



# **DEVELOPMENTAL PSYCHOLOGY**

## **UNIT 9 SECTIONS 1 & 2**

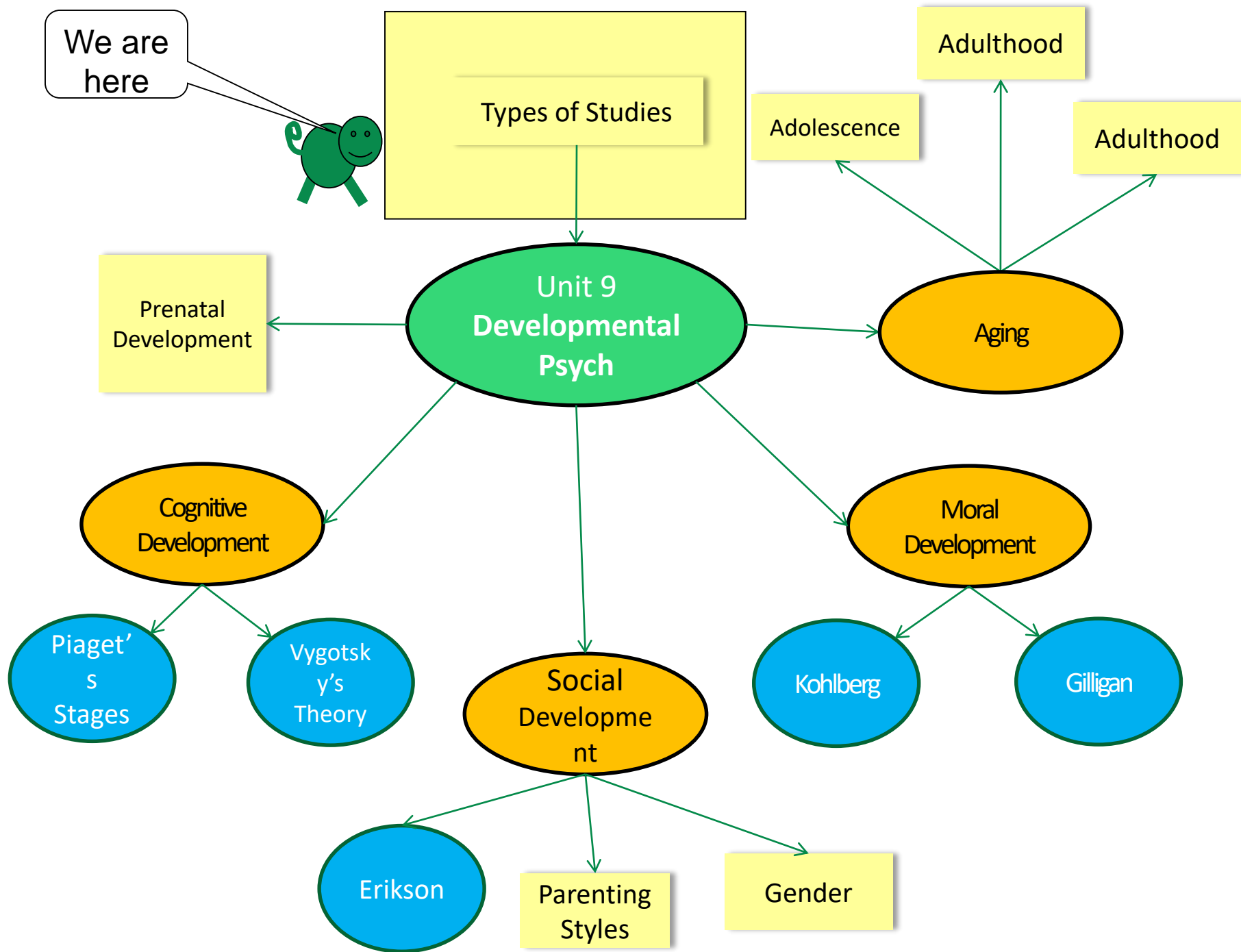


# WHS AP Psychology



## Unit 9: Developmental Psychology

Essential Task 9-1: . Detail how psychologists study development including longitudinal studies, cross-sectional studies, and autobiographical studies.





# Opening Activity (OA 1)

1. Reflect back on your childhood. In what ways were you similar and different...

- Two years ago?
- Five years ago?
- Ten years ago?

2. Have you changed or are you the same as you were ?



# Essential Task 9-1:

## [Outline](#)

- Developmental Psychology
- Themes in Developmental Psychology
- Research Methods
  - longitudinal studies
  - cross-sectional studies
  - autobiographical studies



# Developmental Psychology

- Study of humans from womb to tomb.





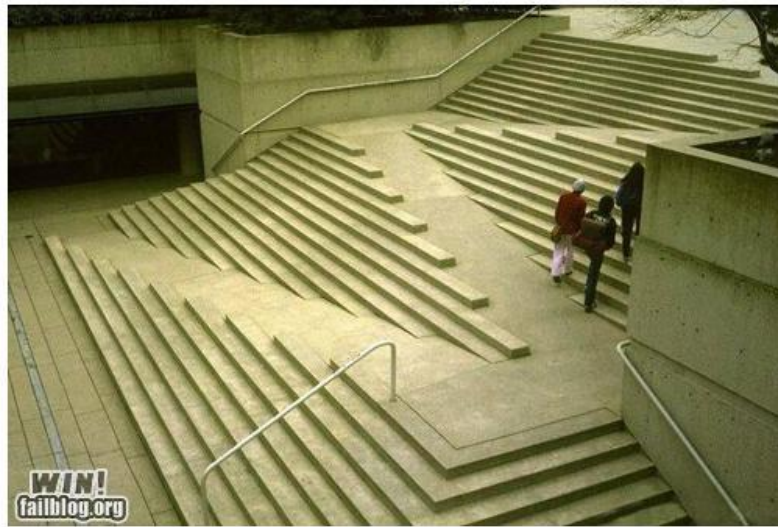
# Developmental Psychology

Issue	Details
Nature/Nurture	How do genetic inheritance ( <i>our nature</i> ) and experience ( <i>the nurture we receive</i> ) influence our behavior?
Stability/Change	Do our early personality traits persist through life, or do we become different persons as we age.
Continuity/Stages	Is development a gradual, continuous process or a sequence of separate stages?



# Continuity vs. Stages

Continuity



Stages







- Cohort – people from the same group
- Attrition – gradually reducing the strength; or weakening another
  - High attrition – people dropping out of experiments



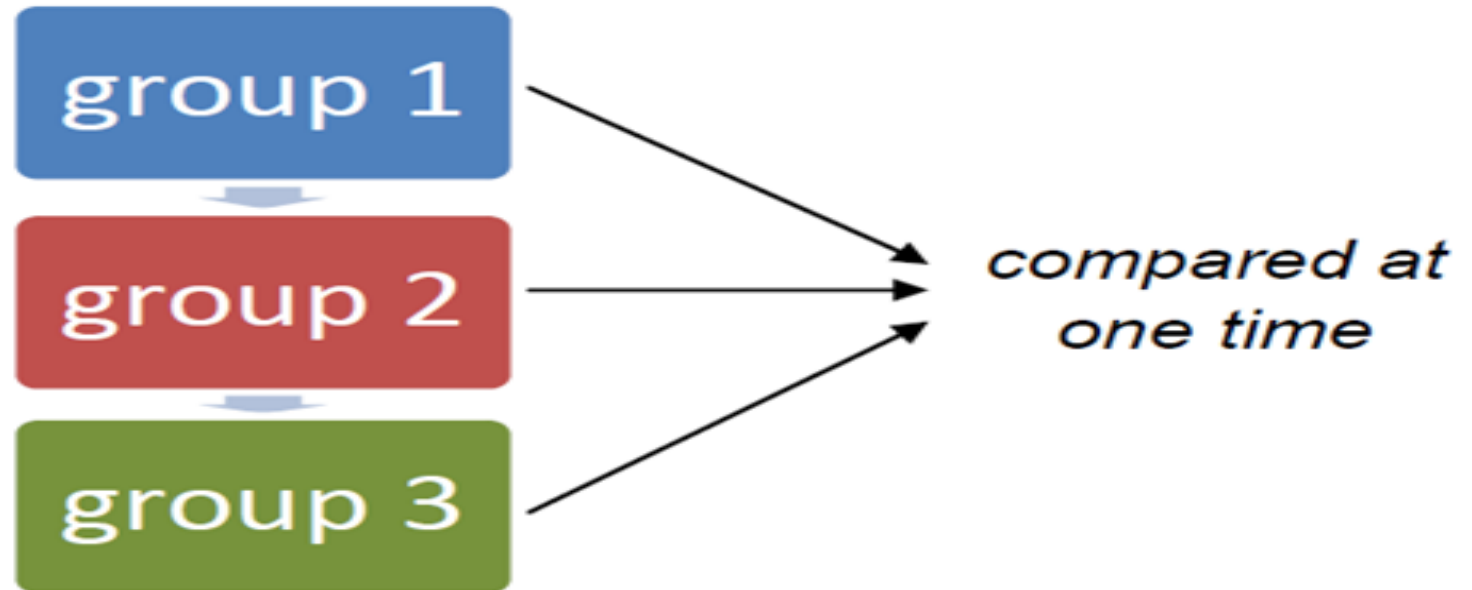
# Cross-Sectional Study

- Study people of different ages at the same point in time
- Advantages
  - Inexpensive, can be completed quickly
  - Low attrition
  - Learn the impact of age in different factors
- Disadvantages
  - Different age groups are not necessarily much alike
  - Differences may be due to cohort differences rather than age



# Cross-Sectional Research Study:

*different groups*



Example: Vocabulary Exam

Age group of 5	--	50% correct
Age group of 10	--	65% correct
Age group of 15	--	80% correct



# Longitudinal Study

- Study the same group of people over time
- Advantages
  - Detailed information about subjects
  - Developmental changes can be studied in detail
  - Eliminates cohort differences
- Disadvantages
  - Expensive and time consuming
  - Potential for high attrition of subjects (high dropout rates)
    - Attrition – gradual weakening
  - Differences over time may be due to assessment tools and not age



# Biographical or Retrospective Study

- Participant's past is reconstructed through interviews and other research about their life
- Advantages
  - Great detail about life of individual
  - In-depth study of one person
- Disadvantages
  - Recall of individual may not be accurate
  - Can be expensive and time consuming





## Examples:

1. An interview with Drake about his childhood – what made him become such a shallow and empty person.
2. Research that had Middle School students and High School students take a geometry exam to see whether or not age has an influence on abstract thinking.
3. 20 year study where Sia studied the effects of listening to boring indie music on children who were born in 1990.

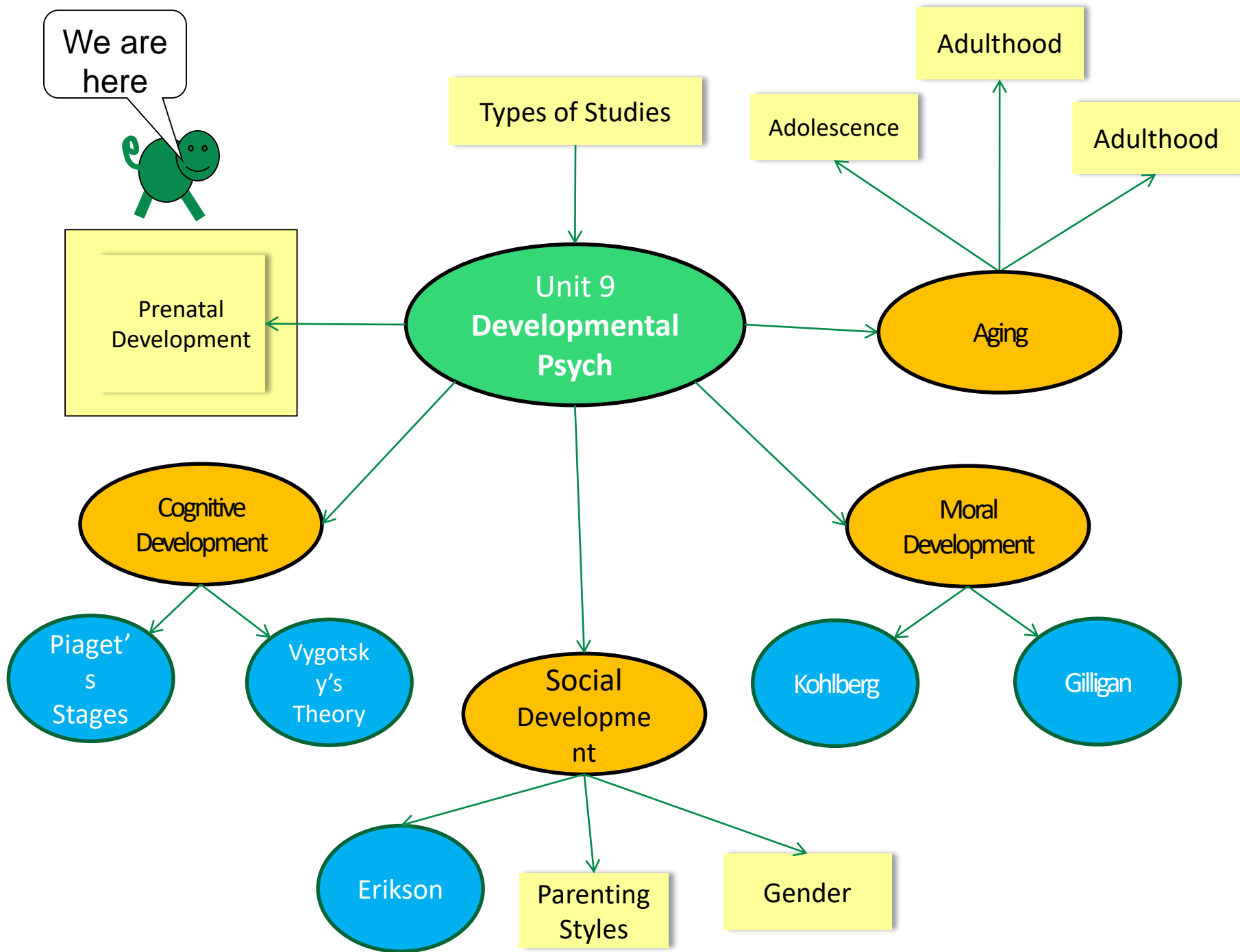


# WHS AP Psychology



## Unit 9: Developmental Psychology

Essential Task 9-2: Explain the process of conception, gestation (*zygote, embryo, and fetus*), factors that influence fetal development (*teratogens and Fetal Alcohol Syndrome*), and the maturation of motor skills.





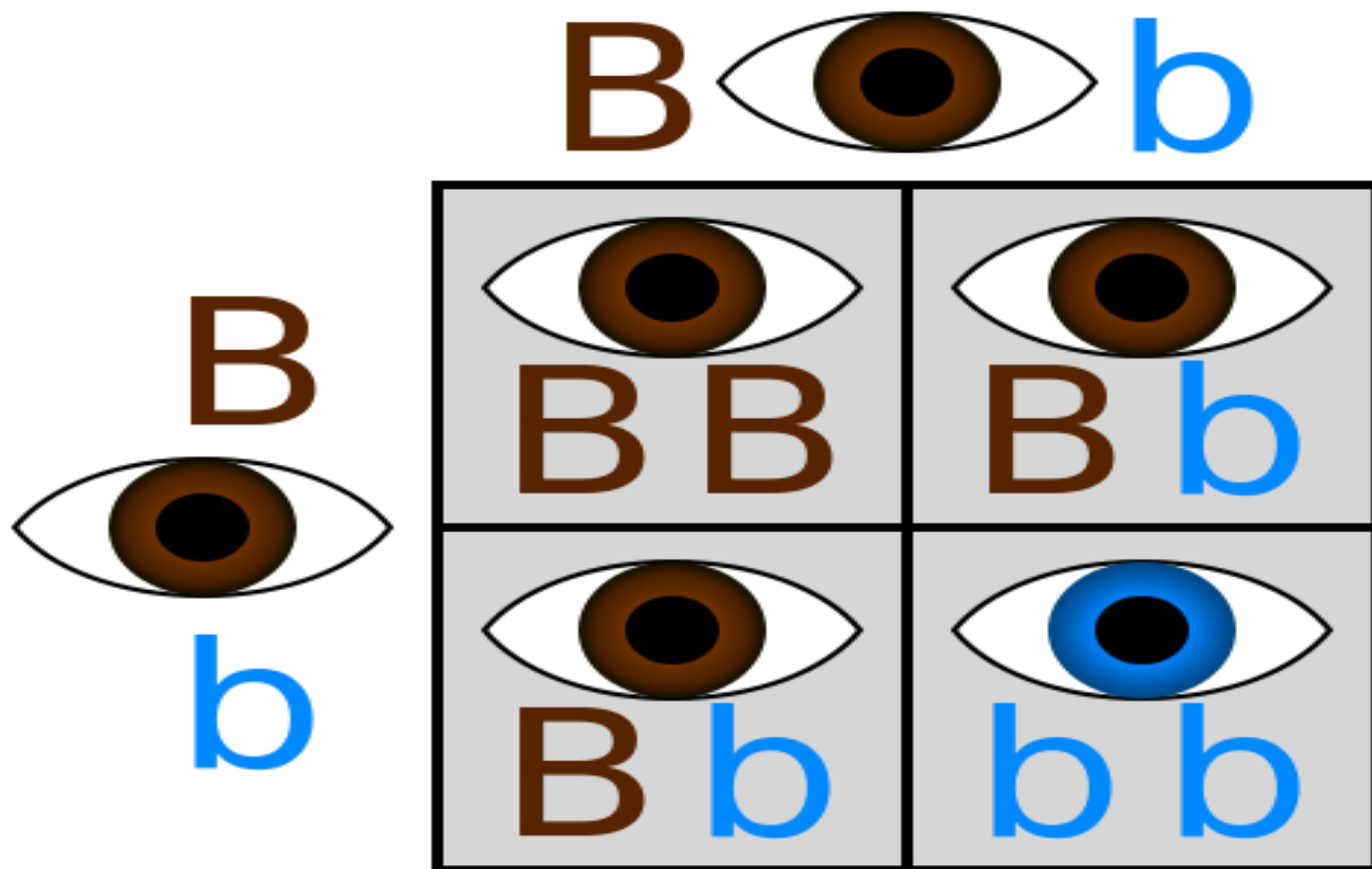


# Important Terms

- **Heredity (Nature):** Transmission of physical & psychological characteristics from parents to their children through genes
- **DNA :** Molecular structure shaped like a double helix that contains coded genetic information
- **Gene:** Specific areas on a strand of DNA that carry hereditary information
  - **Dominant Genes** – The gene's features will appear each time the gene is present (Brown eyes)
  - **Recessive Genes** – The gene's features will appear only if it is paired with another recessive gene. (Blue eyes)



# Pundit Square





# Outline 9-2

- Gestation
  - *Zygote*
  - *Embryo*
  - *Fetus*
- Factors that influence fetal development
  - *teratogens*
  - *Fetal Alcohol Syndrome)*
- Developmental Norms



# Prenatal Development

- **Conception:** fusion from an egg & a sperm
- **Zygote:** the fertilized egg, it enters a two week period of rapid cell division and develop into an embryo
  - **Monozygotic** – Identical Twins (Twin studies)
  - **Dizygotic** – Fraternal Twins
- **Embryo:** Developing human organism from two weeks – 8 weeks
- **Fetus:** developing human organism from 9 weeks after conception to birth
- **Neonate** – new born Birth to 1 month



# Quick question

- When does life begin?
  - Pro Choice
  - Pro Life
- Roe vs. Wade





# Prenatal Development and the Newborn

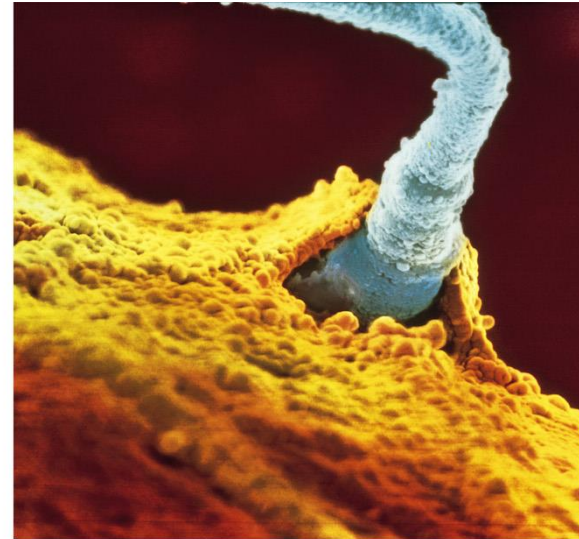
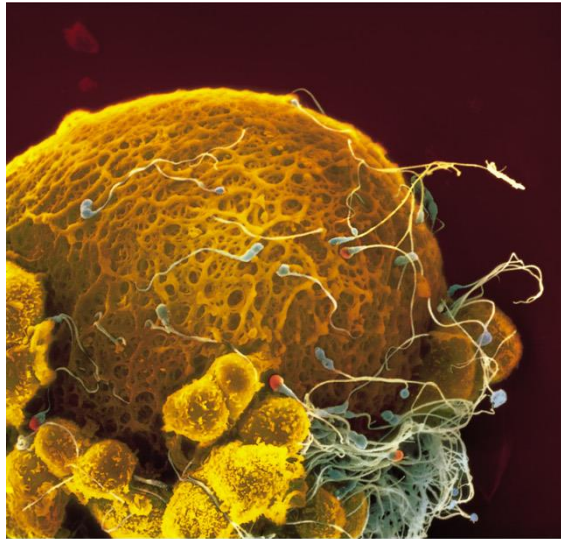
How, over time, did we come to be who we are?

From zygote to birth, development progresses in an orderly, though fragile, sequence.



# Conception

A single sperm cell (male) penetrates the outer coating of the egg (female) and fuses to form one fertilized cell.

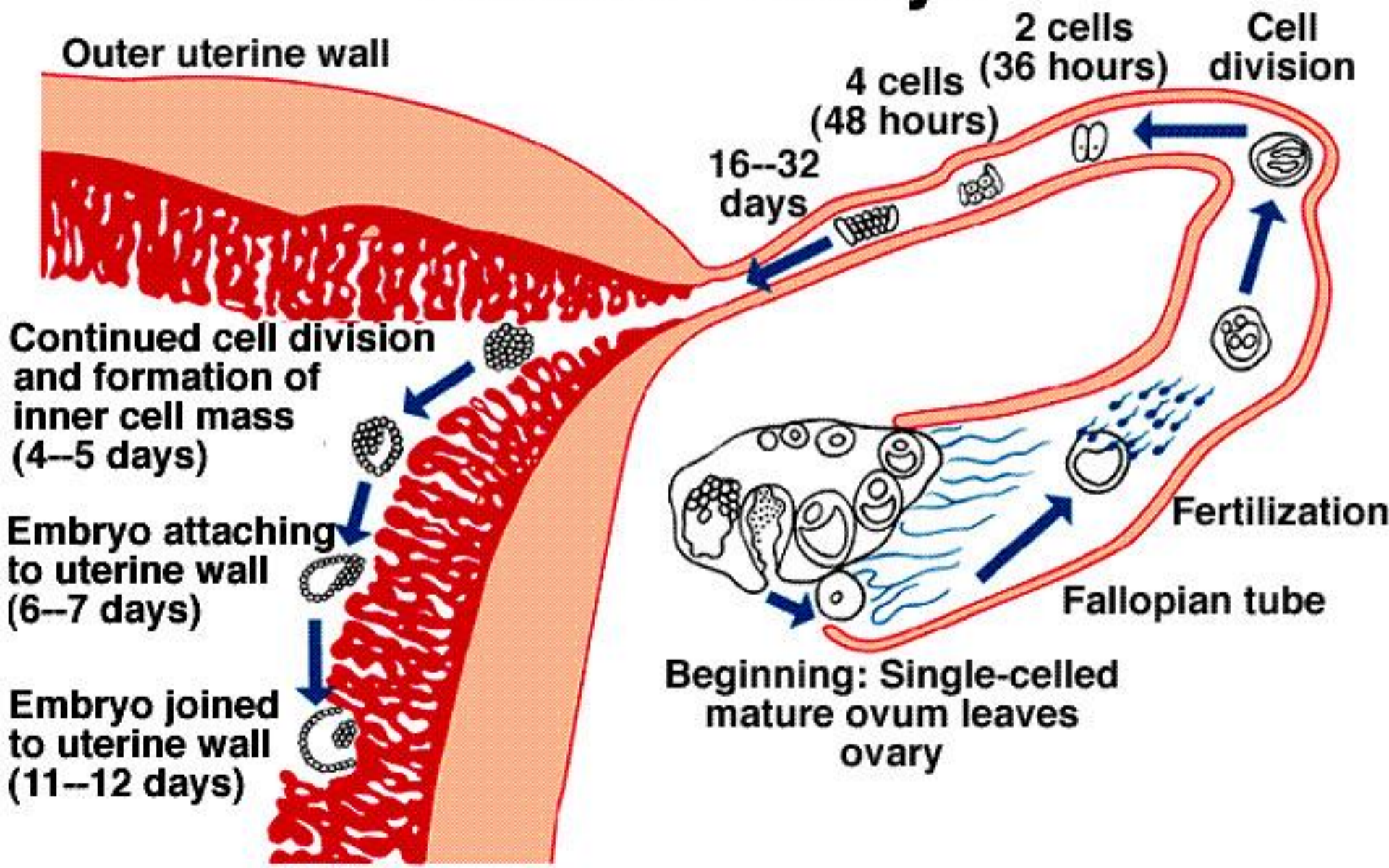


Your most fortunate of moments!<sup>(a)</sup><sup>(b)</sup>

Out of the 200 million sperm and 5000 eggs 'you' won the race.



# Early Development of a Human Embryo







# Prenatal Development

- A zygote is a fertilized cell with cells that become increasingly diverse.
- At about 14 days the zygote turns into an embryo (a and b).



(a)

Embryo at 40 Days



(b)

Embryo at 45 Days



# Embryo: 6 Weeks

Notice the large neural tube and the formation of the heart and other internal organs.





# Embryo: 7 Weeks

Eyes, fingers, toes and most internal organs have formed, but are not yet fully functional





# Embryo: 7 weeks

- Facial features are visible, including a mouth and tongue.
- The eyes have a retina and lens.
- The major muscle system is developed and the unborn child moves as if practicing.
- The child has its own blood type, distinct from the mother's.
- These blood cells are produced by the liver now instead of the yolk sac.





# Embryo: 8 Weeks







# Embryo: 8 Weeks

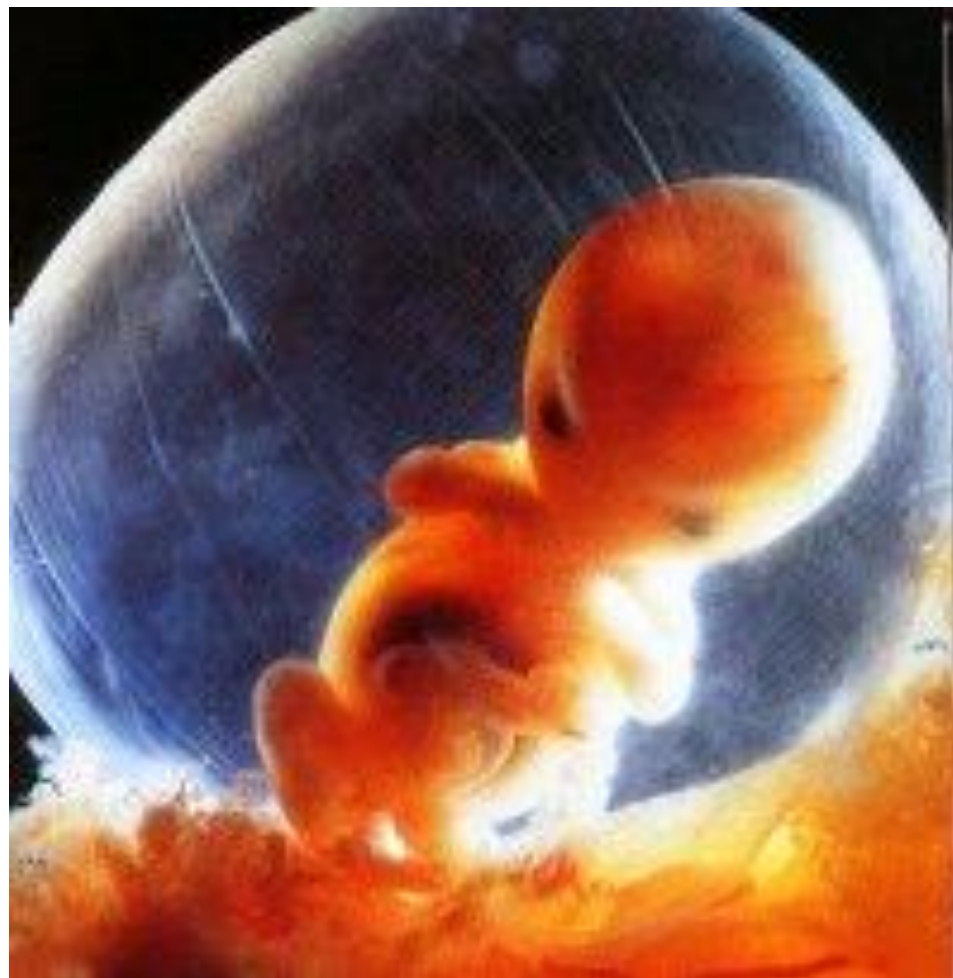
Embryo in Amniotic sac





# Fetus: 8-9 Weeks

- The unborn child, called a fetus at this stage, is about half an inch long.
- The tiny baby is protected by the amniotic sac, filled with fluid.
- Inside, the child swims and moves gracefully.
- The arms and legs have lengthened, and fingers can be seen.
- The toes will develop in the next few days.
- Brain waves can now be measured.



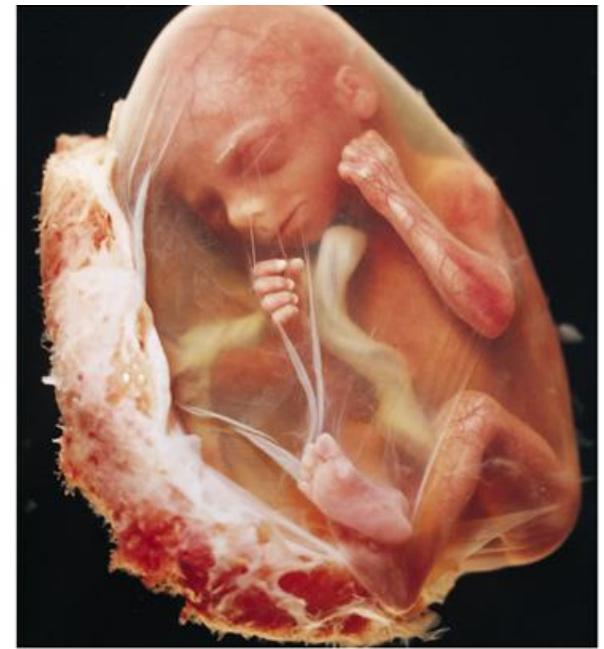


# Prenatal Development

At 9 weeks, an embryo turns into a fetus (c and d).



(c)



(d)





# 10 Weeks:

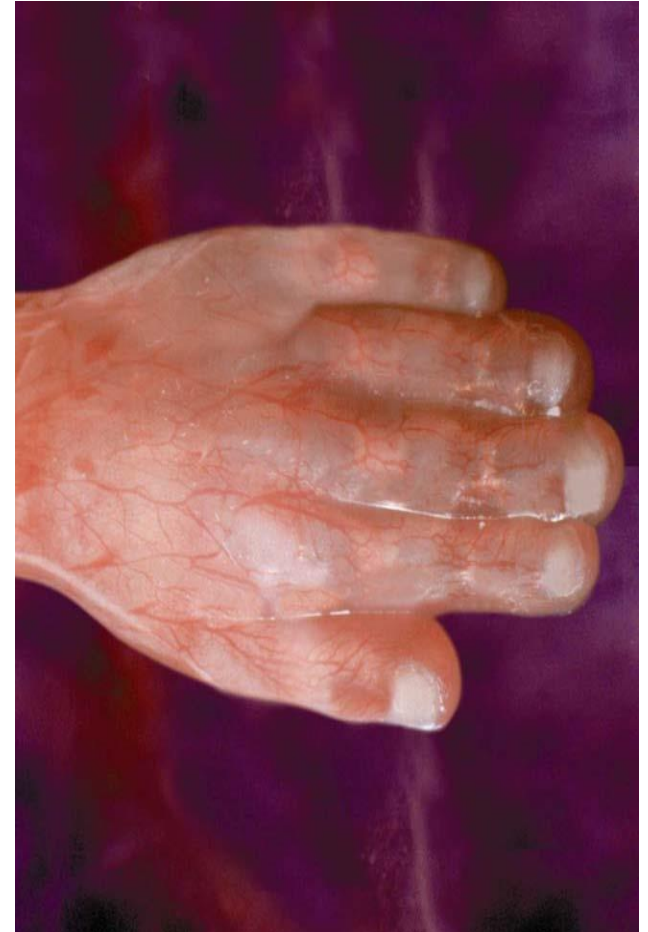
- The heart is almost completely developed and very much resembles that of a newborn baby.
- An opening the atrium of the heart and the presence of a bypass valve divert much of the blood away from the lungs, as the child's blood is oxygenated through the placenta.
- Twenty tiny baby teeth are forming in the gums; some babies are even born with teeth emerging from the gums.





## 12 Weeks:

The baby at 12 weeks:  
notice the webbing  
on the fingers, with  
the digits still fused





# Fetus: 12 Weeks

- Vocal chords are complete, and the child can and does sometimes cry silently.
- The brain is fully formed, and the child can feel pain.
- The fetus may even suck his thumb.
- The eyelids now cover the eyes, and will remain shut until the seventh month to protect the delicate optical nerve fibers.
- Notice head size and chest size in comparison to an adult





# Fetus at 14-15 Weeks:

- 14 weeks—
  - Muscles lengthen and become organized.
  - The mother will soon start feeling the first flutters of the unborn child kicking and moving within
- 15 weeks—
  - The fetus has an adult's taste buds and may be able to savor the mother's meals.
  - Foods the mother eats can affect movement of the baby





## Fetus at 4 Months (~16 weeks)

- Face is fully developed and
- A downy hair covers the skin.
- Face is fully formed.
- Eyes are fully formed but not yet functional.

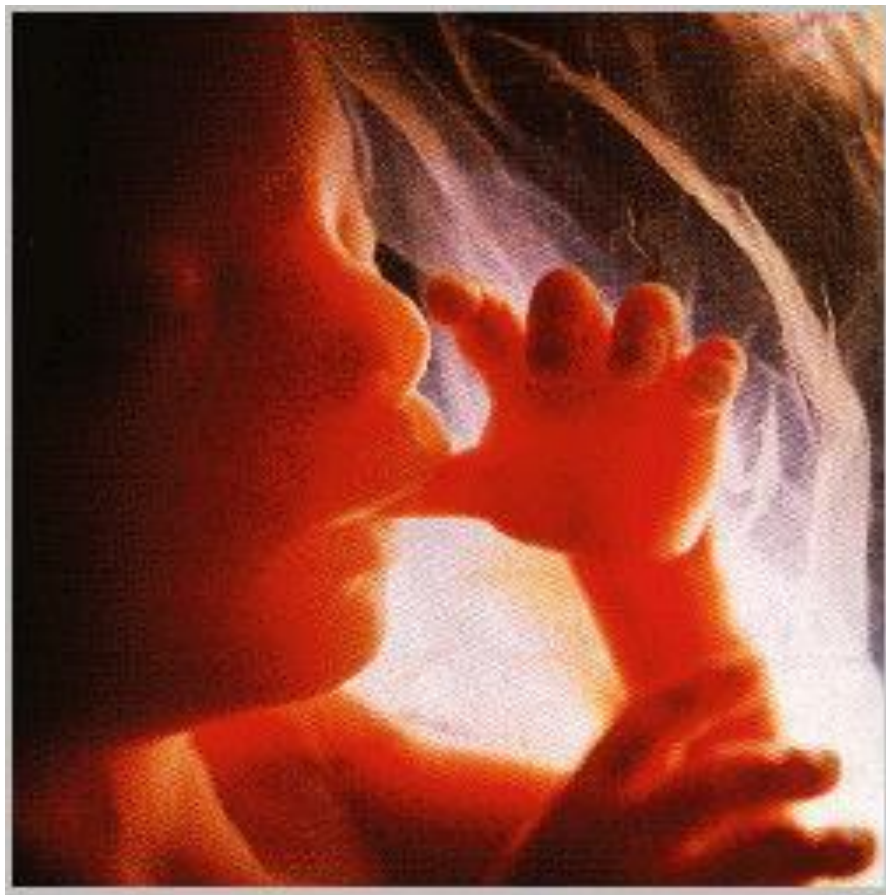






# 16 Weeks:

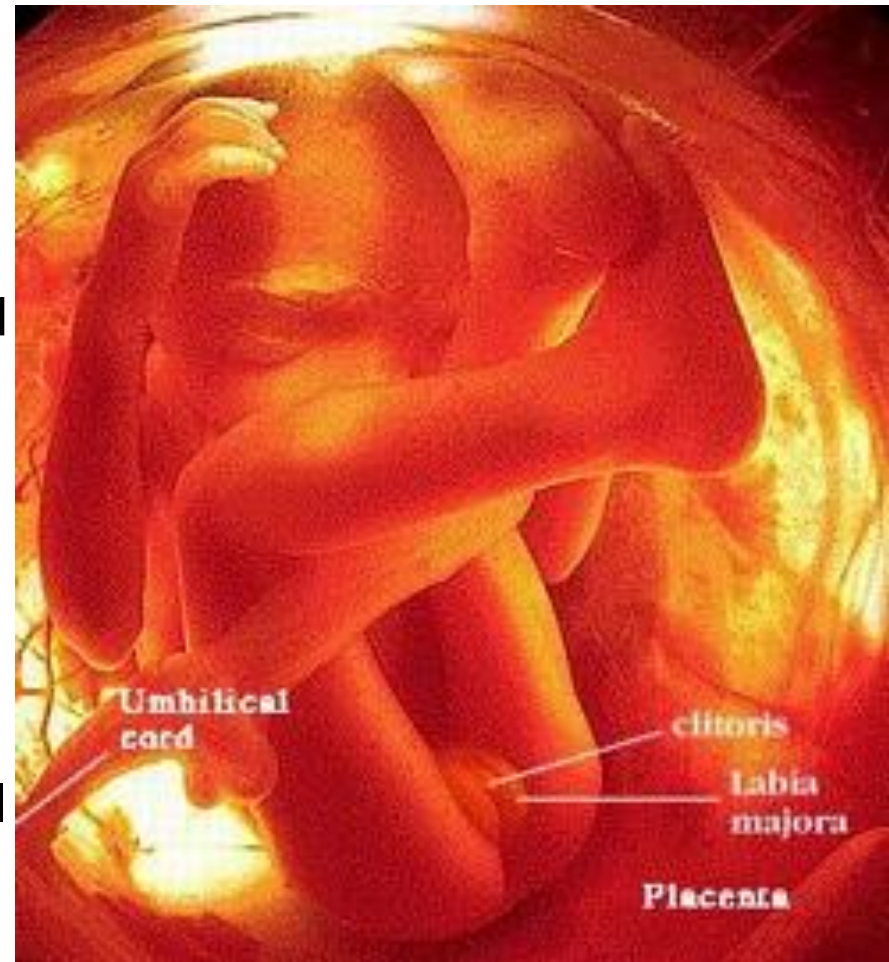
- Five and a half inches tall and only six to 10 ounces in weight
- Eyebrows, eyelashes and fine hair appear.
- The child can grasp with his hands, suck her thumb, kick, or even somersault





# 20 Weeks:

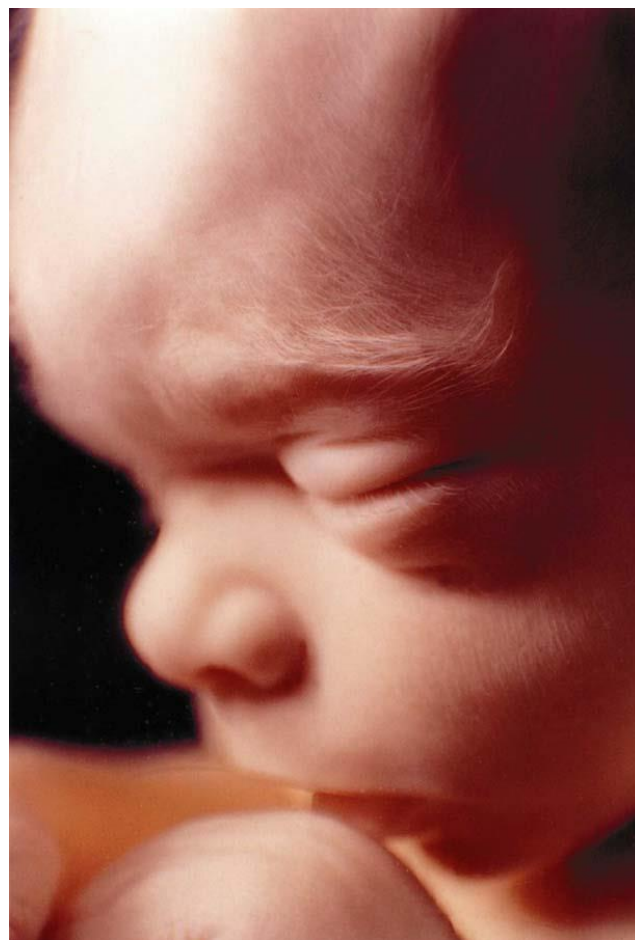
- The child can hear and recognize her mother's voice.
- Though still small and fragile, the baby is growing rapidly and could possibly survive if born at this stage.
- Fingernails and fingerprints appear.
- Sex organs are visible.
- Using an ultrasound device, the doctor can tell if the child is a girl or a boy. This is a baby girl.





## 5 Months:

- Beginning to form hair on all body parts
- Definite sleep/awake cycles now.
- REM sleep occurs.







## 5 Months:

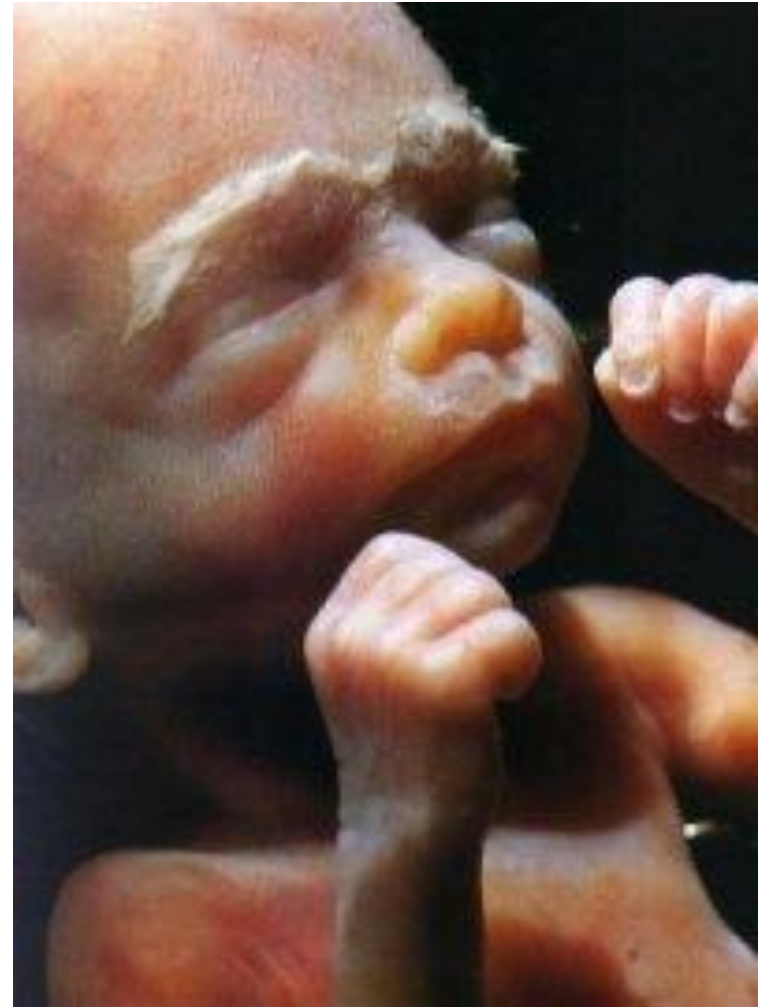
- Approximately 8-10 inches long and 1 to 2 pounds
- Body position is often still “head up”
- Baby is viable at this point with at least a 50/50 chance of survival outside the womb.





# 24 Weeks:

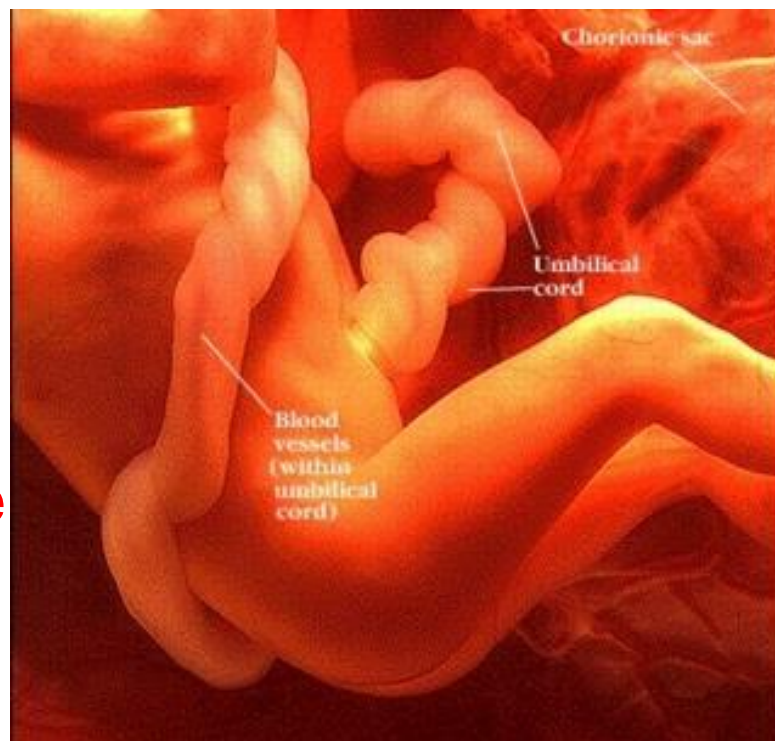
- Seen here at six months, the unborn child is covered with a fine, downy hair called lanugo.
- Its tender skin is protected by a waxy substance called vernix.
- Some of this substance may still be on the child's skin at birth at which time it will be quickly absorbed.
- The child practices breathing by inhaling amniotic fluid into developing lungs.





# 30 Weeks:

- For several months, the umbilical cord has been the baby's lifeline to the mother.
- Nourishment is transferred from the mother's blood, through the placenta, and into the umbilical cord to the fetus.
- If the mother ingests any toxic substances, such as drugs or alcohol, the baby receives these as well.





# 7 Months:

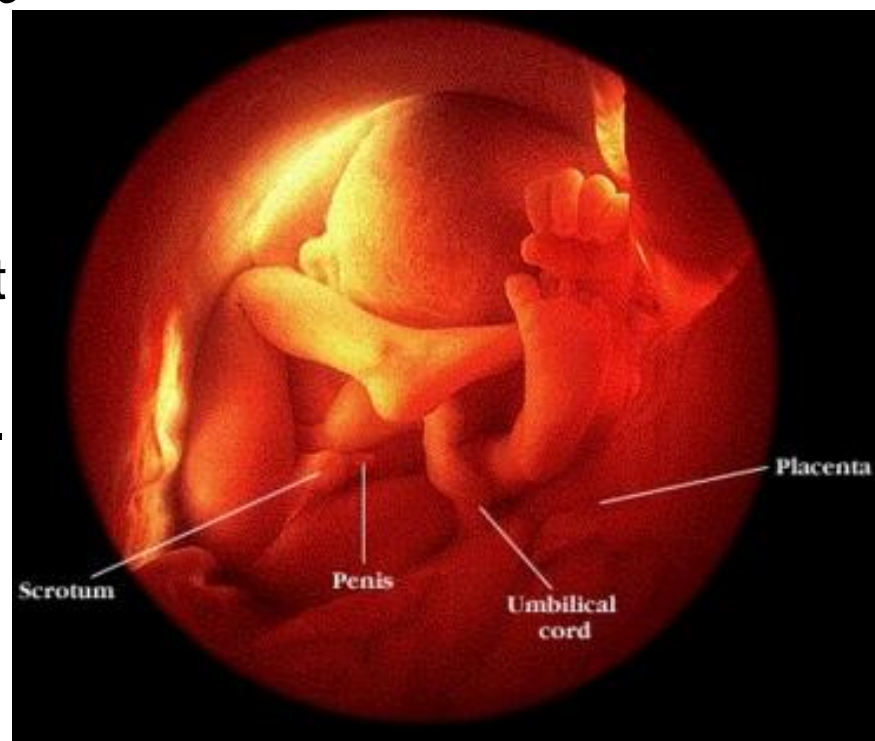
- Room is getting tight at this point.
- The baby is less able to move, squirms and pushes more than flutters and kicks.
- Most babies begins to get into a head down position getting ready for birth.





# 32 Weeks:

- The fetus sleeps 90-95% of the day with REM sleep dominating the sleep cycle, an indication of dreaming.
- The baby is very viable at this point, with a 75% or higher chance of survival.
- If the baby is born, the concerns are with adequate lung development. Final lung development does not occur until about 37 weeks.







# Birth: 38-42 Weeks

- 40 weeks is normal gestation
- The baby weighs on average 7 lbs. and is 20 inches long.
- At birth the baby can see, hear, move and recognizes the voices of her parents or others who have been near the mother.





# Fetus







# Prenatal Development

- Zygote – conception to 2 weeks
- Embryo – 2 weeks through 8 weeks
- Fetus – 9 weeks to birth
- **Placenta** – is an organ that...
  - Connects fetus to mother
  - Brings oxygen and nutrients
  - Takes away waste
- **amniotic fluid**
  - the fluid surrounding a fetus
  - fluid protects the developing baby by cushioning
  - promotes gastrointestinal development



# Prenatal Development

- Critical period
  - A time during development when influences have major effect
  - Example: there is a critical period for language development
  - We will revisit this concept later



# Teratogens

- Agents, such as chemicals and viruses that can reach the embryo or fetus and cause harm
- The earlier in the development the exposure occurs the more severe the harm
- Thalidomide, Narcotics, Radiation, Lead, Cigarette Smoke



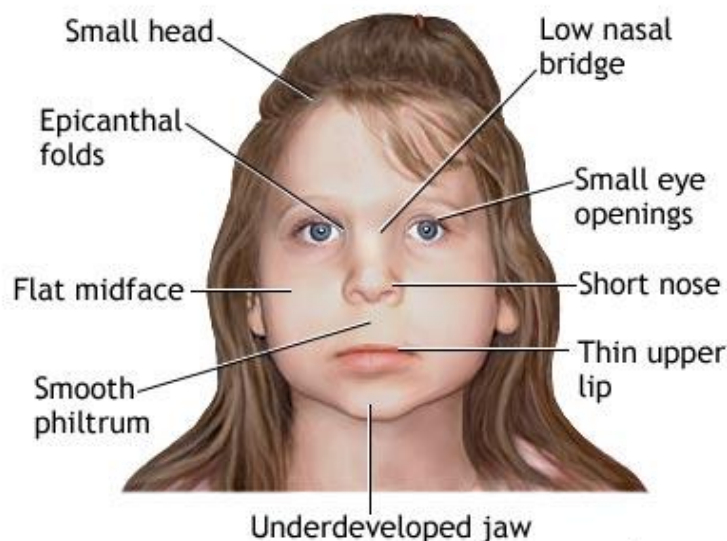
# Thalidomide





# Fetal Alcohol Syndrome

- Occurs in children of women who consumed large amounts of alcohol during pregnancy
- Alcohol easily passes through the placenta
- Symptoms include damages to the brain development, facial deformities, heart defects, stunted growth, and cognitive impairments





# Videos on Teratogens

- <https://www.youtube.com/watch?v=41n3mDoVbvk>  
– Thalidomide
- <https://www.youtube.com/watch?v=WfbztgLafPY>
- <https://www.youtube.com/watch?v=IXS-dpF-P9I>  
– FAS



# Other Problems

- **Genetic disorder:** Problems caused by inherited characteristics from parents
  - Cystic fibrosis: defective gene causes a thick, buildup of mucus in the lungs, pancreas and other organs (poor growth, difficulty breathing, lung disease)
- **Congenital Problem:** A problem or defect that occurs during prenatal development—exists at birth and sometimes before birth;  
Birth defects
  - Heart problems, cleft plate





# Reflexes (Automatic responses)

- **Rooting**
  - Baby turns its head toward something that brushes its cheek and gropes around with mouth
- **Sucking**
  - Newborn's tendency to suck on objects placed in the mouth
- **Swallowing**
  - Enables newborn babies to swallow liquids without choking
- **Grasping**
  - Close fist around anything placed in their hand
- **Moro**
  - If a baby's position is abruptly changed or if he is startled by a loud noise, he will make a hugging motion
- **Babinski**
  - Firmly touch foot of the baby, and their toes will fan out
- **Stepping**
  - Stepping motions made by an infant when held upright



# Temperament

**Temperament** refers to the “core” physical and emotional characteristic patterns

- emotional reactions and emotional self-regulation
- Thomas and Chess identified three basic types of babies
  - **Easy**
    - Good-natured, easy to care for, adaptable
  - **Difficult**
    - Moody and intense, react to new situations and people negatively and strongly
  - **Slow-to-warm-up**
    - Inactive and slow to respond to new things, and when they do react, it is mild



# Temperament

- Kagan has added a fourth type
  - Shy child
    - Timid and inhibited, fearful of anything new or strange
- Temperament may predict later disposition



# Perceptual Abilities

- Vision
  - Clear for 8-10 inches
  - Good vision by 6 months
- Depth perception
  - Visual cliff research
- Other senses
  - Ears are functional prior to birth
    - Hearing is the dominant sense
    - Indian Mythology – “OM”
  - Infants particularly tune in to human voices
  - Taste and smell are fully functional



# Depth Perception 6-12 Months





# Visual Cliff Test



Visual cliff may suggest  
that depth perception is  
partly innate

- The assumption was that if a child had developed depth perception, he or she would be able to perceive the visual cliff and would be reluctant or refuse to crawl to the caregiver.
- perceive depth emerges sometime around the age that an infant begins to crawl.



# Cognitive Development in the Newborn

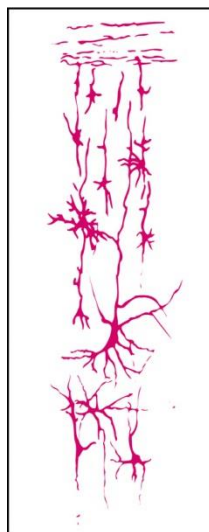
- **Habituation** – decreasing responsiveness with repeated presentation of the same stimulus
  - We are interested in new information so we pay attention to it
  - But if its not new anymore... we lose interest and focus
  - It is a sign that learning is taking place
  - Example: Peek-a-boo
  - Example: Horror movies (the more you watch the less one responds to gore)



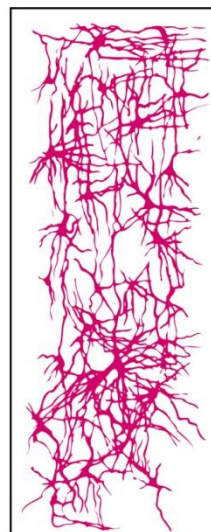


# Developing Brain

The developing brain overproduces neurons. Peaking around 28 billion at 7 months, these neurons are pruned to 23 billion at birth. The greatest neuronal spurt is in the frontal lobe enabling the individual to think rationally.



At birth



3 months



15 months



# Maturation

- The **development** of the brain unfolds based on **genetic instructions, causing various bodily and mental functions to occur in sequence is called maturation**
  - Order of maturation is almost universal
  - babbling comes before talking
  - standing comes before walking
- Maturation sets the basic course of development, while experience adjusts it
- **Cephalocaudal**: we develop from “head” to “toe”
- **Proximodistal**: we develop from center of the body to extremities



# Motor Development

- **Developmental Norms**

- Ages by which an average child achieves various developmental milestones
- First, infants begin to roll over. Next, they sit unsupported, crawl, and finally walk.
- **Experience has little effect on this sequence.**



**Sitting  
unsupported  
6 months**



**Crawling  
8-9 months**



**Beginning  
to walk  
12 months**

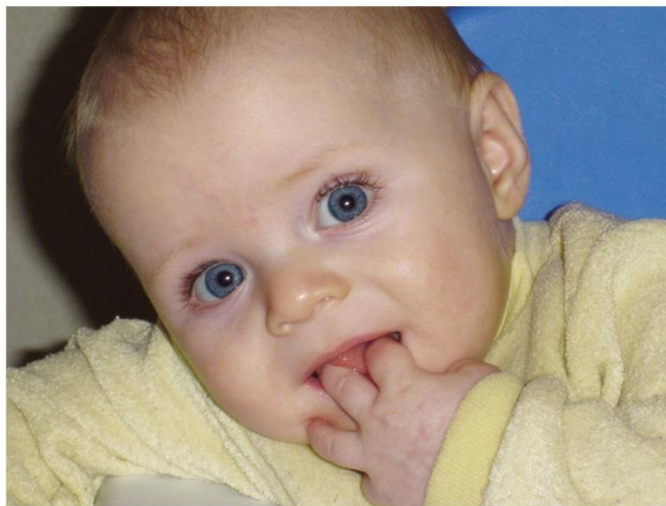


**Walking  
Independently  
15 months**



# Maturation and Infant Memory

The earliest age of conscious memory is around 3½ years (Bauer, 2002). A 5-year-old has a sense of self and an increased long-term memory, thus organization of memory is different from 3-4 years.



Developing a sense of “self.”



Kicking moves the mobile, will be retained for about a month.