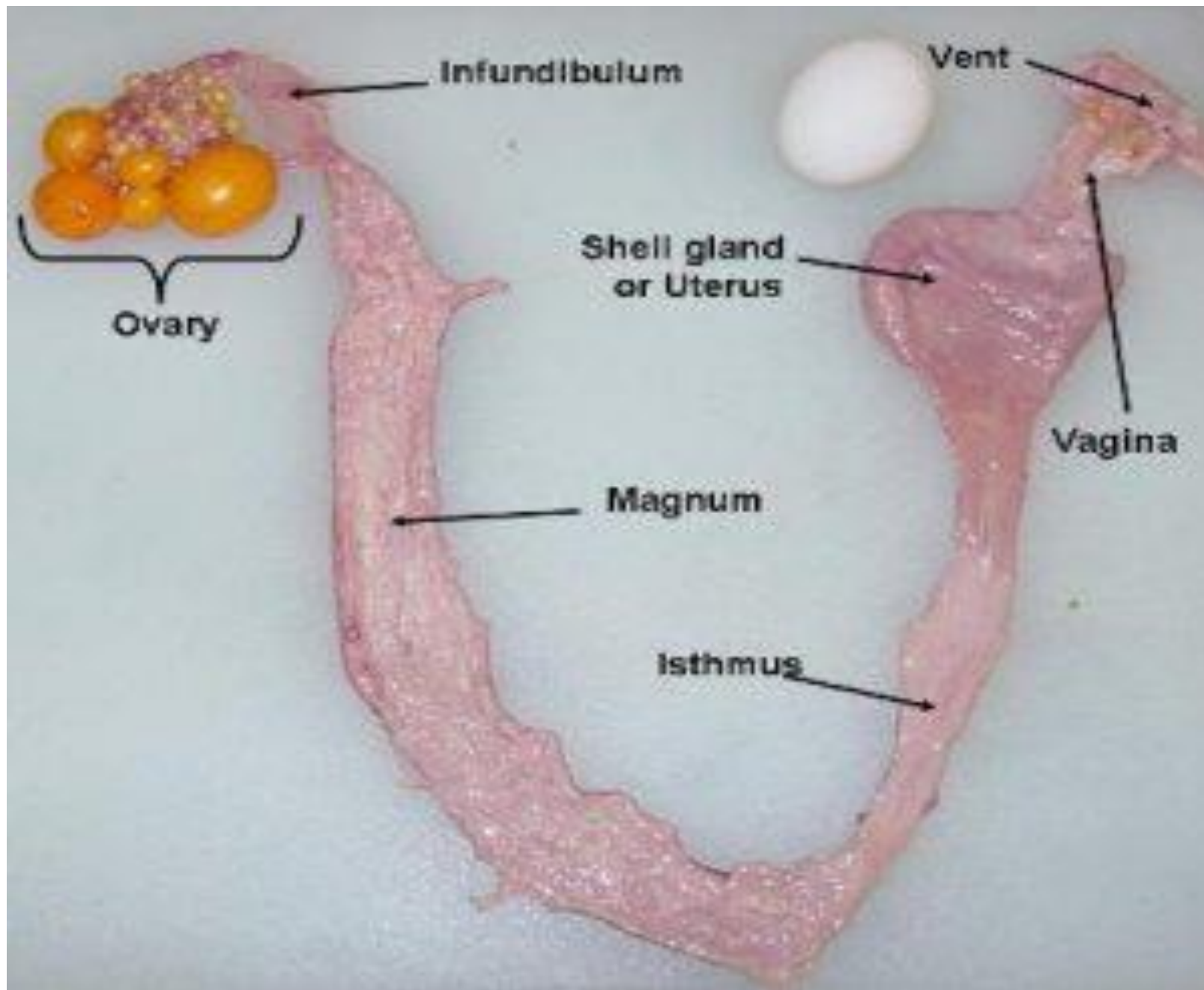
Presentation: Anterior Longitudinal

Position: Dorsal (Dorso-Sacral)

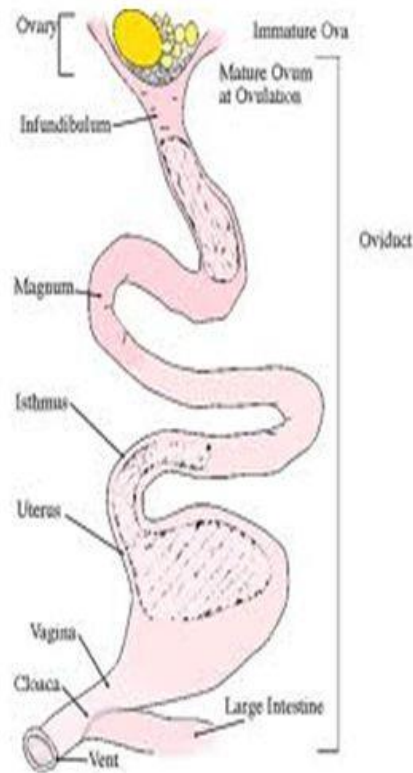
Posture: Left Carpal Flexion

فیزیولوژی سه، جلسه دهم:

دستگاه تولید مثل در پرندگان



Avian Reproductive System (Oviduct)



➤ Two oviducts at birth, however, the left one become functional at maturity.

➤ Different parts are:

1. Ovary, 2. Infundibulum, 3. Magnum
4. Isthmus, 5. Uterus, 6. Vagina, 7. Cloaca.

Function:

- Ovary: Production of ova.
- Infundibulum: Picking of Ova and transport it to the magnum.
- Magnum: Secretion of albumin
- Isthmus: Form shell membrane
- Uterus: Form hard shell
- Vagina: Expelled mature eggs to exterior
- Cloaca: common opening for digestive, urinary and reproductive tract.

فیزیولوژی سه، جلسه یازدهم

کلیات آندوکرینولوژی

Chemical Classes of Hormones

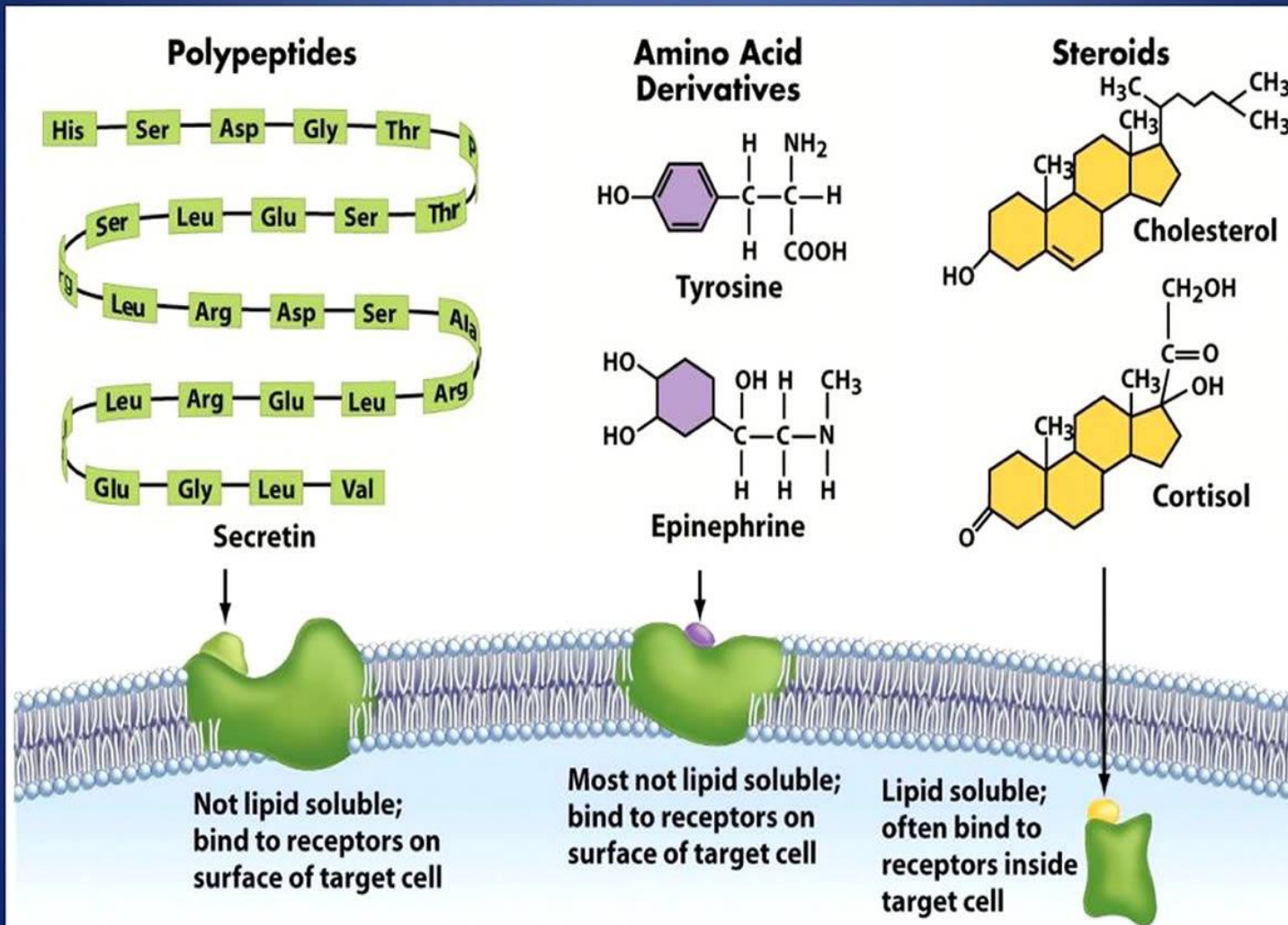


Figure 47-3 Biological Science, 2/e
© 2005 Pearson Prentice Hall, Inc.

فیزیولوژی سه، جلسه دوازدهم

هیپوفیز و هورمون های آن

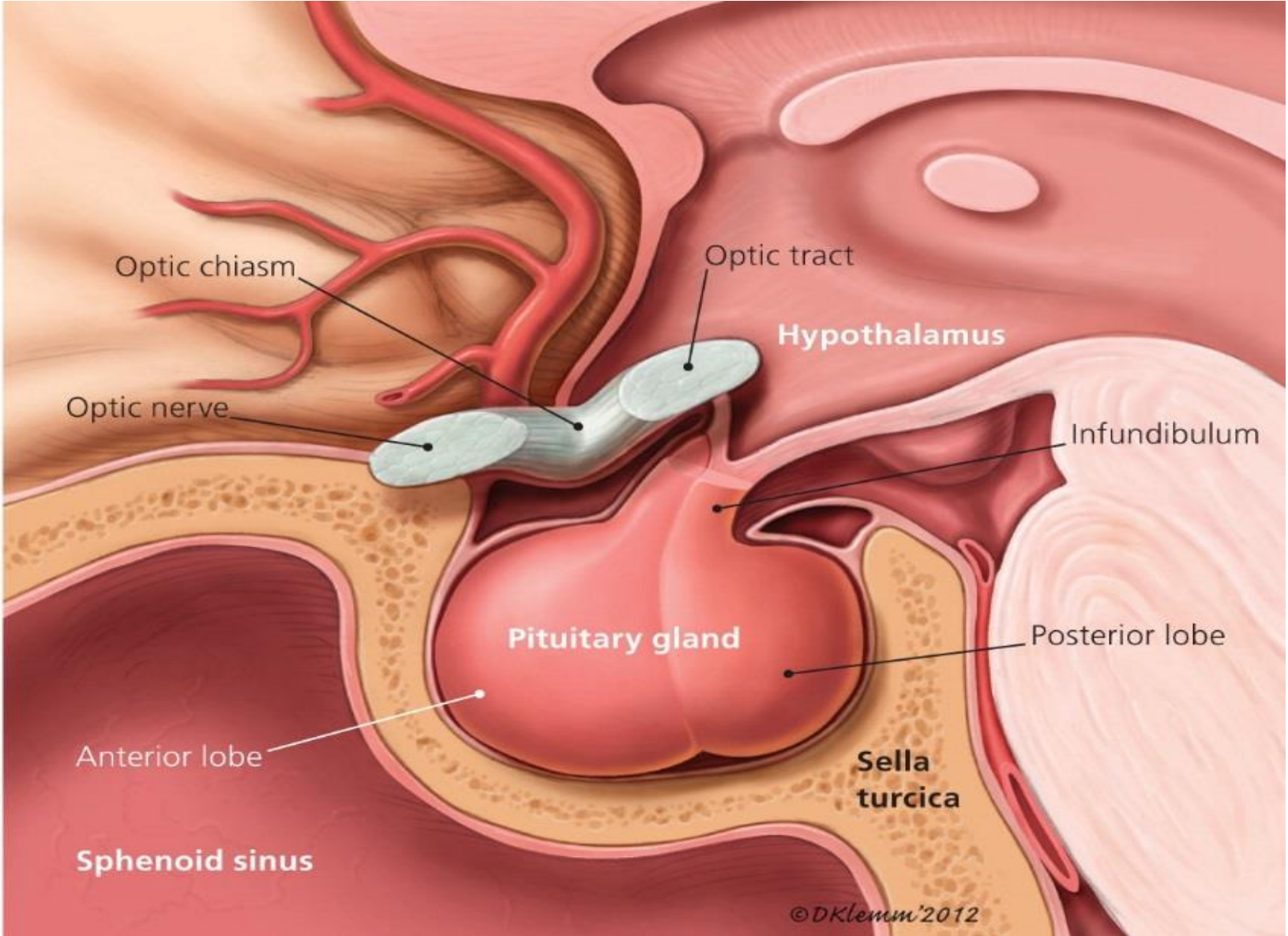
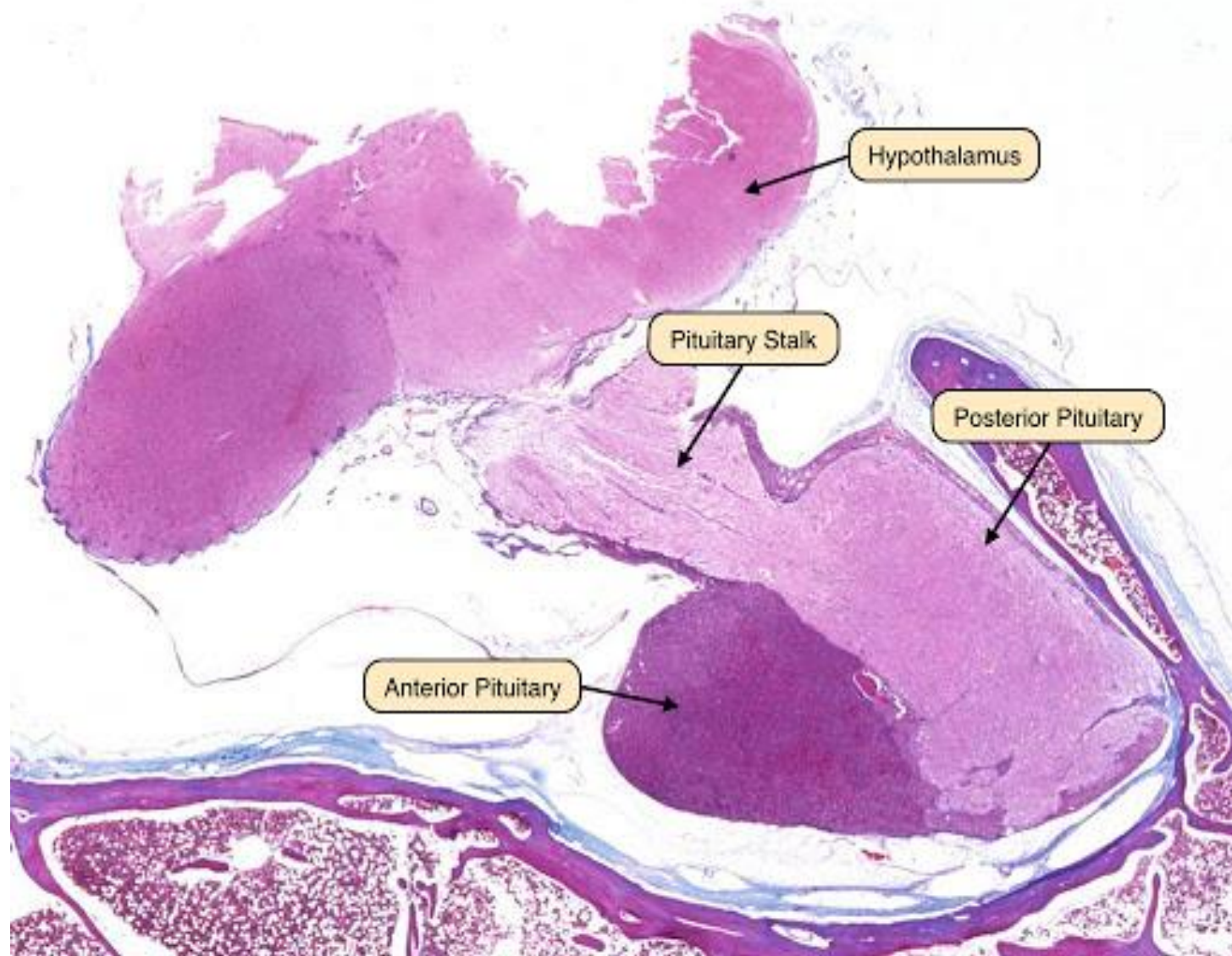
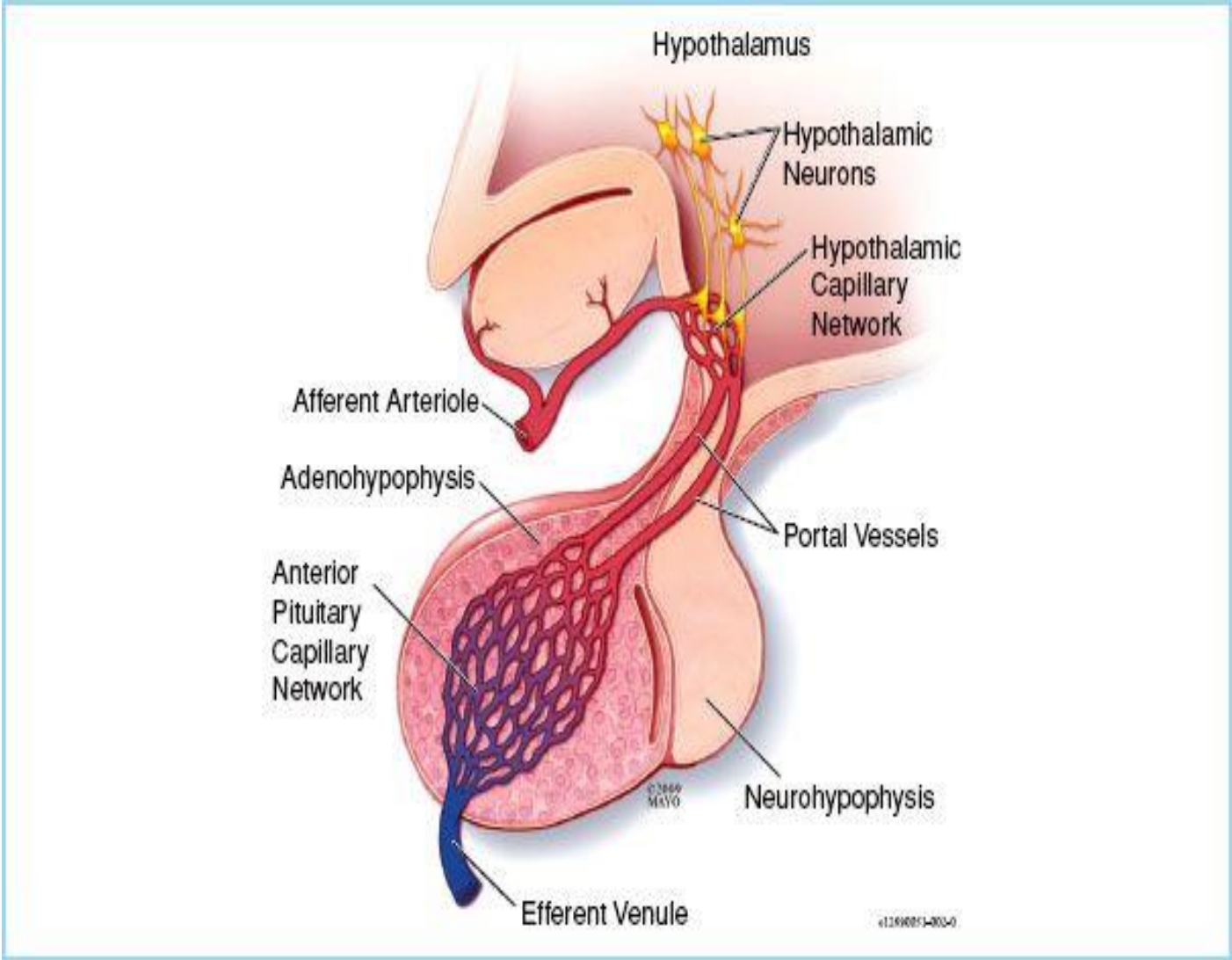


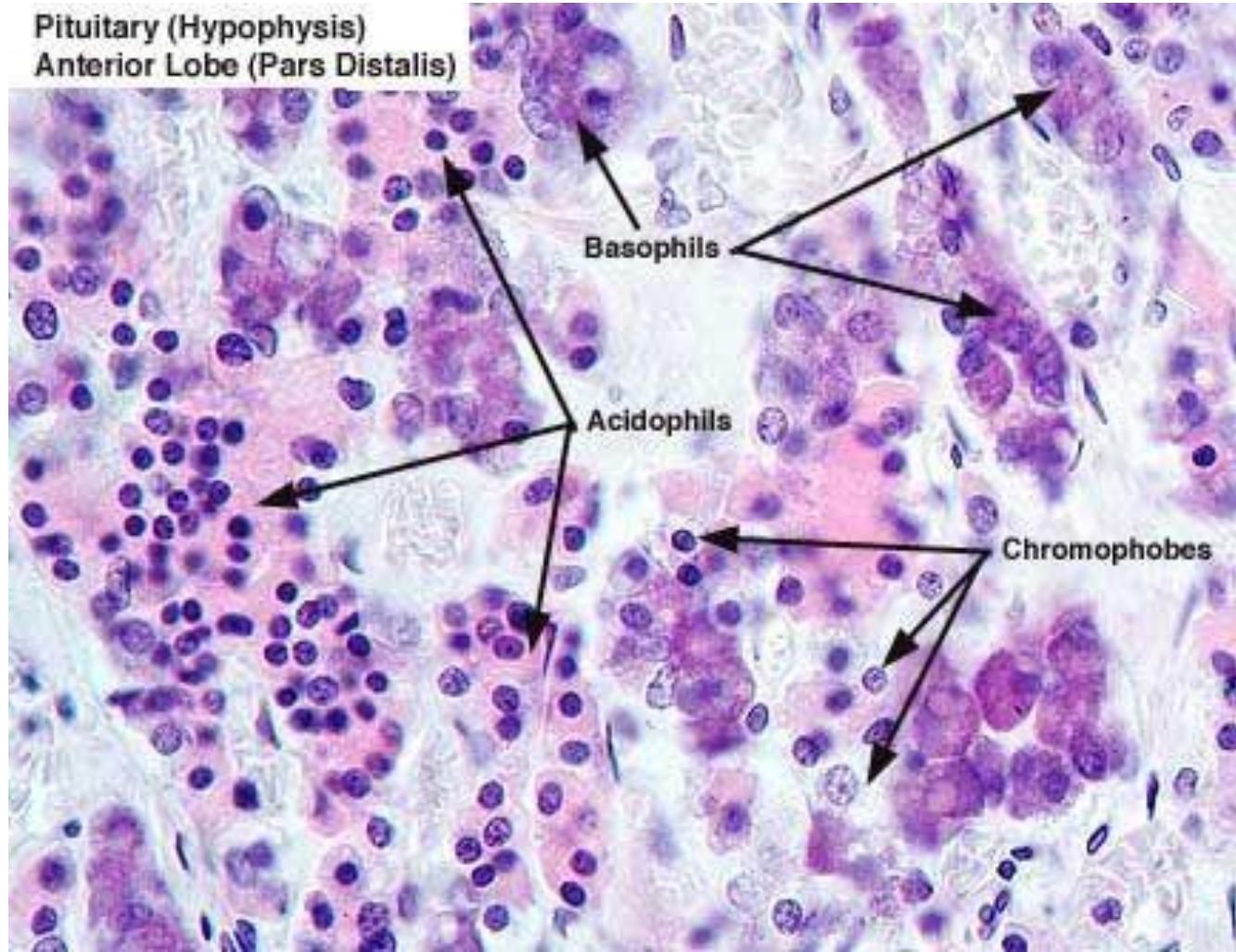
ILLUSTRATION BY DAVID KLEMM

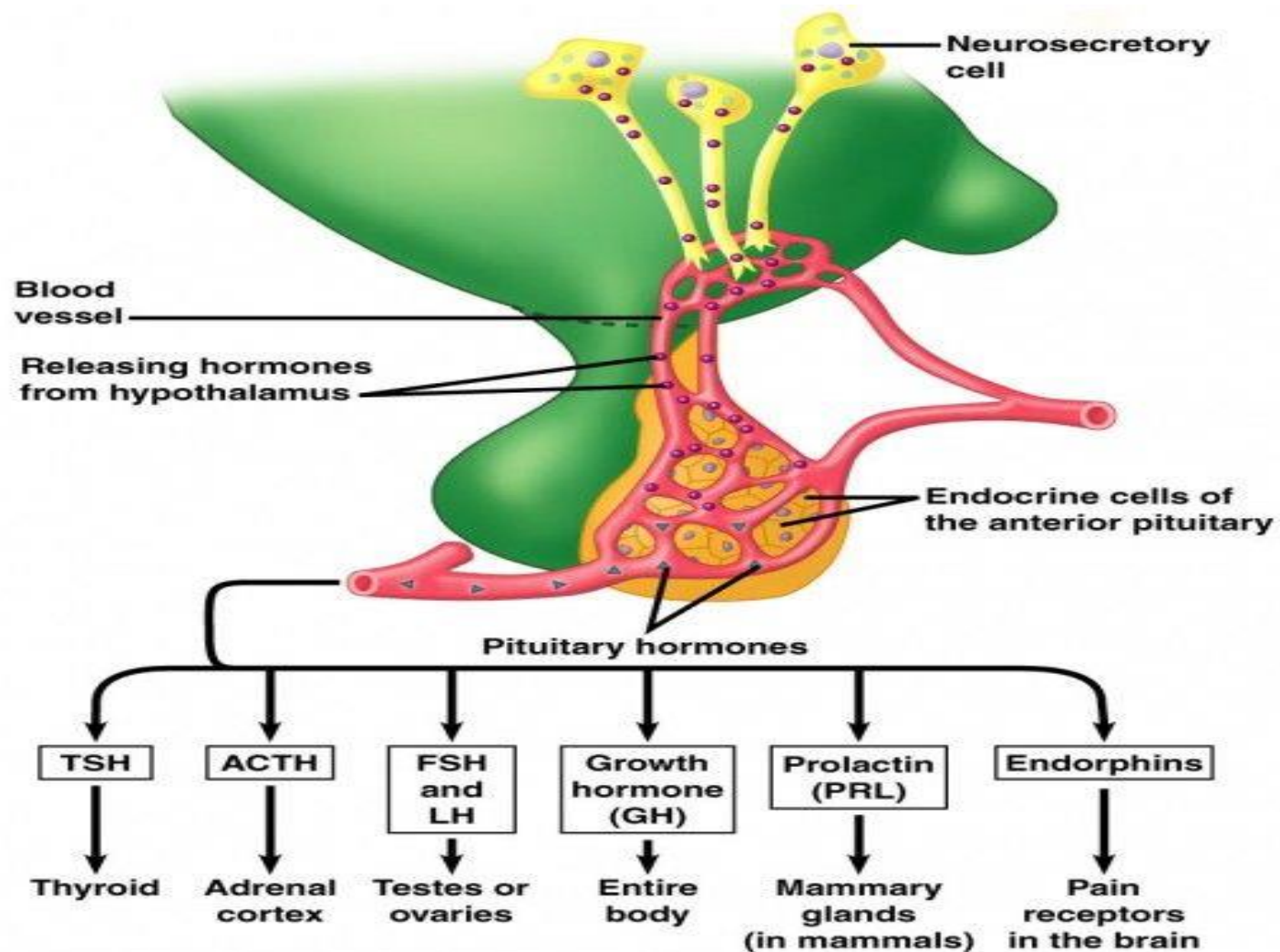
©DKlemm'2012



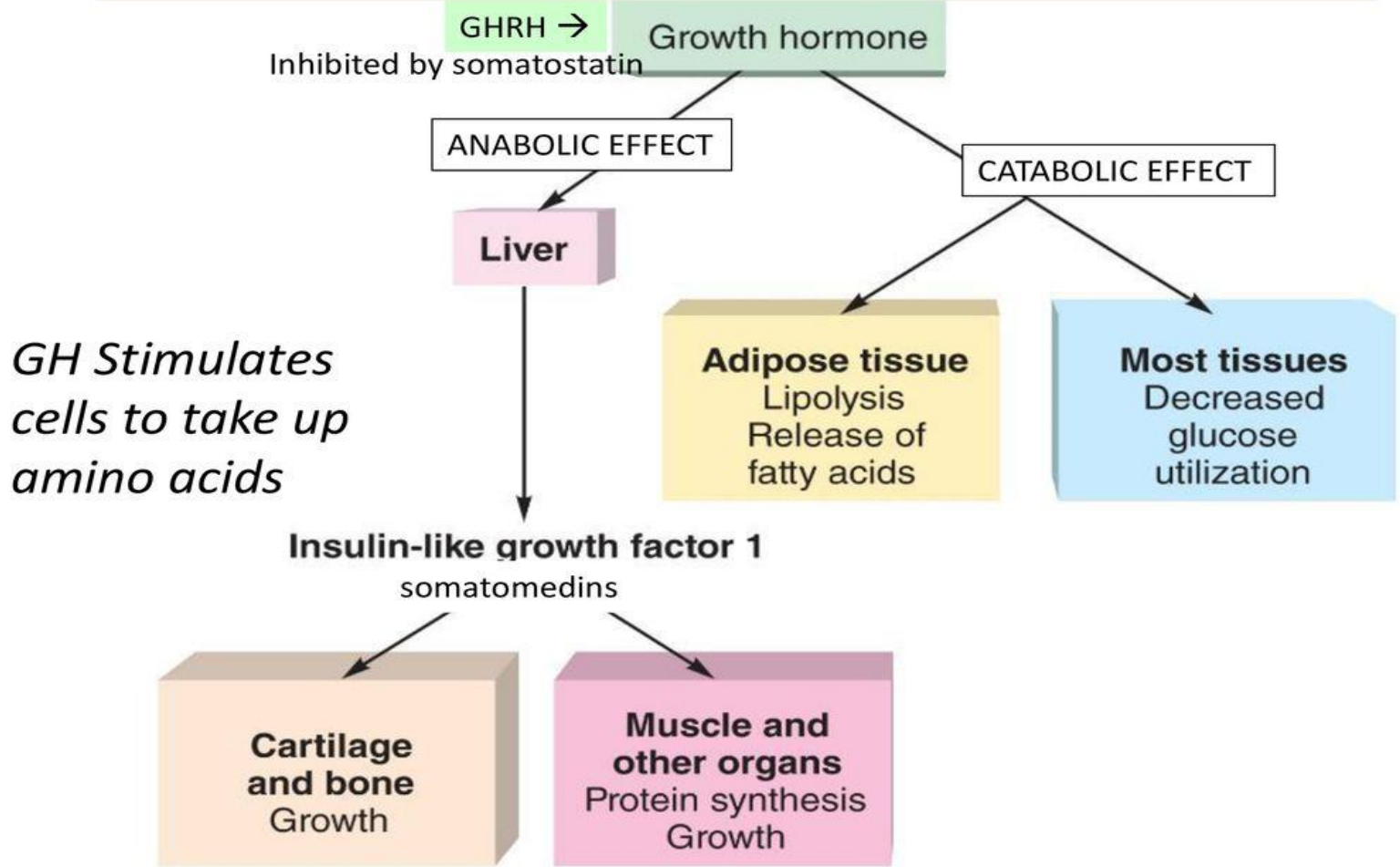


Pituitary (Hypophysis)
Anterior Lobe (Pars Distalis)





Metabolic Effects of Growth Hormone



Factors affecting Growth Hormone Secretion

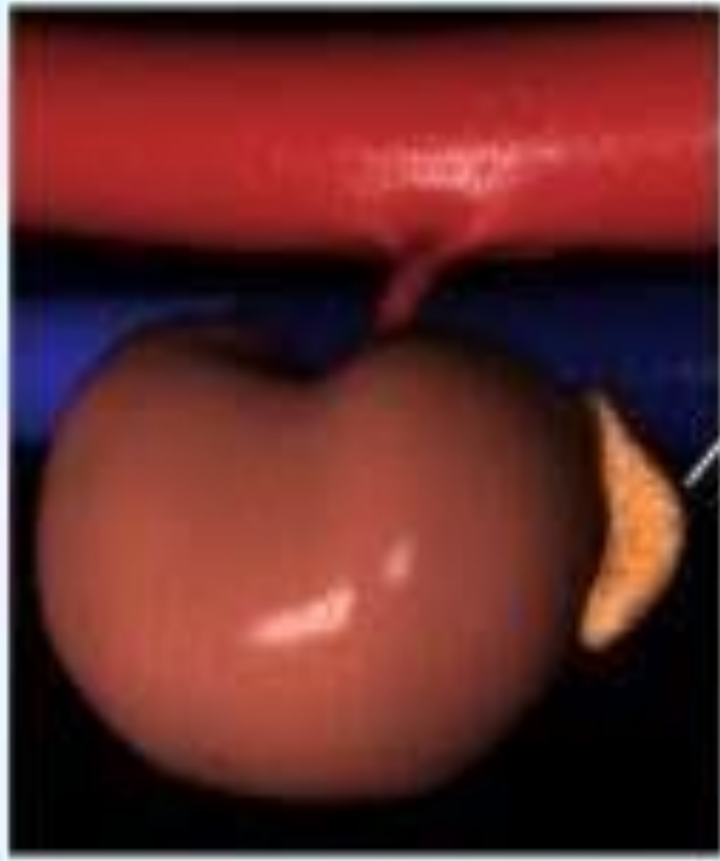
Stimulate GH secretion	Inhibit GH secretion
Decrease blood sugar	Increase blood sugar
Decreased blood FFA	Increased blood FFA
Increase blood AA (Arginine)	Aging
Starvation, Protein deficiency	Obesity
Trauma, Stress, GHRH	GHIH (Somatostatin)
Exercise, Excitement	GH (Exogenous)
Testosterone, Estrogen, Ghrelin Deep sleep (Stage II & IV)	Somatomedins (Insulin Like Growth Factors)

فيزيولوژي سه، جلسه سيزدهم

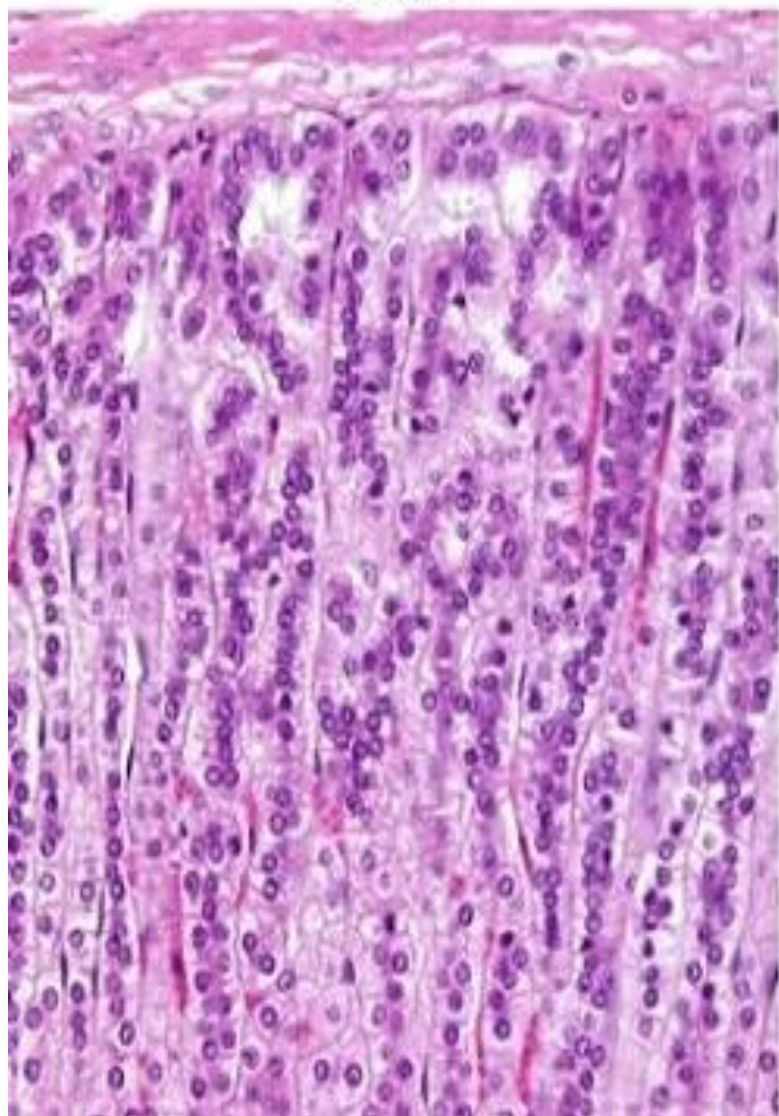
غدد فوق كليوي

بخش درون ريز لوزالمعده

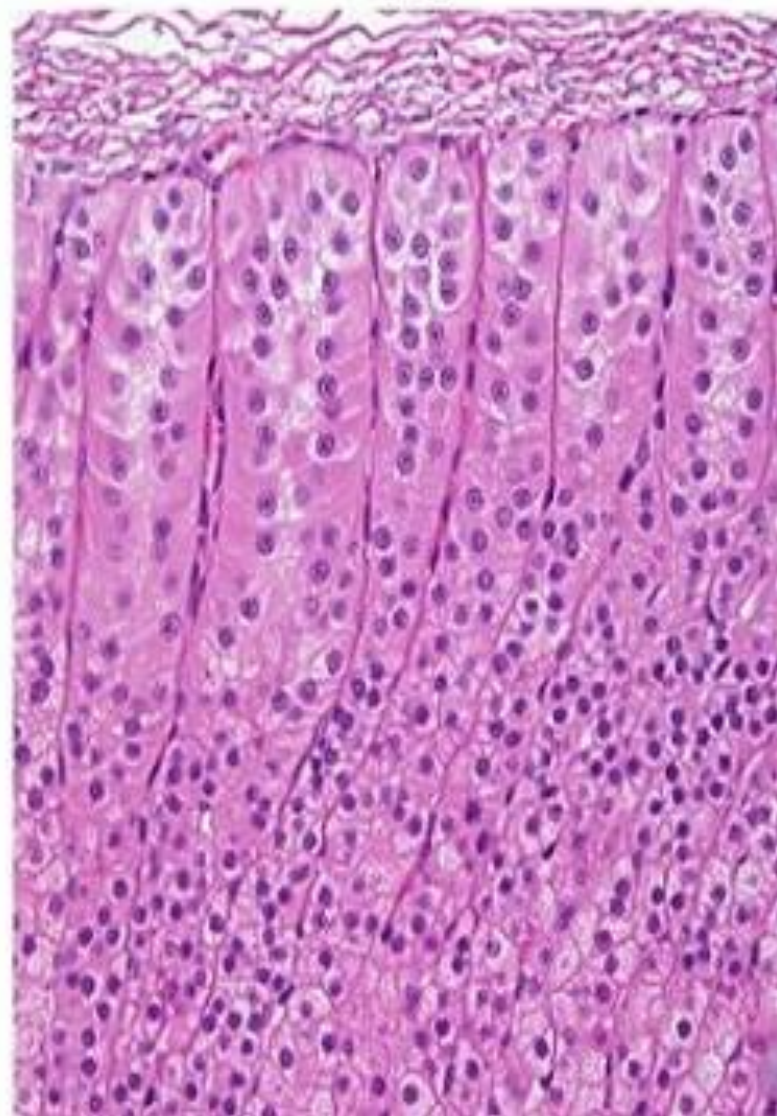
Adrenal Gland

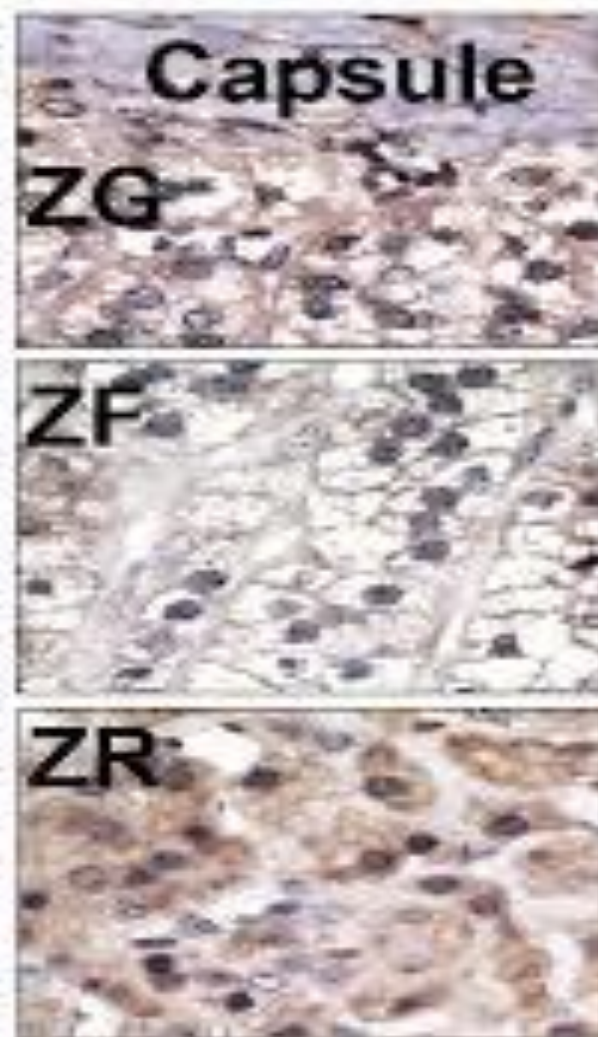
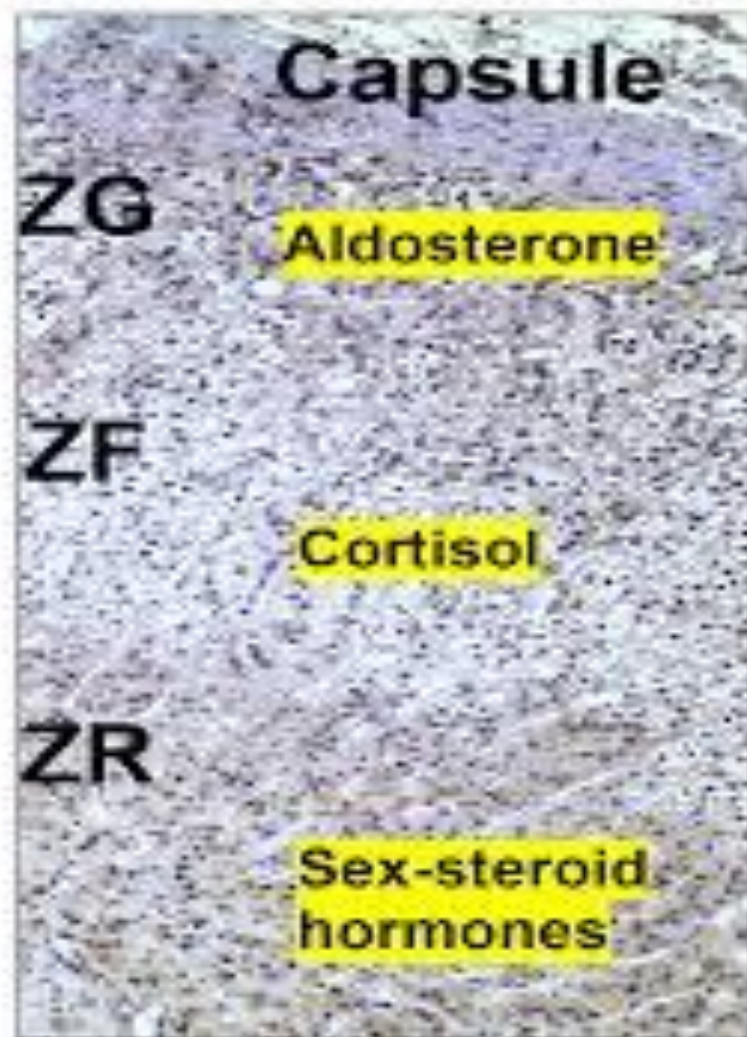


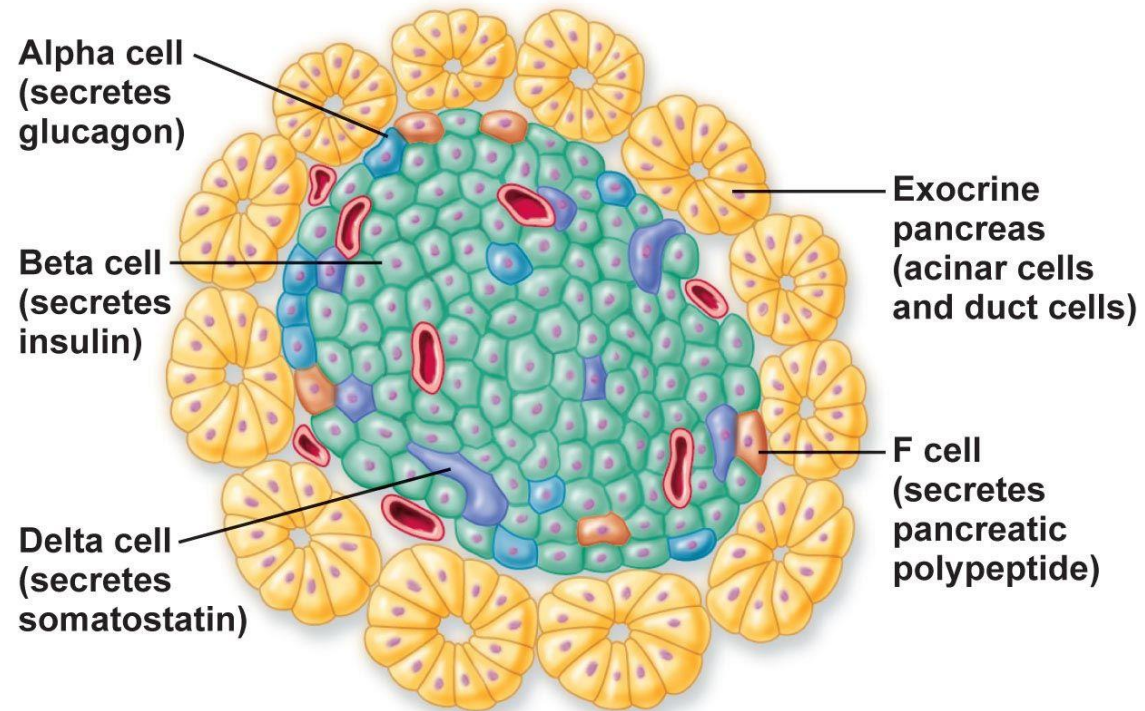
Rabbit



Cat



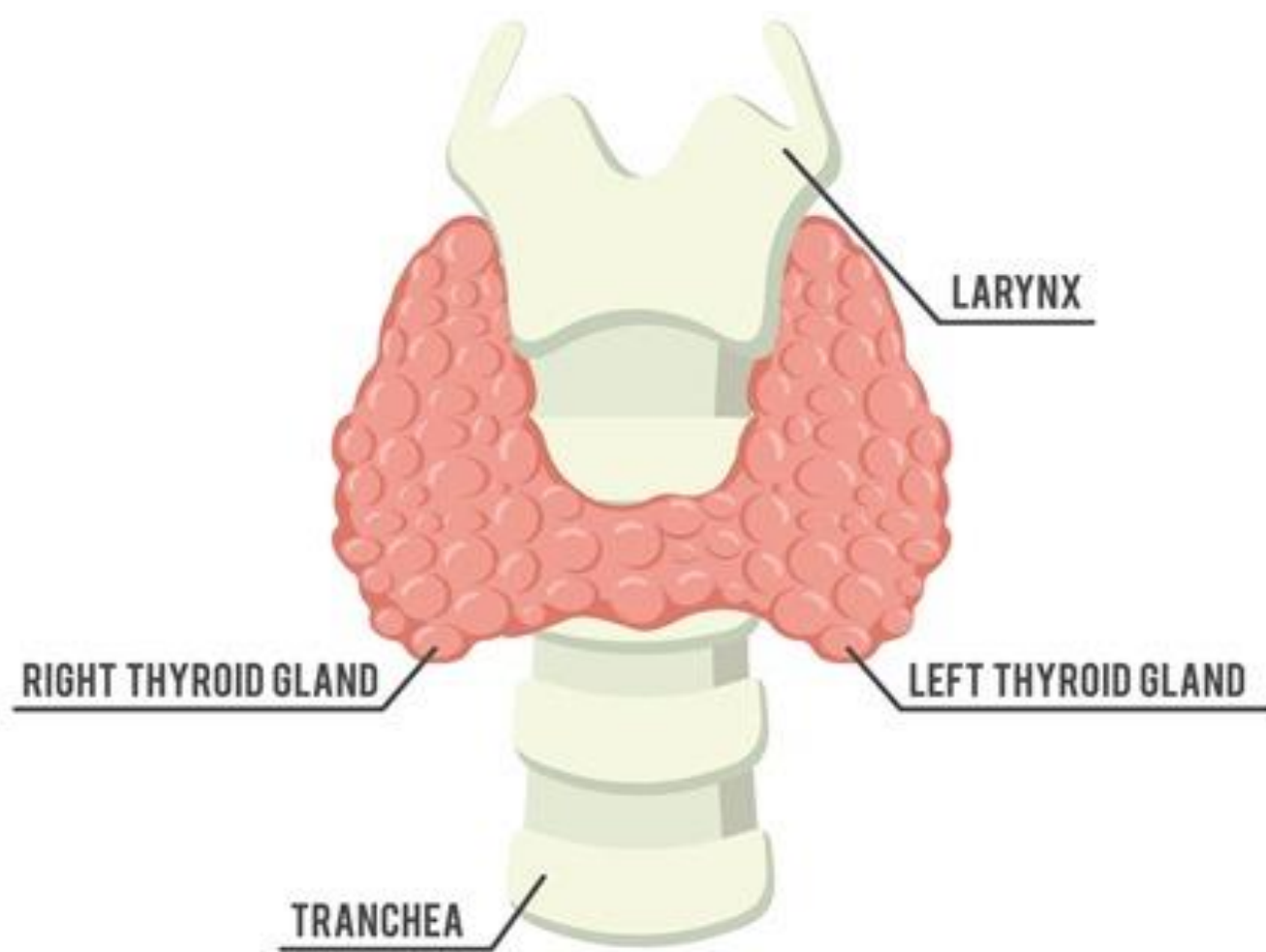




(b)

فیزیولوژی سه، جلسه چهاردهم

غده تیروئید، غدد پاراتیروئید و هورمون های آنها



THYROID AND PARATHYROID

Thyroid gland
(front view)



Thyroid gland
(back view)

