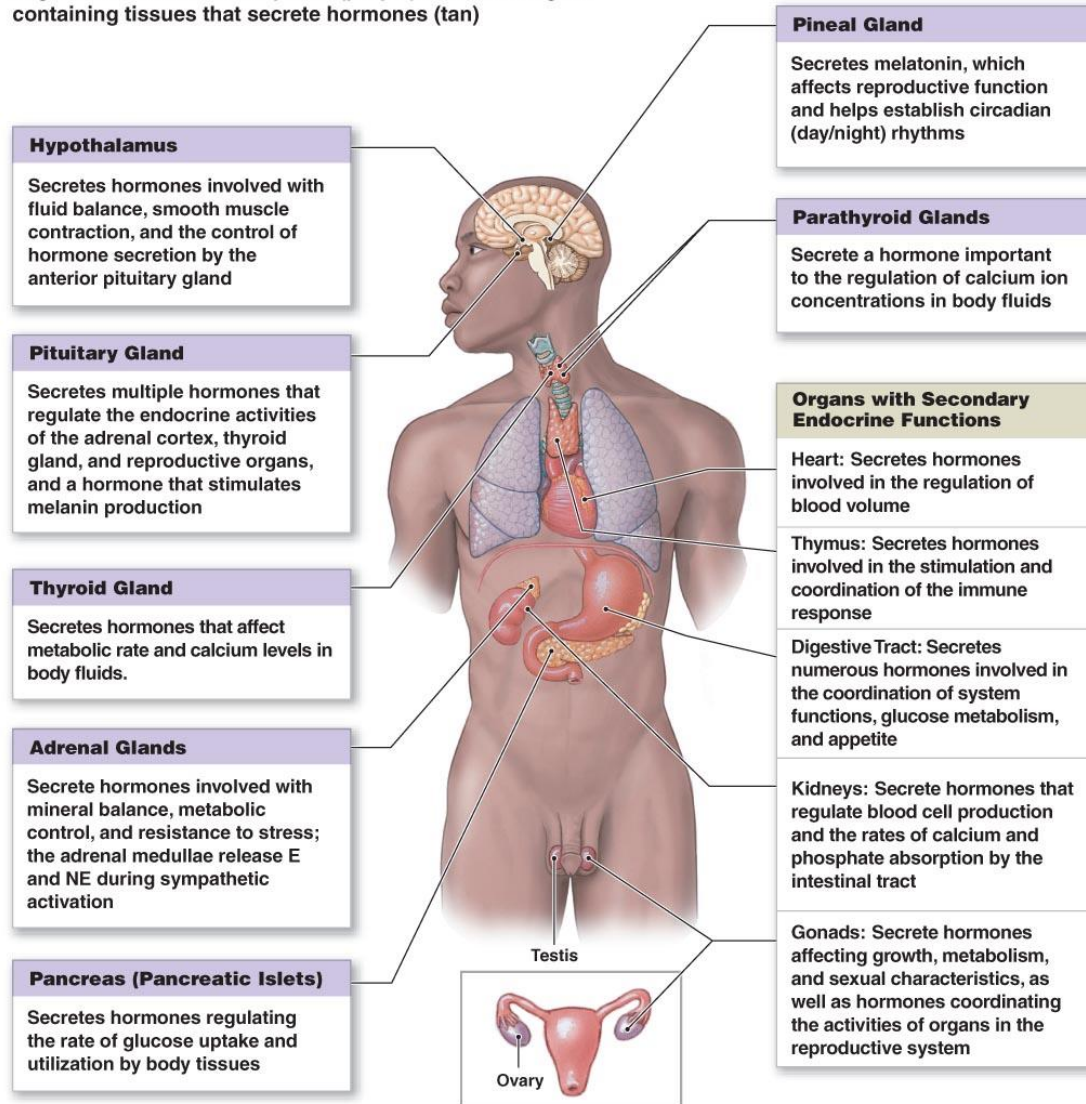


# Chapter 19: Hormones & Reproduction



# The Endocrine System

Organs of the endocrine system (purple) and other organs containing tissues that secrete hormones (tan)



- Produces chemical messengers called **HORMONES** that control body activities

# How It Works

- Endocrine glands produce and/or release hormones directly into the bloodstream
- Hormones turn on, turn off, speed up, or slow down body organs/activities.



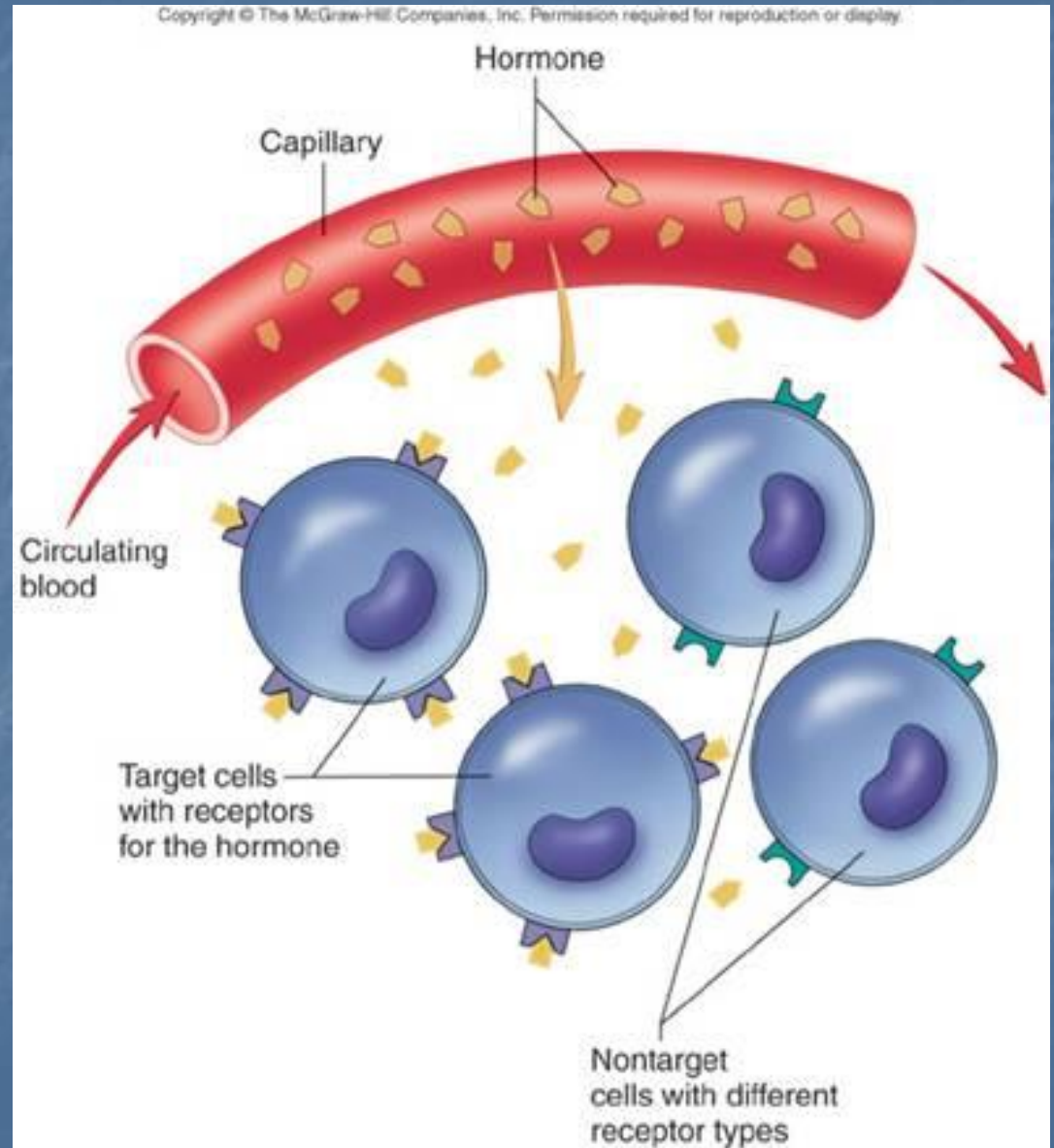
# For Example

- You see a burglar
- Nerve impulse to brain
- Brain sends impulse to adrenal glands to release adrenaline
- Heart and breathing rates increase



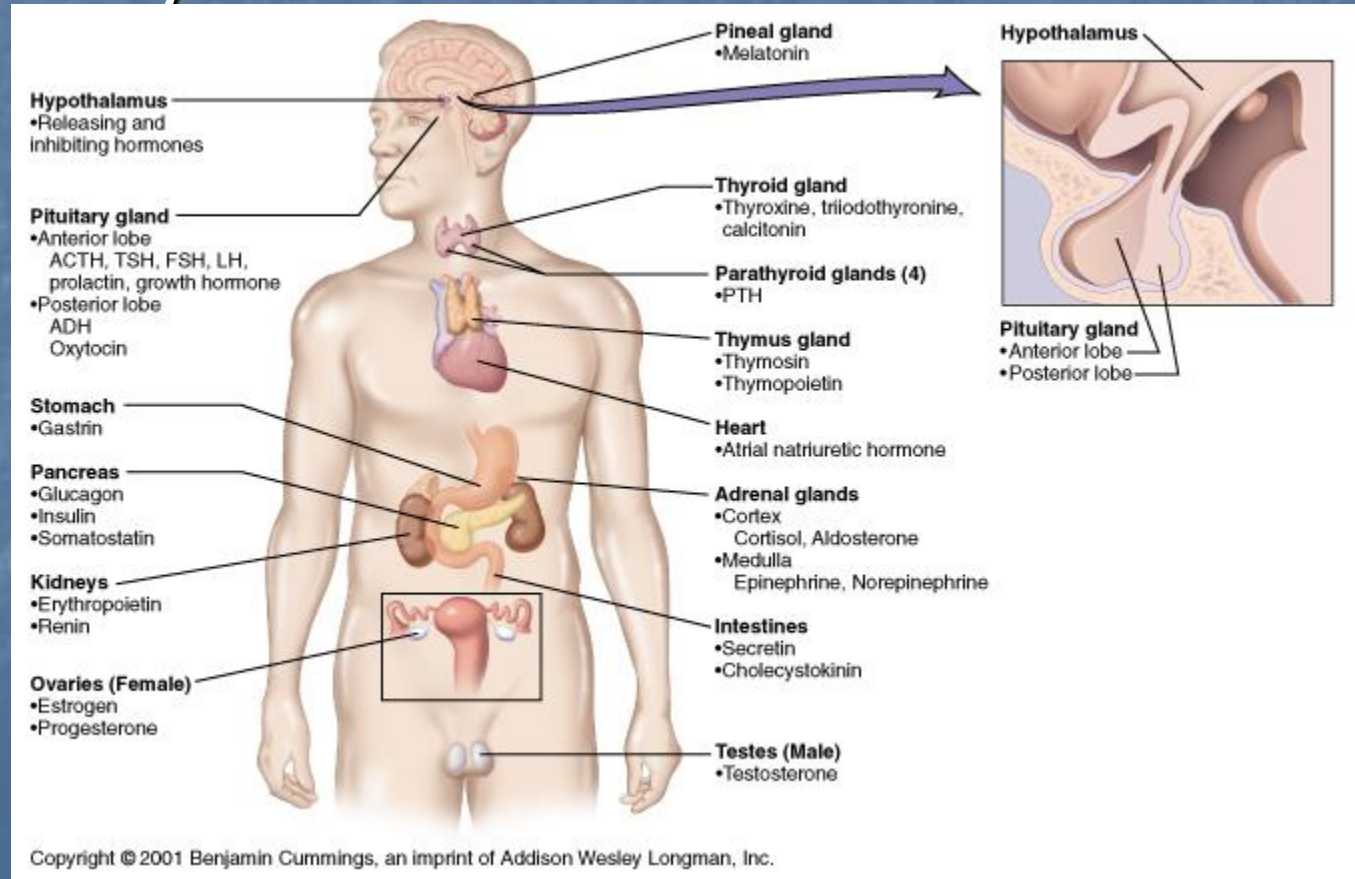
# How Does It Know?

- Hormones only interact with **TARGET CELLS**



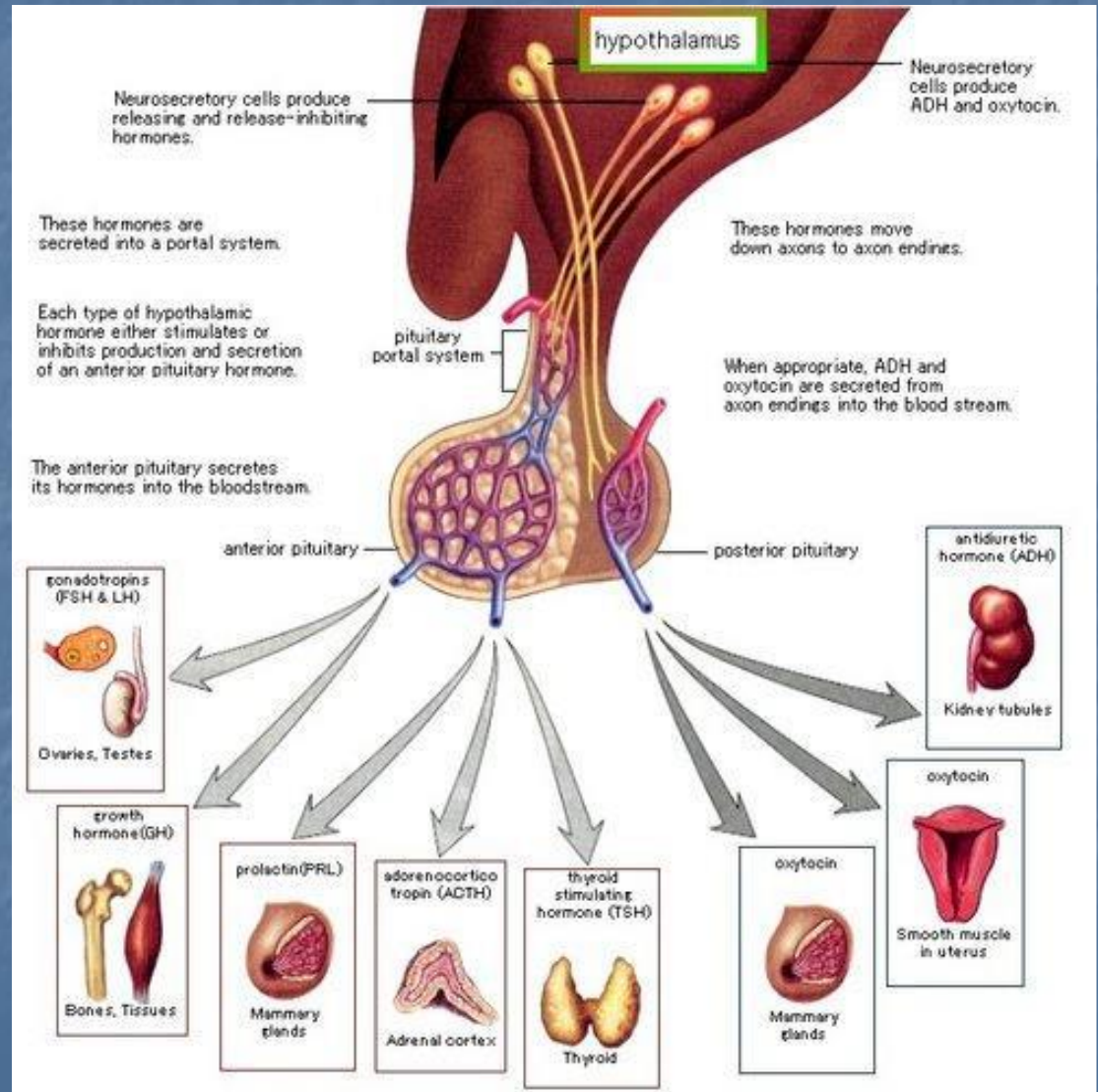
# Hypothalamus

## ■ Links Nervous System to Endocrine System



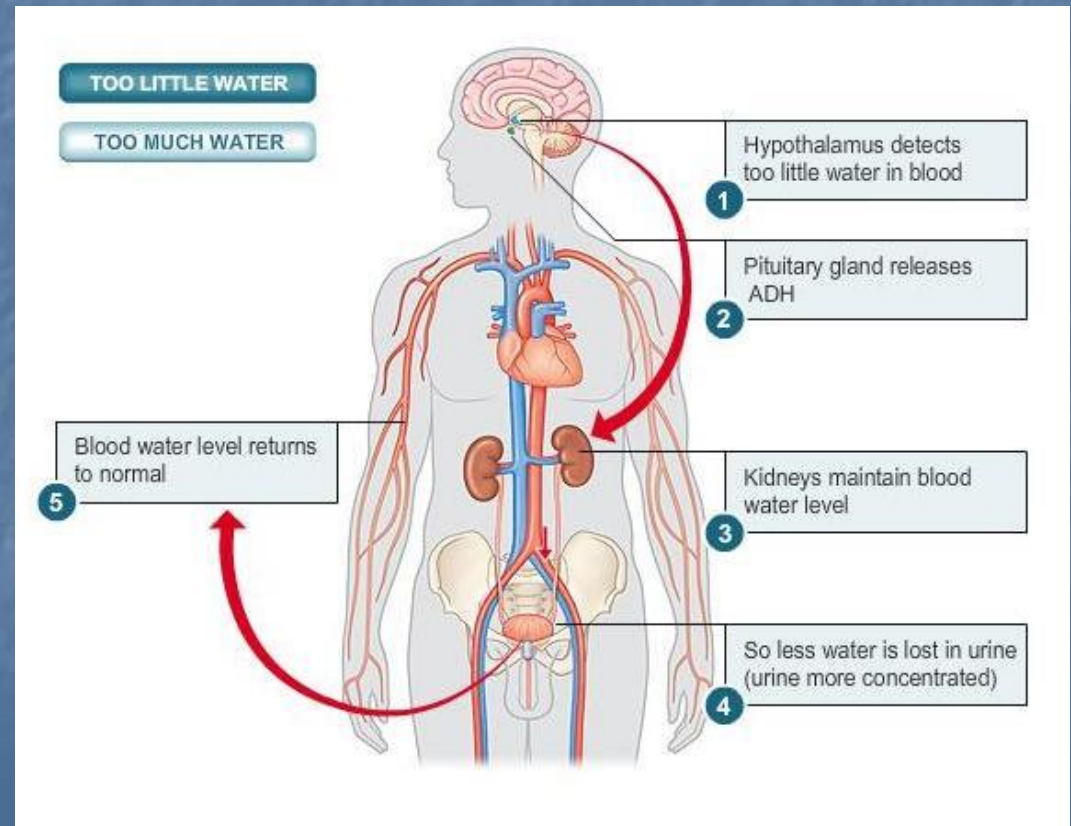
# Pituitary Gland

- “Master Gland” that regulates
  - metabolism (thyroid)
  - growth (bones)
  - puberty (gonads)
  - water regulation (kidneys)



# Negative Feedback

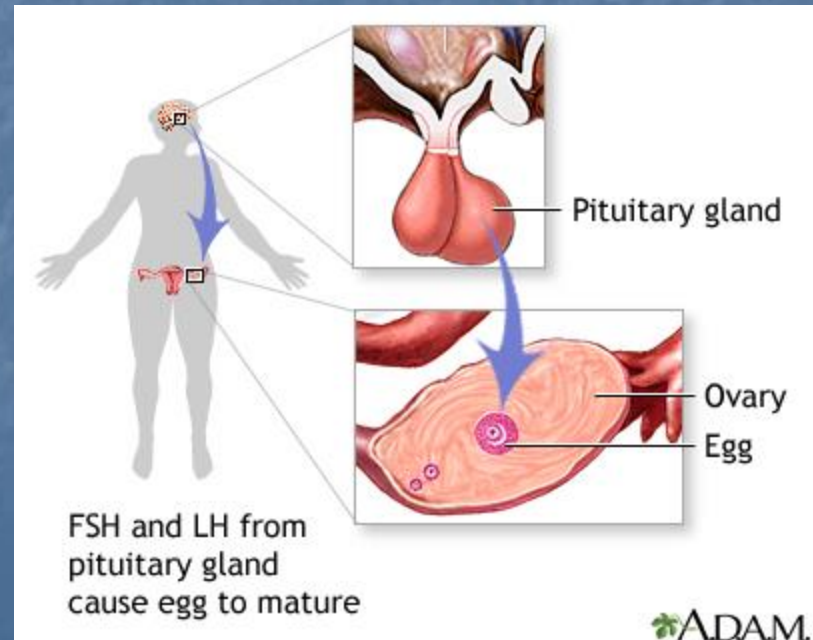
- When levels high, endocrine system signals to stop release of hormone





# Puberty “Wake Up” Hormones

- Follicle Stimulating Hormone (FSH) from pituitary “wakes up” gonads
- Luteinizing Hormone (LH), also from pituitary, signals maturation of sperm & egg
- Both rise and fall together during menstrual cycle



# Sexual Reproduction

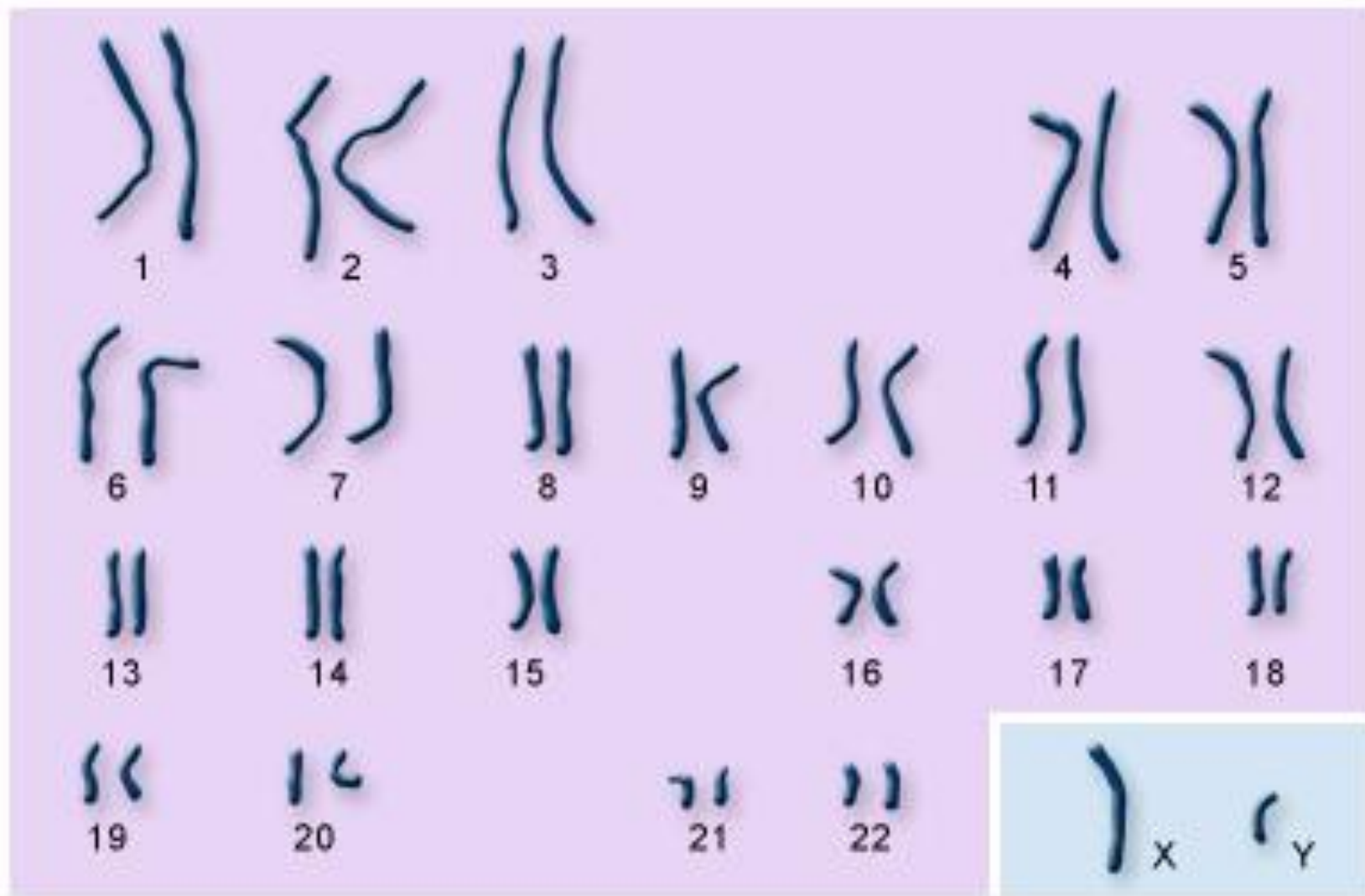
- Egg – female sex cell
- Sperm – male sex cell
- Fertilization – joining of sperm & egg
- Zygote – fertilized egg



# Chromosomes

- Found in nucleus
- Contain DNA
- Gametes (sperm & egg) carry  $\frac{1}{2}$  genetic code
- When combined make a whole – YOU!





autosomes

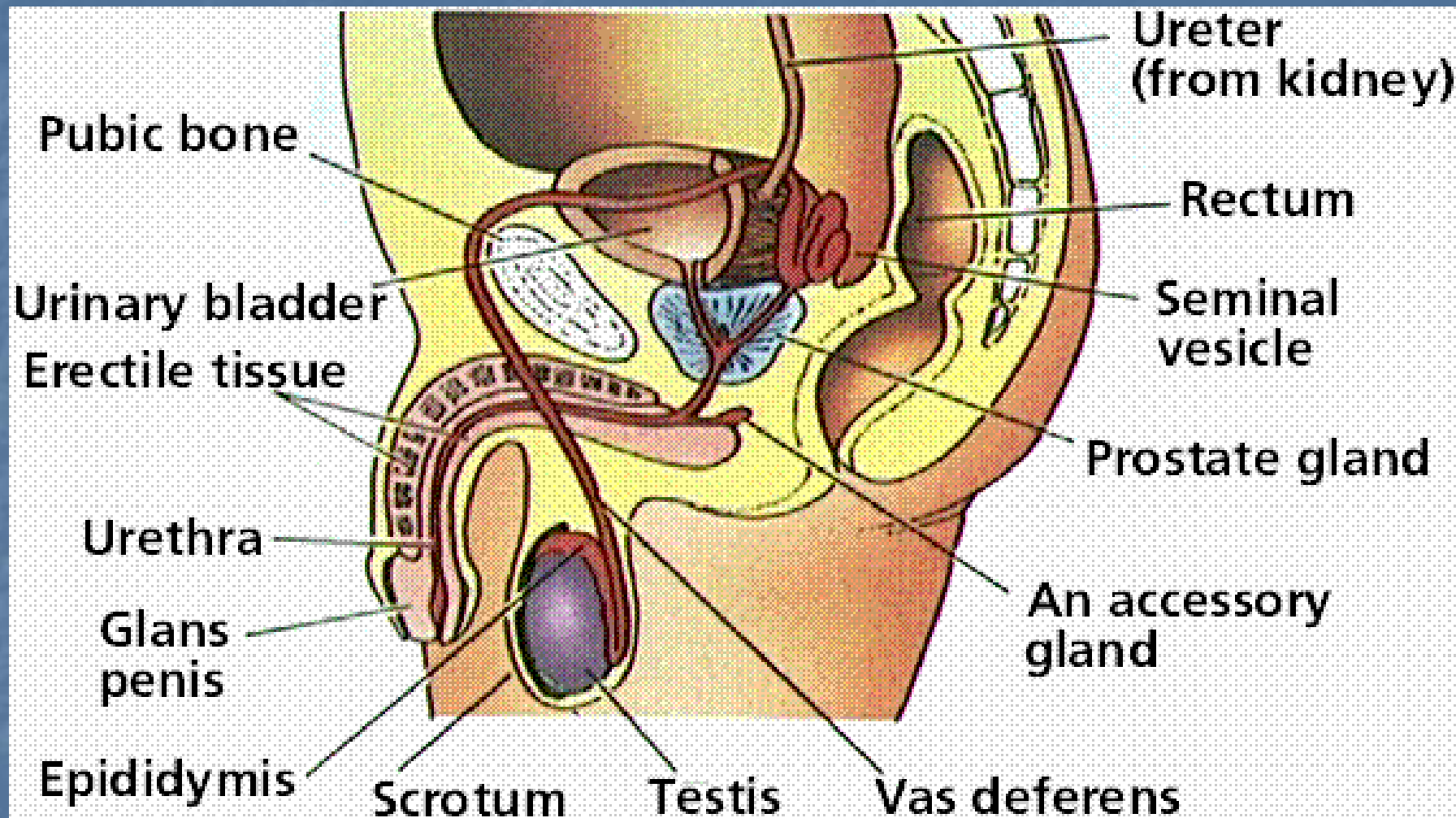
sex chromosomes



## 20.2 Reproductive Systems-

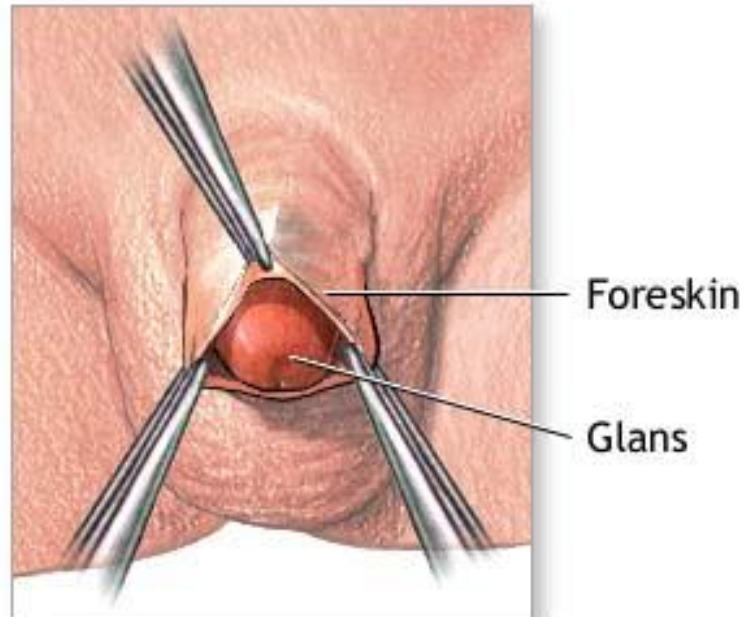
### Male Reproductive System

- Produces sperm and testosterone
- 2 testes produce sperm
- Testes protected in scrotum (external sac)
- Sperm mix with fluids to form semen
- Semen leaves the body thru urethra of penis (ejaculation)



# Circumcision

- Removal of foreskin on penis

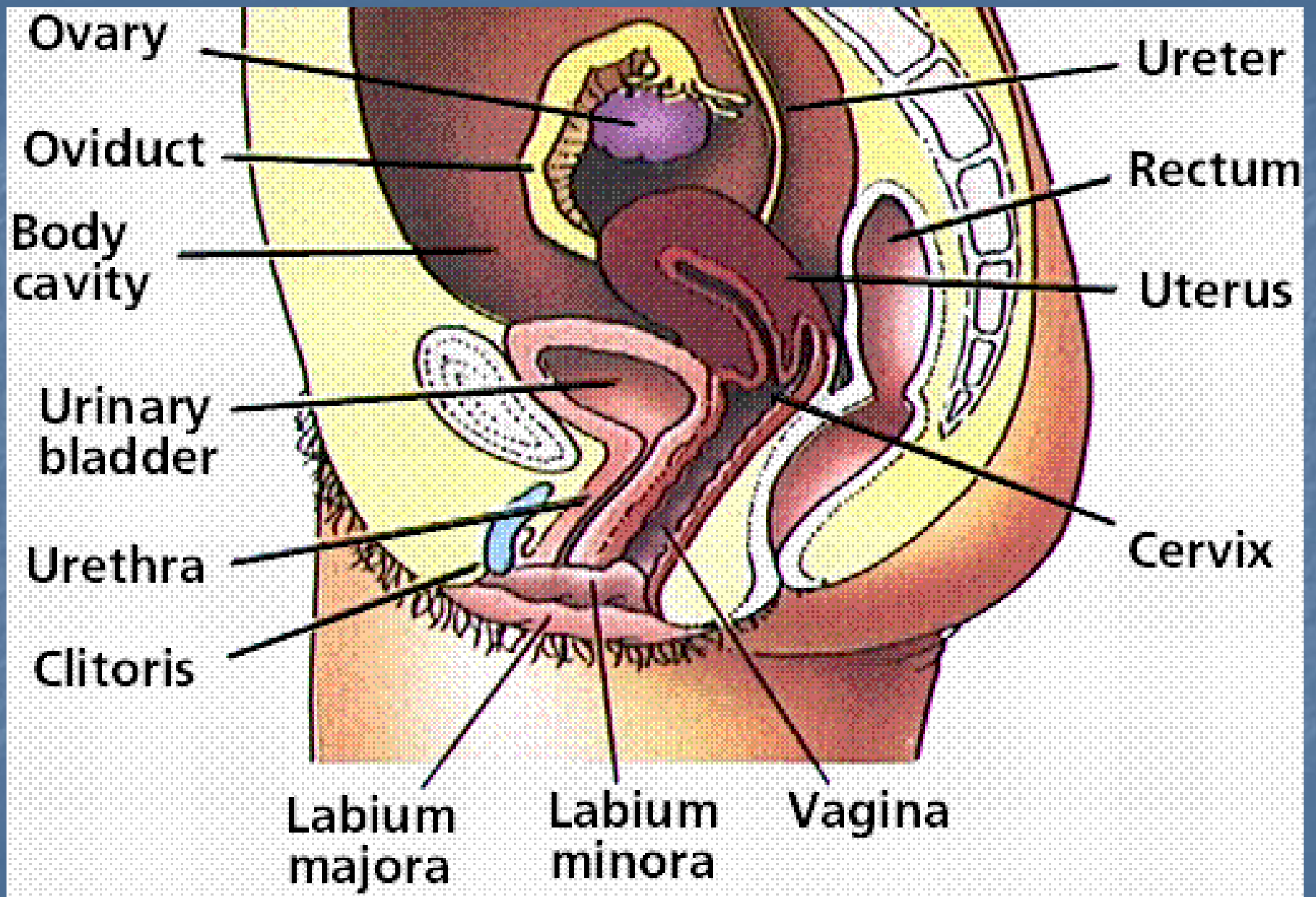


# Female Reproductive System

- To produce eggs, estrogen, and nourish a developing baby until birth
- 2 ovaries house eggs
- Egg released during ovulation
- Fallopian tubes lead to uterus
- Base of the uterus is the **cervix** ([a common site of cancer in women: story of Henrietta Lacks](#))
- Vagina to outside of body

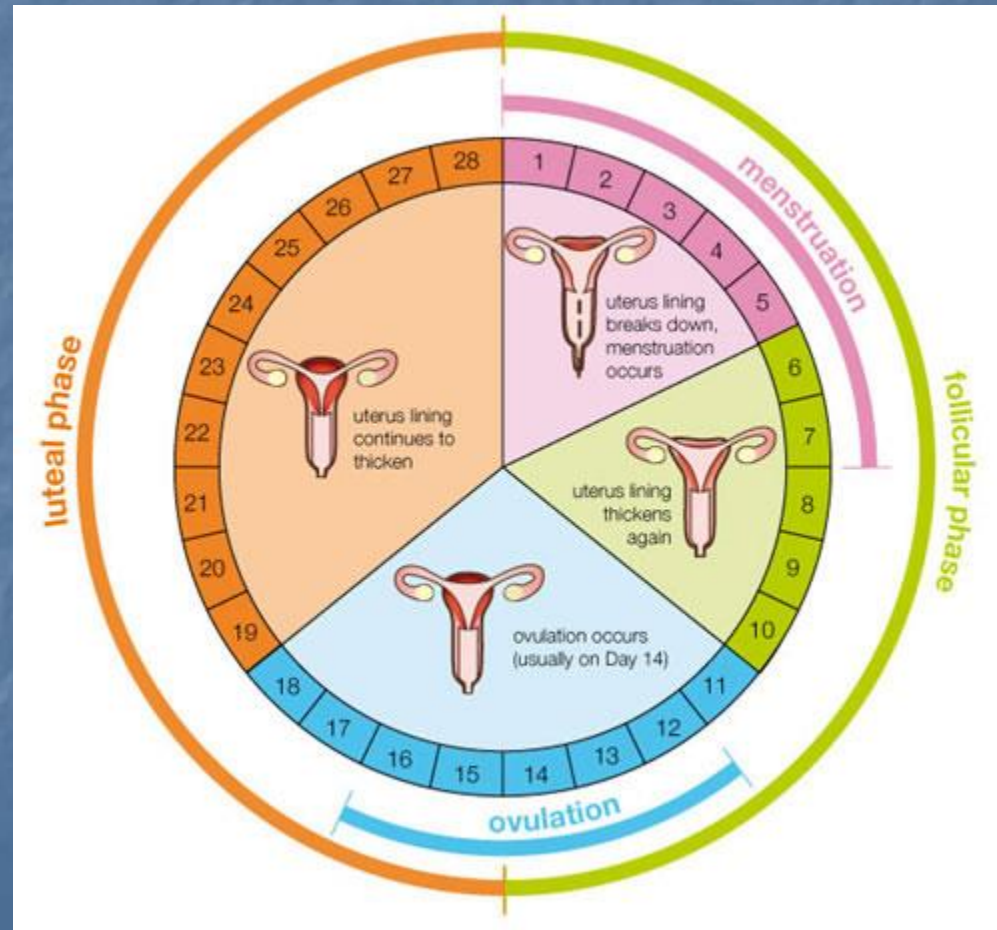






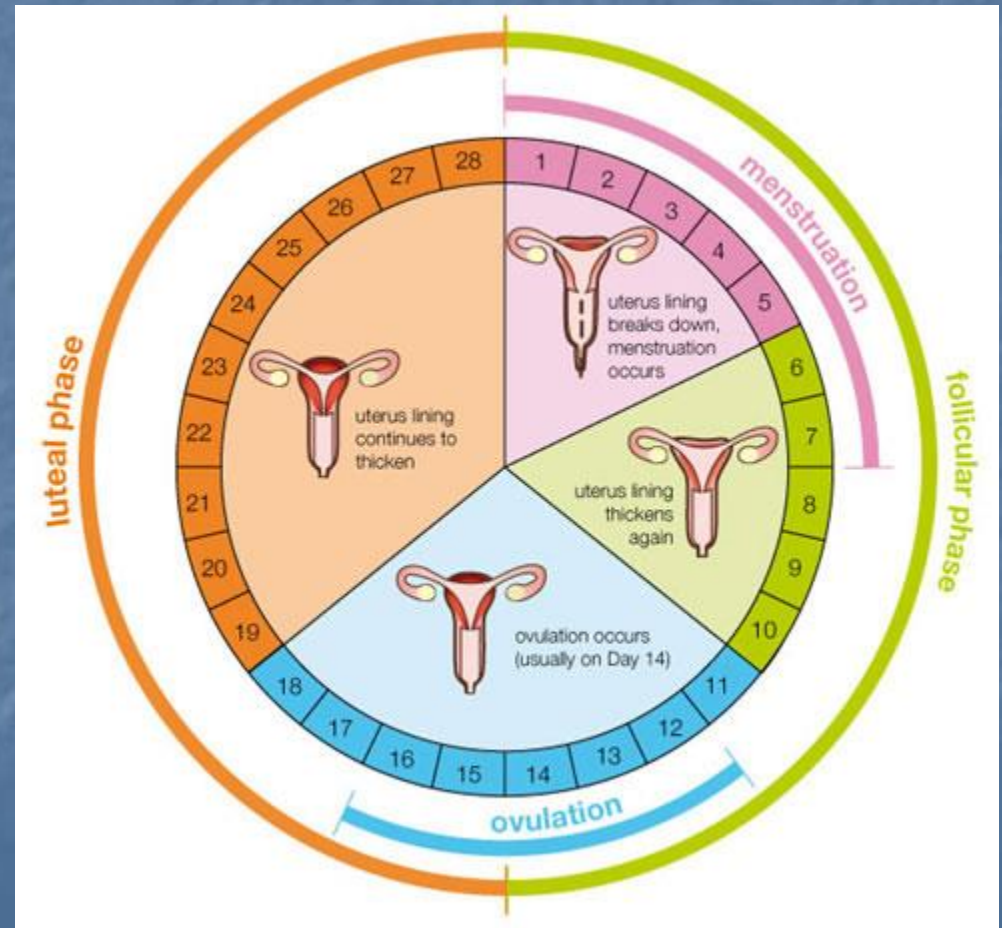
# The Menstrual Cycle (about 28 days)

- An egg matures in an ovary
- Lining of uterus begins to thicken
- At maturity, egg is released (ovulation) while cervical mucus thins



# The Menstrual Cycle (about 28 days)

- ❑ If egg not fertilized in a few days, will break down (along with uterine wall)
- ❑ Thickened lining passes out of body ([menstruation](#)) for 4 – 6 days
- ❑ Another egg begins to mature





# What About the Egg?

- Fertilization? = Pregnant
- No Fertilization? = Menstruation



## 20.3 Pregnancy

- Embryo attaches to uterine wall (implantation)
- Amniotic sac forms (filled with fluid to protect & cushion)
- Placenta develops from uterine lining
- Umbilical cord attaches where nutrients, gases & wastes are exchanged

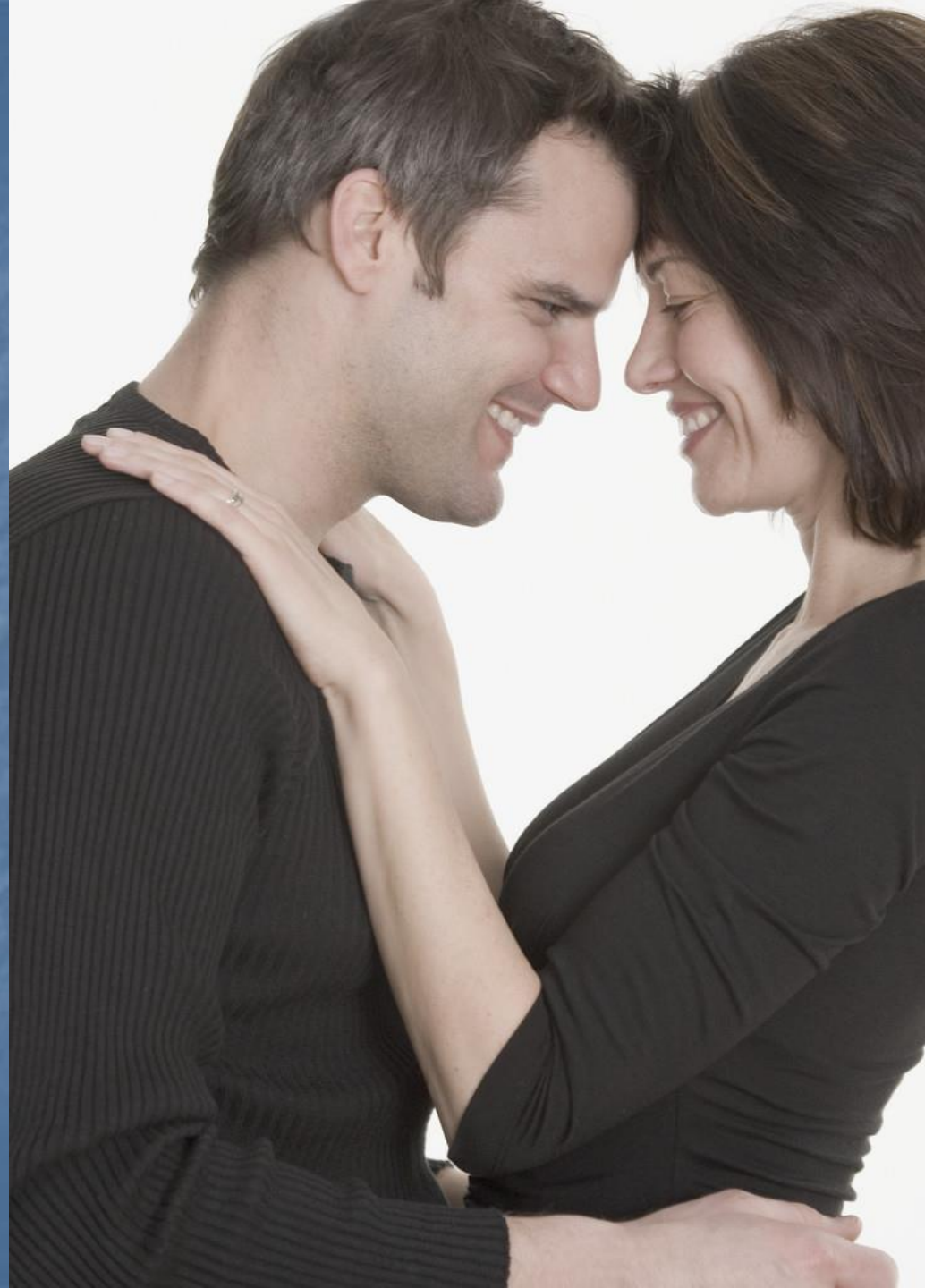
# Human Development

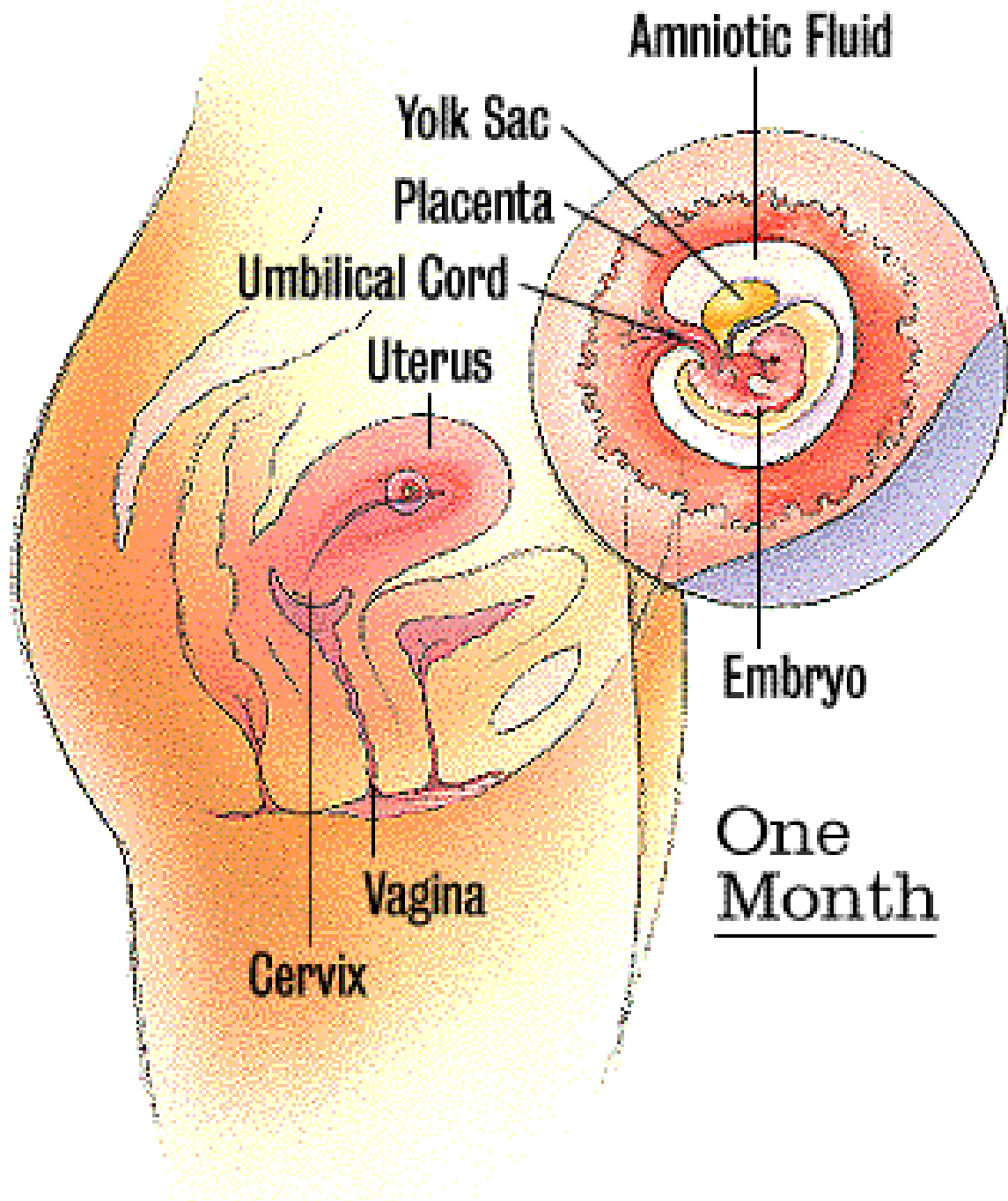
- Zygote – fertilized egg
- Embryo – til 8 weeks
- Fetus – 9 wks to birth



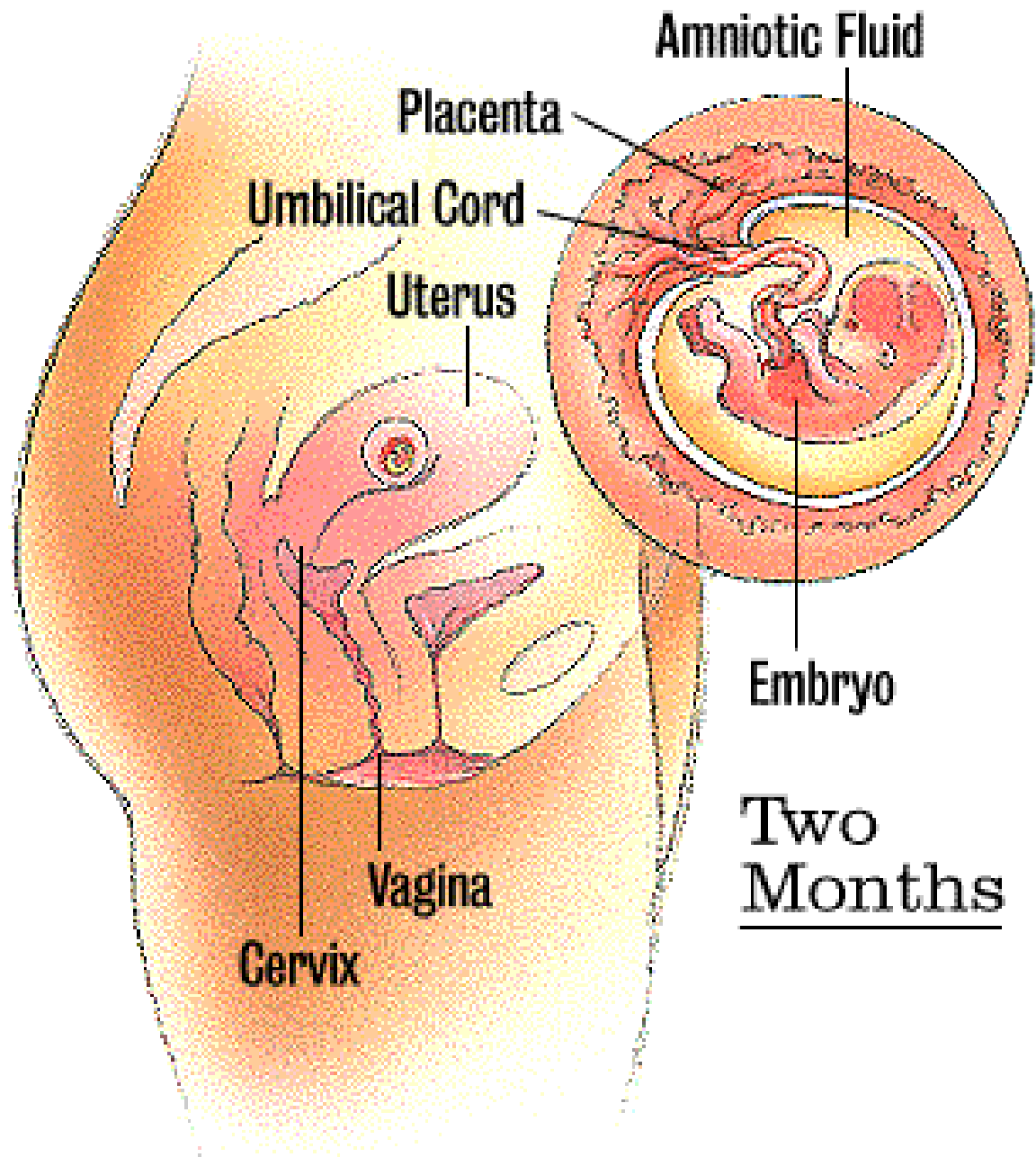
# 3 Stages of Pregnancy

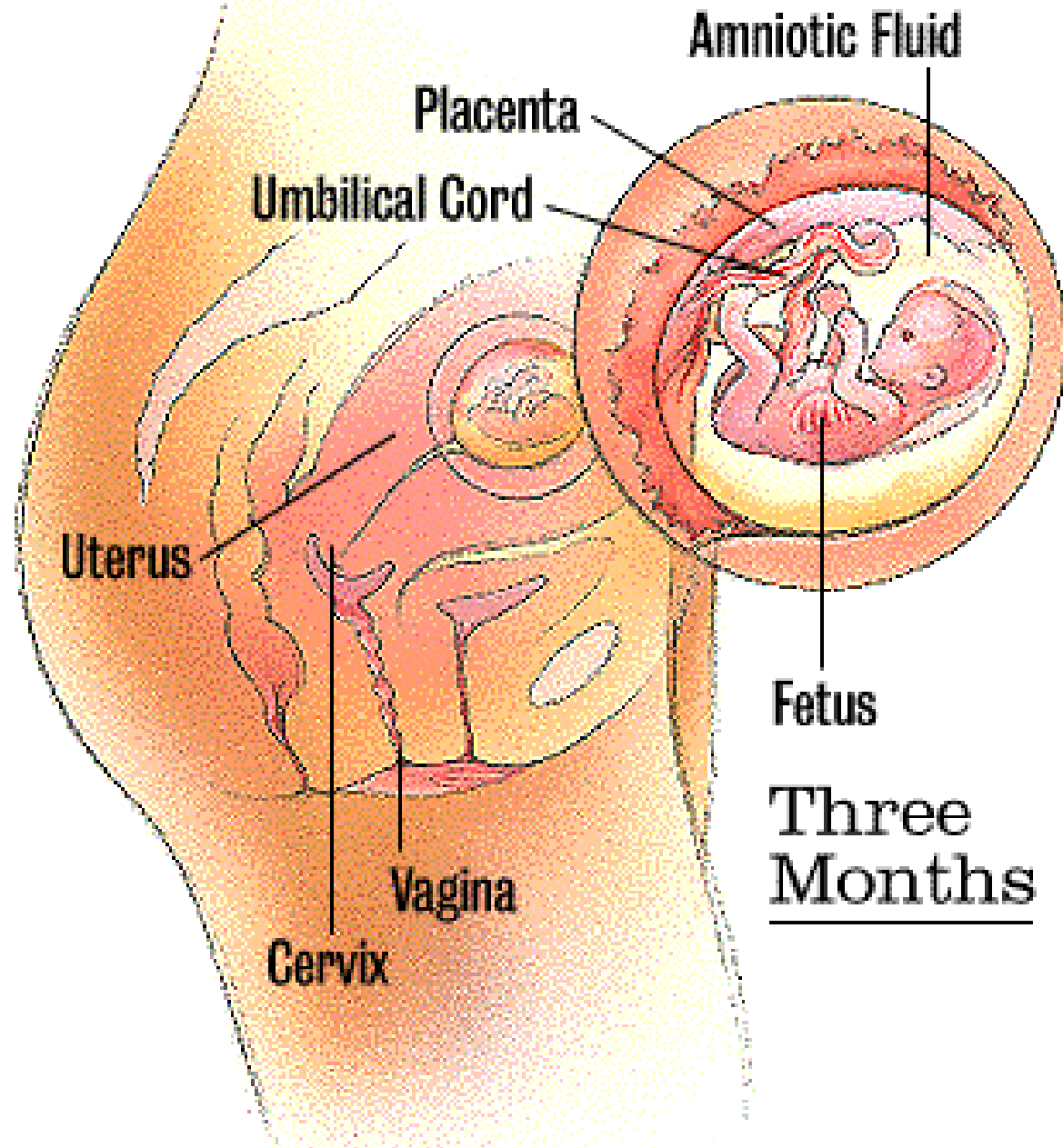
- 40 week Gestation
- 1<sup>st</sup> Trimester
  - 1<sup>st</sup> 12 - 14 weeks
  - Organs forming
  - Most critical time







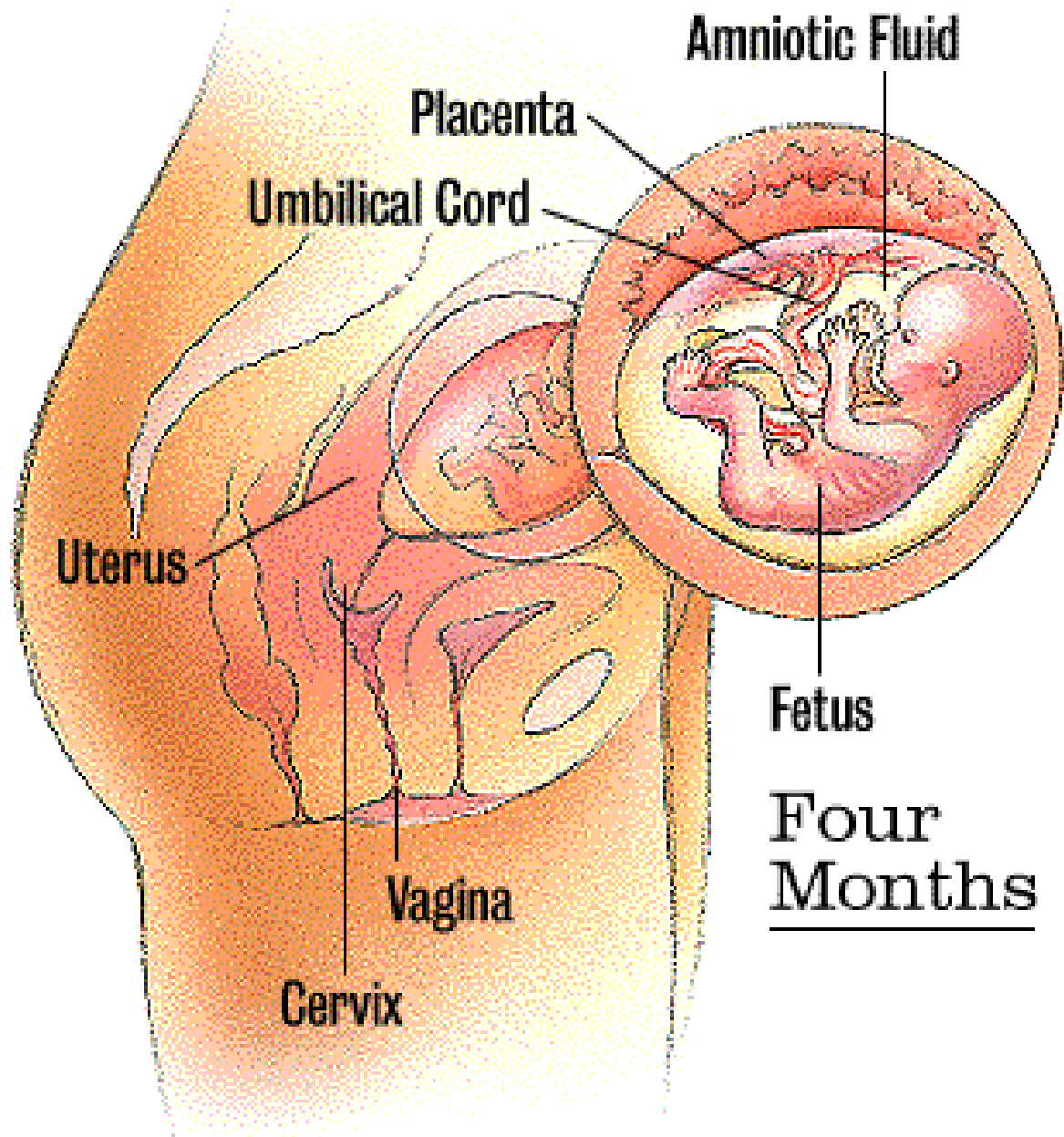


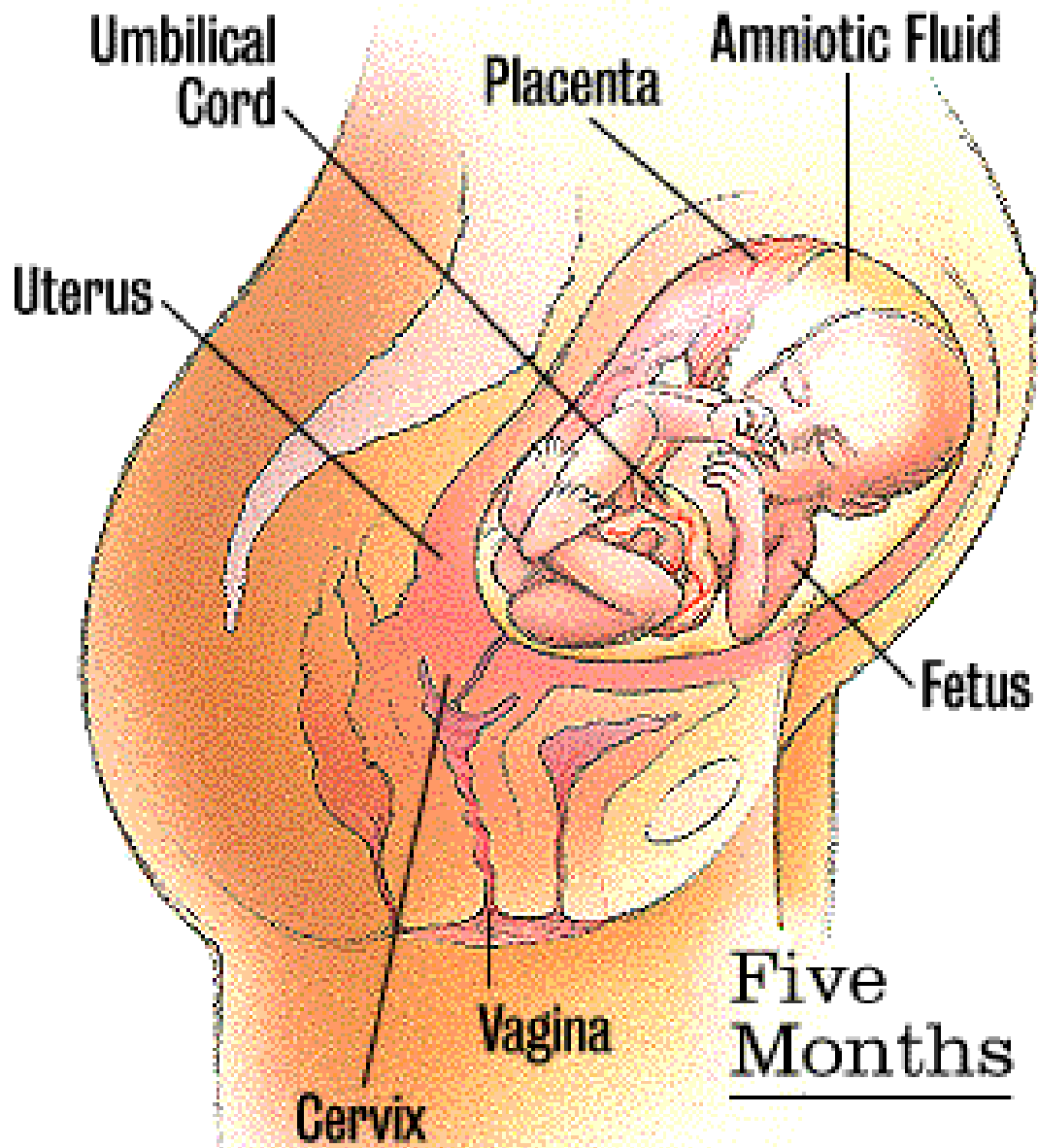


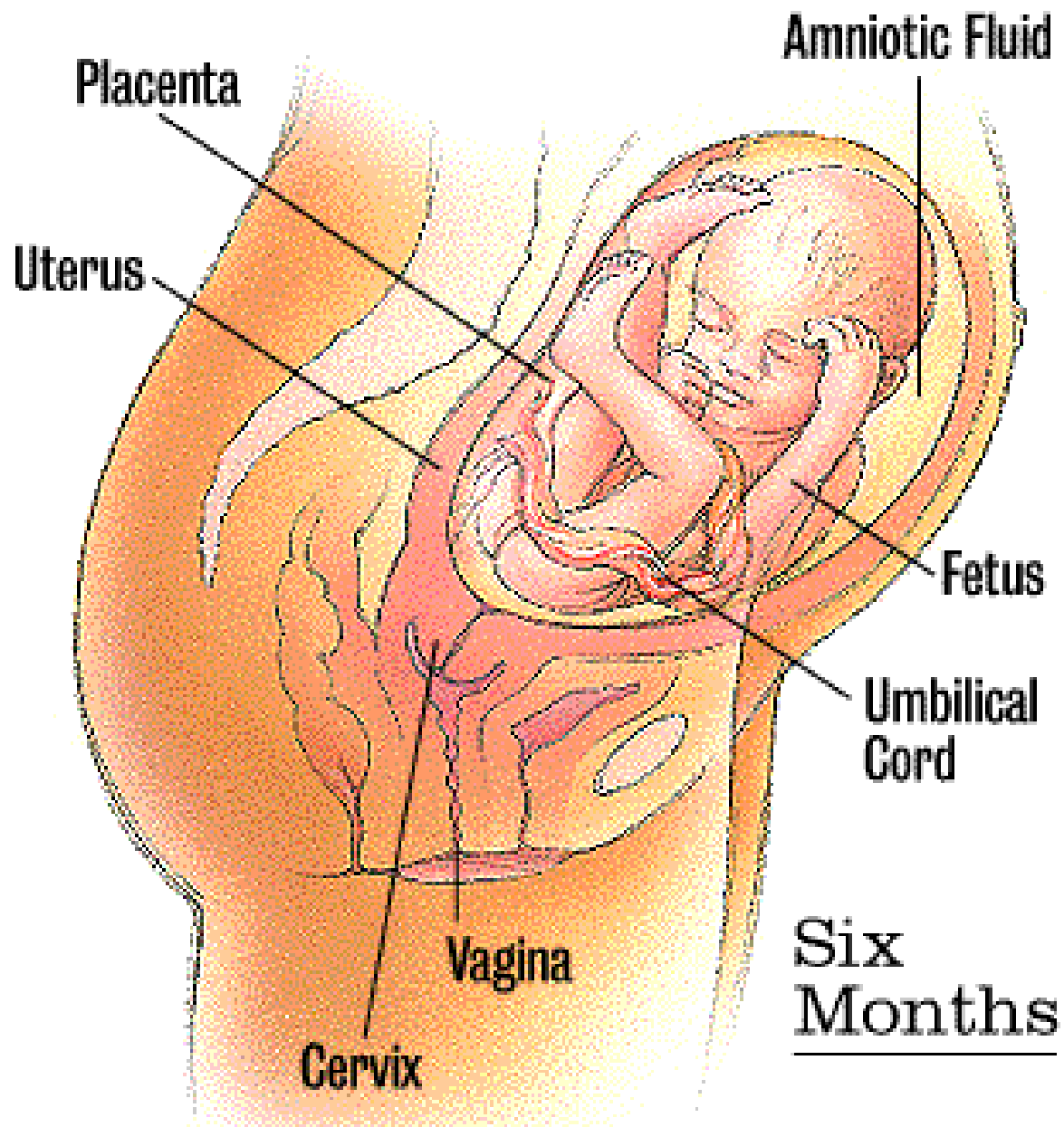


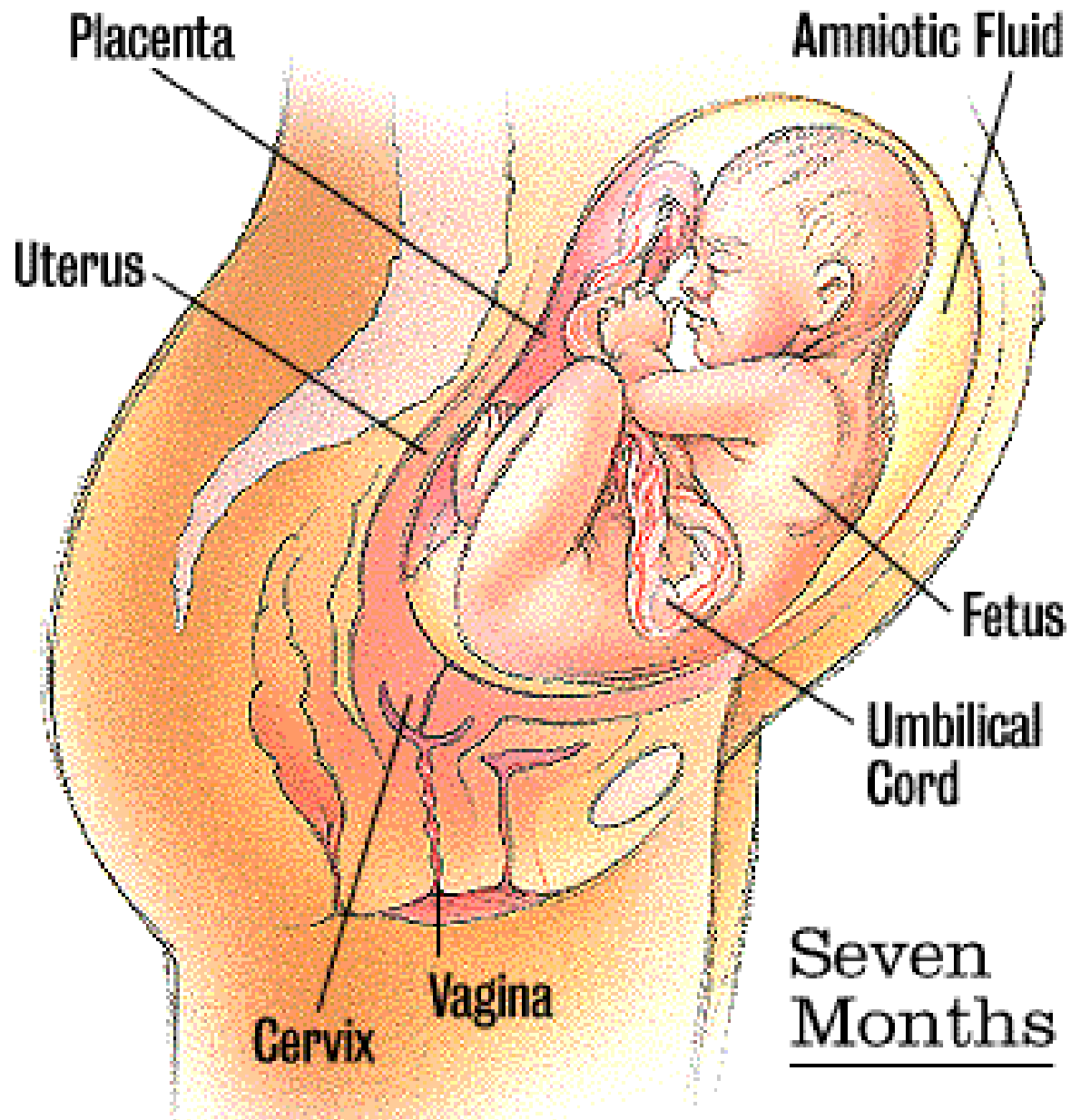
## 3 Stages of Pregnancy (cont.)

- 2<sup>nd</sup> Trimester
  - Til end of 7<sup>th</sup> month
  - Organ systems formed & maturing







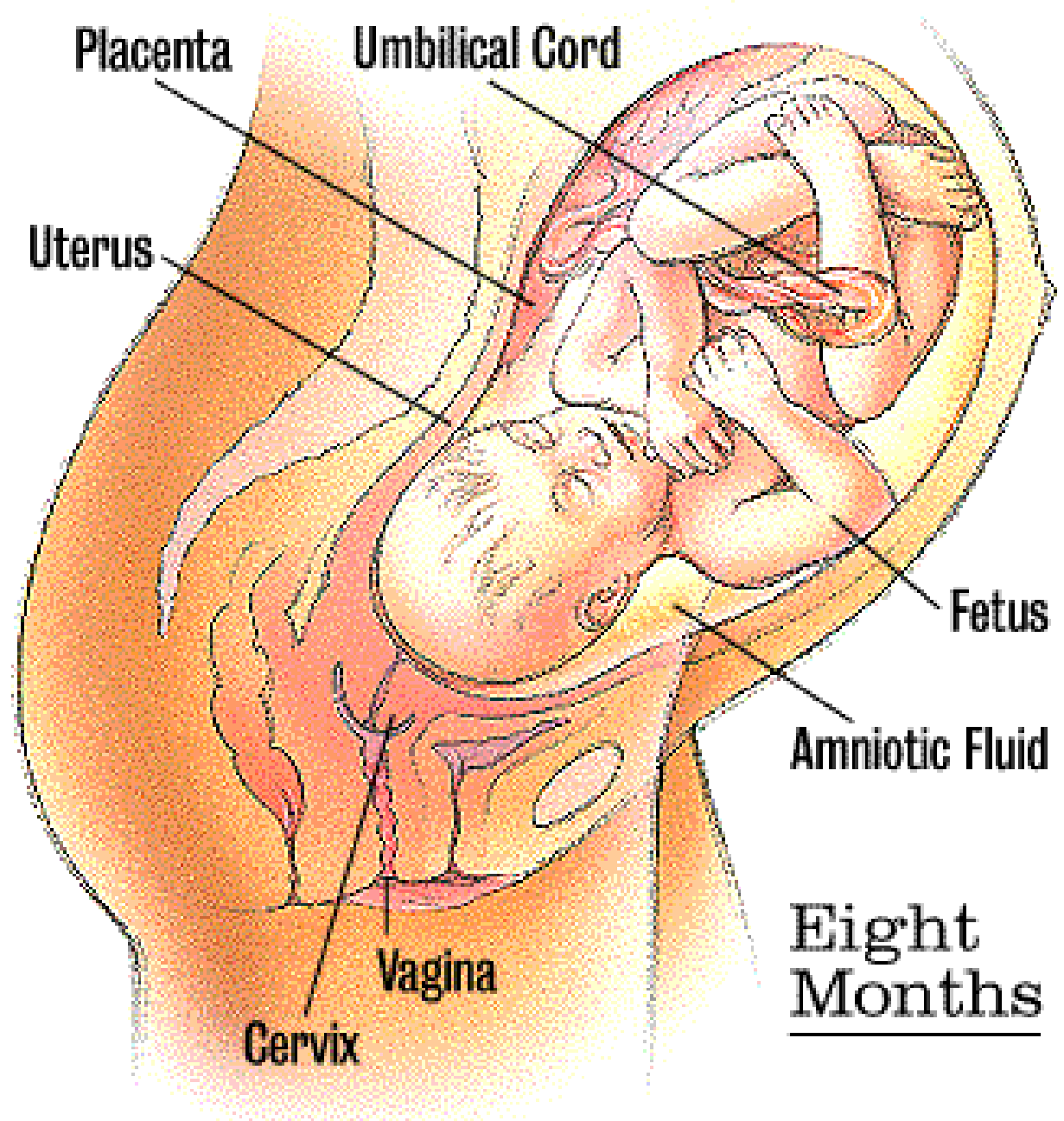


# 3 Stages of Pregnancy (cont.)

- 3<sup>rd</sup> Trimester
  - Final weeks
  - Rapid growth and weight gain of fetus







Placenta

Umbilical Cord

Uterus

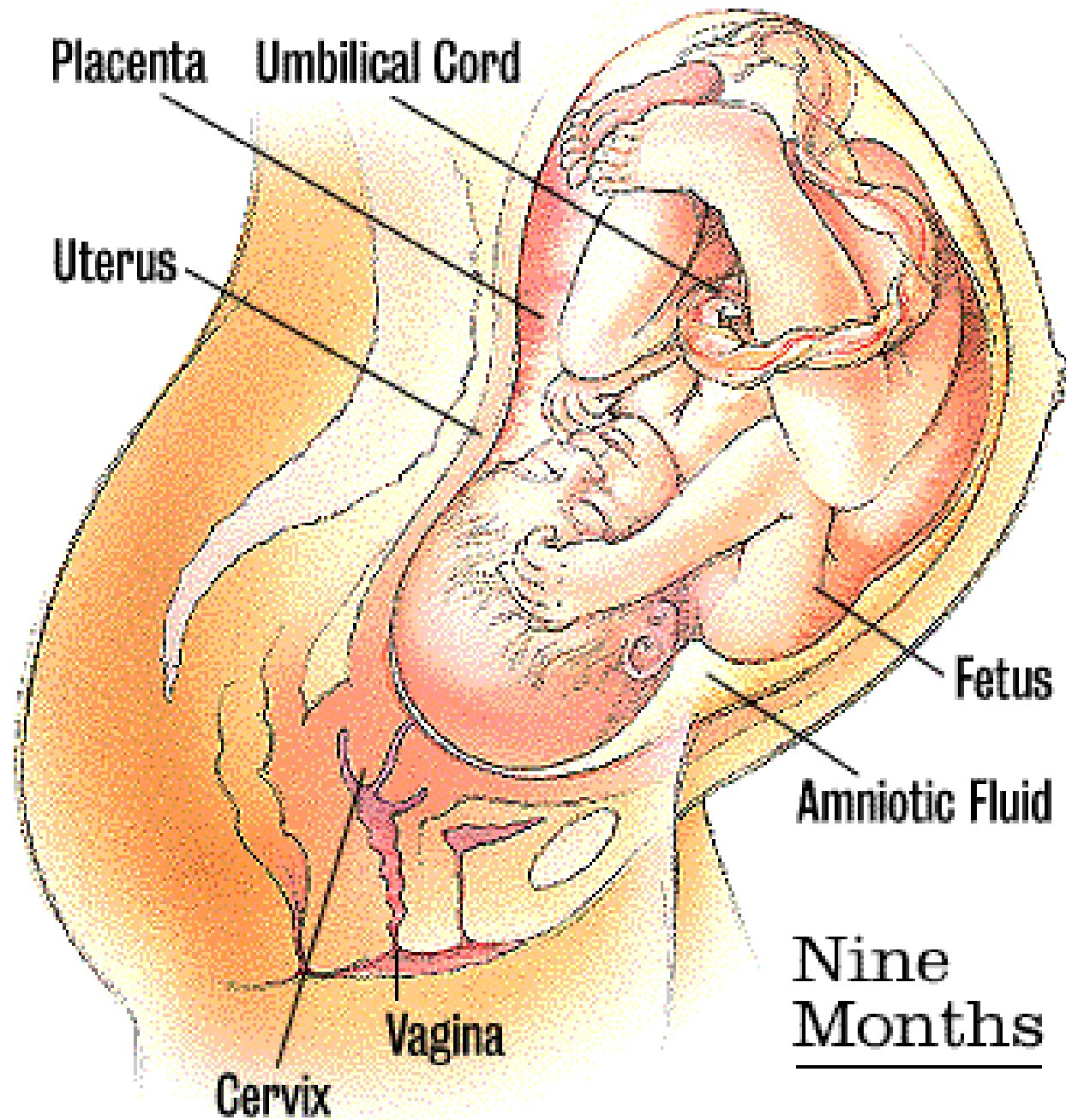
Fetus

Amniotic Fluid

Eight Months

Vagina

Cervix



# Ready?

- Between 38 & 42 weeks, all systems mature
- Baby's size puts pressure on cervix & amniotic sac



# *Cervical Effacement & Dilation*

## *(Borramiento y Dilatación Cervical)*

**Effacement** - the gradual thinning, shortening and drawing up of the cervix measured in percentages from 0 to 100%.

**Borramiento** - el adelgazamiento, acortamiento y encogimiento gradual del cervix medido en porcentajes del 0 al 100 %.



0%  
Effaced



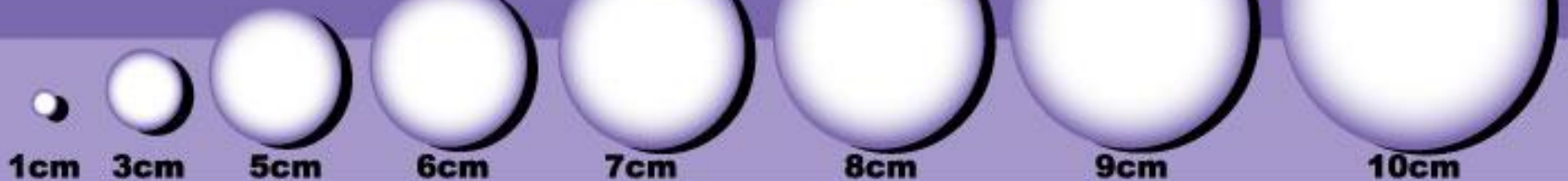
50%  
Effaced



100%  
Effaced

**Dilation** - the gradual opening of the cervix measured in centimeters from 0 to 10 cms.

**Dilatación** - La apertura gradual del cérvix medida en centímetros de 0 a 10 cms.



1cm

3cm

5cm

6cm

7cm

8cm

9cm

10cm

# Stages of Childbirth

- Labor – cervix dilates, uterus contracts
- Delivery – baby pushed out through vagina (aka birth canal)
- Afterbirth – Placenta is delivered
- Caesarean Section (C-Section) – baby is removed surgically from abdomen

# Other Pregnancy Terms



- Siblings – brothers and sisters
- Fraternal Twins – 2 eggs and 2 sperm
- Identical Twins – zygote splits



# Infancy

- 1<sup>st</sup> two years
- Rapid learning, growth, and development





# Toddlers

- Continued growth and independence





# Childhood

- Growth slows but continues, more coordinated in activities

# Adolescence

- “Awkward” stage between childhood and adulthood
- Puberty – sexual development



# Adulthood

- Body peaks at 22 and by 27 body and brain starts its slow decline, which varies depending on individual.



# Aging

- skin wrinkles, muscles decrease, sense organs decline
- Slow aging process by diet & exercise

