PSYCHOLOGY OF HUMAN DEVELOPMENT AND LEARNING

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What have you heard about Psychology?
What do you know about Psychology?

WEEK 1

- Definition of Psychology
- Myths about Psychology
- Pseudo Psychology
- Branches and Subfields of Psychology
- Definitional of Developmental Psychology and Learning
- Growth, Maturation and Development
- Domains of Development
- Principles of growth and development and its educational implications

Core Competencies of the New Curriculum

1. Critical thinking and Problem-solving.
2. Communication and Collaboration.
3. Creativity and Innovation.
4. Cultural Identity and Global Citizenship.
5. Digital Literacy.
6. Leadership and Personal Development.

Definition and Meaning of Psychology

- **Psychology** – comes from the Greek words **"Psyche"** meaning **"mind"** and **"logia"** or **"logos"** meaning, "the study of something".

- Psychology – The scientific study of overt behavior and mental processes (Coon & Mitterer, 2016)

- **Keywords:** Science, behaviour (overt-covert), mental processes

- Psychology helps to explain how we think, feel and act both individually and as a group

Covert and Overt Behaviours

- **Behaviours** are responses or reactions we make or activities we engage in.

- **Overt behaviour** is that which can be seen and measured.

- Some examples of overt behaviour include walking, dancing, running, using body language such as hand gestures and facial expressions.

- **Covert behaviour** are those which go on inside the mind. They include such private events as thinking, imagining, reasoning, reading in silence etc.

Myths and Misconceptions About Psychology

- Psychology is about mind or face reading
- Psychology is all about common sense
- People who study psychology are mentally disturbed
- Psychologist work only in hospitals or work with only the mentally ill
- Psychologist have spiritual powers and can foretell the future

Pseudo Psychology

❖It refers to any false and unscientific system of beliefs and practices that is offered as an explanation of behaviour. Examples include:

✓Palmistry

✓Phrenology

✓Graphology

✓Astrology

Branches of Psychology

- **Pure Psychology** is a theoretical science that seeks to broaden and develop human understanding.
- Pure psychologists are interested in researching and recognizing processes and pathways that underlie individual behaviours.

- **Applied psychology** is practical and seeks to extend and improve the aspects and phases of human life and behaviour.

- They apply the theories and concepts of psychology to describe, explain, forecast and control behavior in various fields and industries

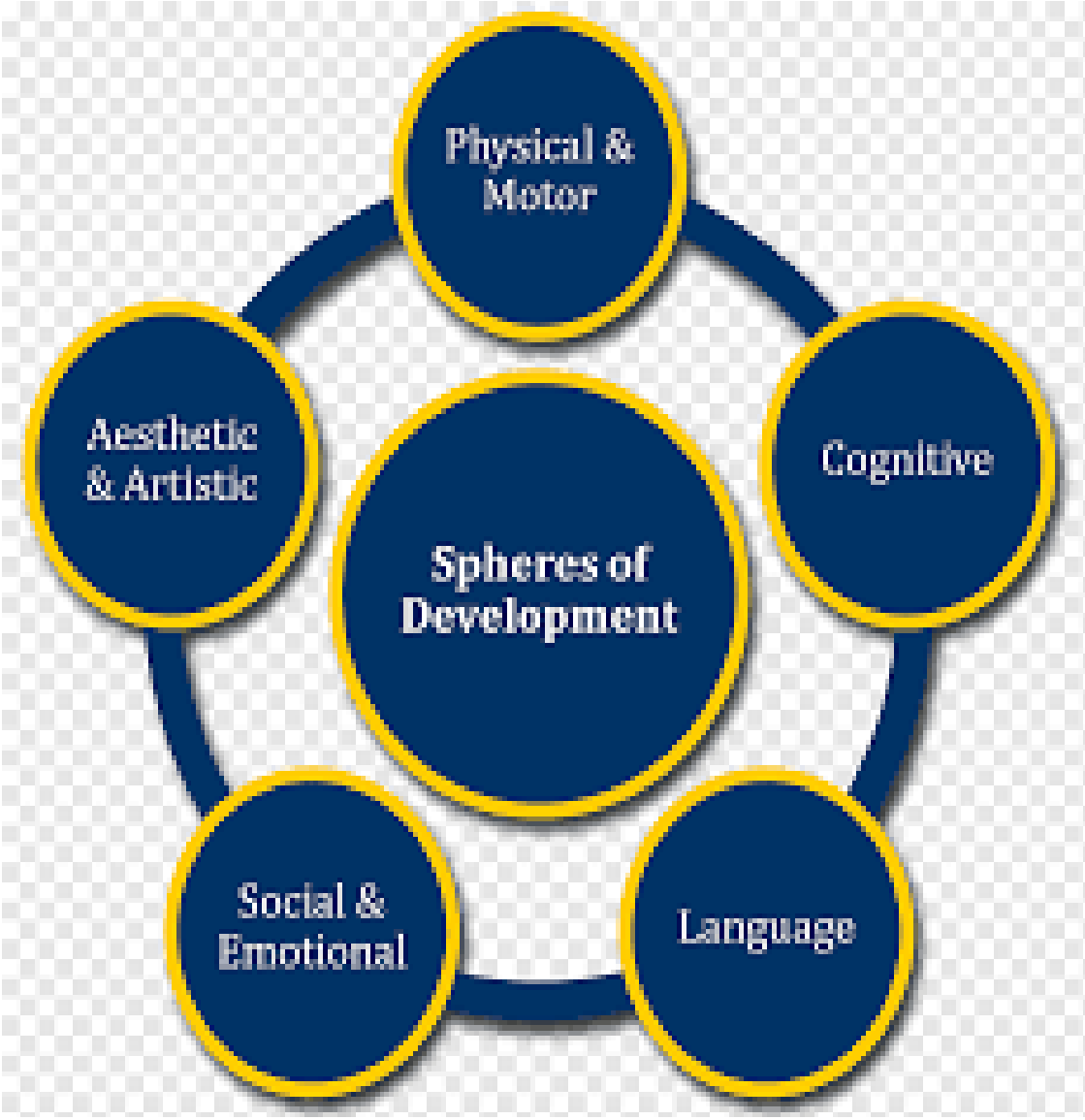
Subfields in Psychology

Developmental Psychology

- This field focuses on human growth and changes across the lifespan, including physical, cognitive, social, intellectual, perceptual, personality and emotional growth (American Psychological Association, 2020).

- Psychologists in this field study how peo ple grow, develop and adapt at different life stages.

- They conduct research designed to help people reach their full potential.



Goals of Developmental Psychology

- **Description** – This is to describe behaviours. One should be able to describe what transpires across the lifespan of the human organism.
- **Explanation** – This is to explain behaviour. Why do people do the things they do? What factors contribute to the child's way of thinking and talking?
- **Prediction** – To make predictions about how one thinks and act to predict developmental changes. When prediction is successful, it can help the teacher or psychologist to make guesses
- **Change/Control** – To help influence and control behaviour to make lasting changes in people's lives.

Growth, Development, Maturation, and Learning

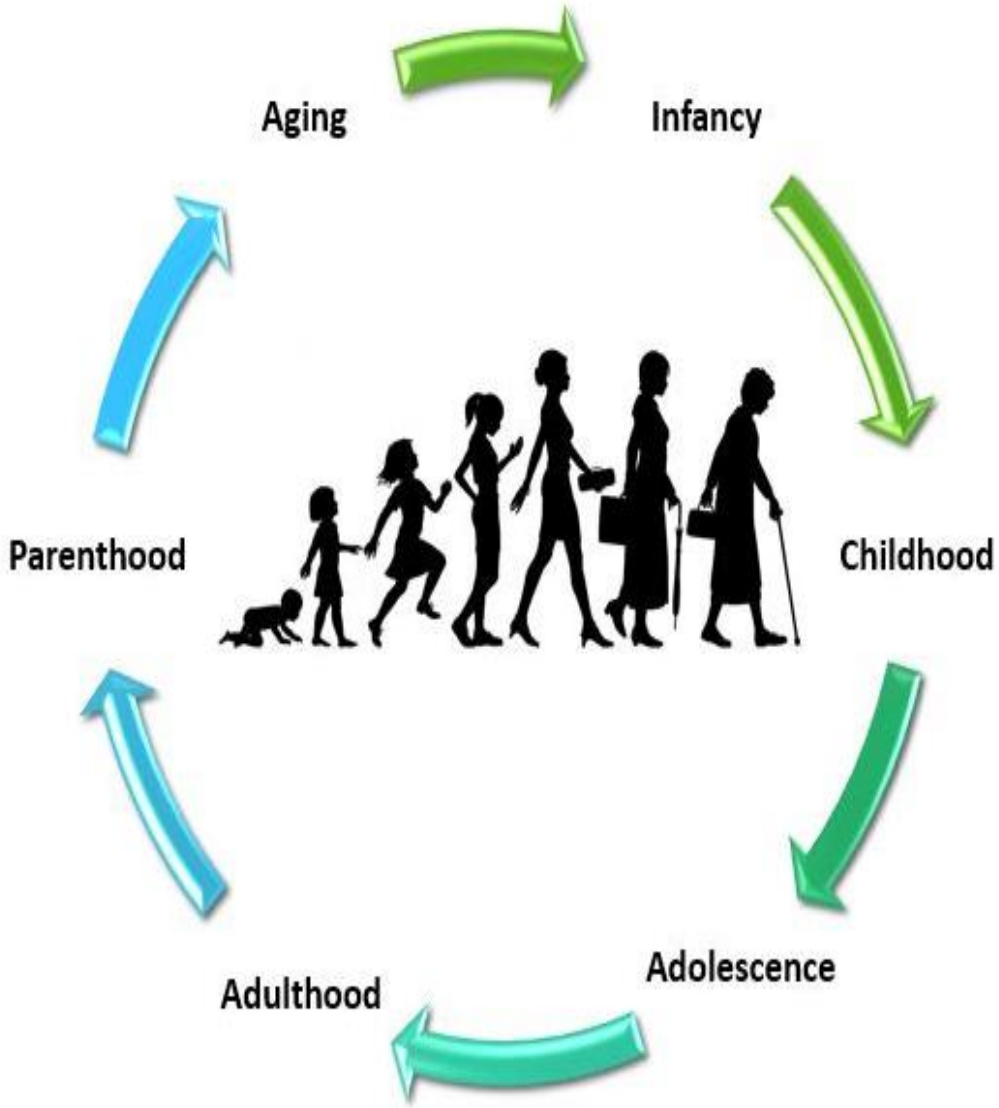
- **Growth** - is used in a purely physical sense.
- It generally refers to an increasing size, length, height, and weight.
- Growth refers to changes in structure or physics only.
- Growth is not a continuous process as it starts with conception but ends at some particular age.
- Growth is always observable and measurable or quantifiable.
- Growth is influenced by genetics.

Growth, Development, Maturation, and Learning

- **Development** refers to all aspects such as physical, cognitive, language, emotional, social etc. (growth and maturation).

- **Development** is defined as the orderly and progressive changes that do occur according to time as organisms move from conception to death (**psychological, emotional, perceptual, intellectual, physical**).

- In **development,** The pattern of movement of change that begins at conception and continues through the life span, which includes growth and decline.



Growth, Development, Maturation, and Learning

- **Maturation** is when certain functions are performed by mind and body automatically.

- **Maturation** – It is the intellectual or emotional process of development. Unlike growth, maturation is often not quantifiable and influenced by genetics.

- In **maturation,** it means that the potential traits for different activities like sitting, crawling, creeping, walking etc.) are present at birth in the individual and are controlled by heredity. Simply put, pattern of human development determined by genetic factors is called **maturation.**

- It can be said that it is the qualitative change that occurs in an individual at a particular stage in life for the performance of a certain task.

Growth, Development, Maturation, and Learning

- **Learning** – It is when a person acquires knowledge or experience.

- **Learning** requires genetic and environmental influences.

- Therefore, learning is defined as knowledge gained through study or a change in behaviour of an individual through experience or practice.

- The main difference between **learning** and **maturation** is that **learning** is the process of acquiring knowledge, skills, and behaviours, whereas **maturation** is the process of becoming mature or developed.

- Thus, **maturation** is a mental and physical growth, whereas **learning** is mainly a mental process.

Growth and Development Differed

Growth	Development
It is refers to increase size, height, weight.	It is refers to change the structure from or shape and Improvement in functioning.
It is a concern with the change in a particular aspect.	It implies the organization of various aspects of the body and behaviour as a whole.
Growth is measurable.	Development is observable.
Maturity is the end point of growth.	Development does not end but continues throughout life.
Growth is physical.	Development can be physical social, emotional & intellectual etc.
Growth is Quantitative.	Development is Qualitative.

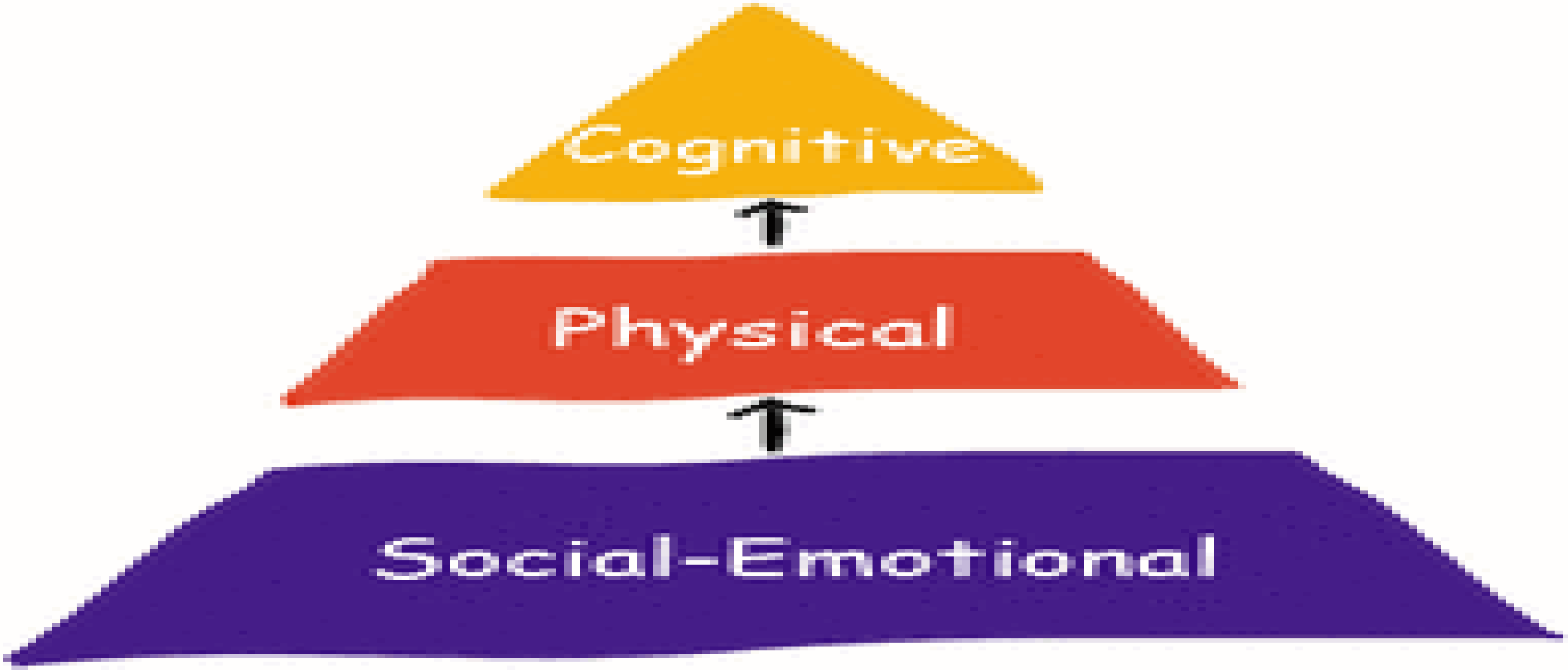
Maturation and Development Differed

	Maturation		Development
1.	Maturation refers to the changes that follow an orderly sequence.	i.	Development does not necessarily refer to orderly sequence.
2.	Maturation is largely dictated by the genetic blueprint which produces commonalities in the growth.	ii.	Development need not to be identified with genetic changes and growth.

Maturation and Learning Differed

LEARNING	MATURATION
Process of acquiring knowledge, skills, and behaviours through experience, training and education	Process of becoming mature or developed, both mentally and physically
Mainly a mental process	Both mental and physical development
Happens through experience, practice, training, or education	Occurs through individual growth
Happens because of external stimuli	Does not need any external stimuli

Domains of Development



Domains of Development

- The **cognitive domain** is generally associated with a child's ability to learn, remember, and solve problems.
- Cognition refers to intellect or mental abilities and involves processing and using information.
- The skills in the cognitive domain, along with language skills, are those usually associated with readiness for academic activities.

Domains of Development

- The **physical domain** is related to a child's ability to control and use large and small muscles of the body.
- During infancy, motor abilities typically developin a specific sequential order.
- However, it is important to note that the rate of motor development differs among children (e.g., standing, walking).
- As a child's motor skills develop there are likely to be increases in his/her interest in and attention items in the environment.

Domains of Development

- The **socio-emotional domain** those which allow a child to engage in meaningful social interaction with adults and peers and to develop his/her own self-concept.

- Milestones in this domain are centered on children gaining better understandings of their own emotions and the emotions of others.

- Engaging in play activities is an important aspect of the development of personal-social skills because it is through play that children learn how to interact with others.

Principles of Human Growth and Development in Learning

1. Growth and Development is directional.

- Development proceeds from the center of the body outward.
- This is the **principle of proximodistal development** that describes the direction of development (from nearer to far apart).
- It means that the spinal cord develops before outer parts of the body.
- The child's arms develop before the hands and the hands and feet develop before the fingers and toes.

Principles of Human Growth and Development in Learning

- Direction of development proceeds from the head downwards.
- This is called the **cephalocaudal principle.**
- According to this principle, development occurs from head to toe.
- The child gains control of the head first, then the arms and then the legs.

Principles of Human Growth and Development in Learning

2.Growth and Development is Asynchronous:

- Individual differences in the development process.
- Even though the pattern of development is similar for all children but the rate of development varies among children.
- Children differ from each other both genetically and environmentally.
- So, both biological factor and environmental situations have their impact on individual's development which leads to individual differences in development.

Principles of Human Growth and Development in Learning

3.Growth and Development is Continuous:

- Development continues throughout the life of an individual.
- This process takes place in interaction with the environment in which a person lives.
- A child has limited knowledge and experiences about his environment.
- But as he develops, he acquires more information through explorations and adds to the skills already acquired and the new skills become the basis for further achievement and mastery of skills.

Principles of Human Growth and Development in Learning

4. Development is Sequential:

- This also called **normative development.**

- Every species, follows a pattern of development to it.

- This pattern is same for everyone.

- E.g. A child crawls before he creeps, stands before he walks and babbles before he talks.

Principles of Human Growth and Development in Learning

6. Development proceeds from general to specific:

- In every type of development, general activity proceeds specific activity.
- E.g. infants after birth are able to make general movements with the eyes, arms and legs.
- After the perfection of these general movements, infants learn to make specific movements.

Principles of Human Growth and Development in Learning

7. Growth and Development is Charcterised by Maturation:

- Maturation refers to the sequential characteristic of biological growth and development.
- The biological changes occur in sequential order and give children new abilities.
- Changes in the brain and nervous system account largely for maturation. These changes in the brain and nervous system account largely for maturation.
- The child's environment and the learning that occurs as a result of the child's experiences largely determine whether the child will reach optimal development.
- An enriched environment and varied experiences help the child to develop his/her potential.

Principles of Human Growth and Development in Learning

8. Development is Gradual: Development does not come all of a sudden. It is cumulative in nature.

9. Rate of development varies from person to person: Development rate is not uniform.

- Boys and girls have different development rates and each part of the body has its own particular rate of growth.

- There are periods of intensity and equilibrium and there are periods of imbalance.

Principles of Human Growth and Development in Learning

10. Growth and Development is Predictable:

- Human development is predictable during the life span.

- Although this development is influenced by both genetic and environmental factors, however, it takes place in a pre-defined manner.

- Specific areas of development, such as: different aspects of motor development, emotional behaviour, speech, social behavior, concept development, goals, intellectual development etc. follow predictable patterns.

Principles of Human Growth and Development in Learning

11. Growth and development is of both hereditary and influenced by environmental factors: For example, poor nutrition can mare the growth of an individual. Reduce intellectual abilities and stature.

12. Most traits are correlated in development: It is known in development that most of the traits are correlated or related.

❖For instance, a child whose mental development is above average, is also superior in so many other aspects like health, sociability and special aptitudes.

❖A child who has a good health can be active socially and intellectually. This means that there is constant interaction between all the factors of development.

Educational Implications of the Principle

1. The directions of human development, e.g. simple to complex, general to specific, must be considered in planning activities for the children to assure satisfaction.

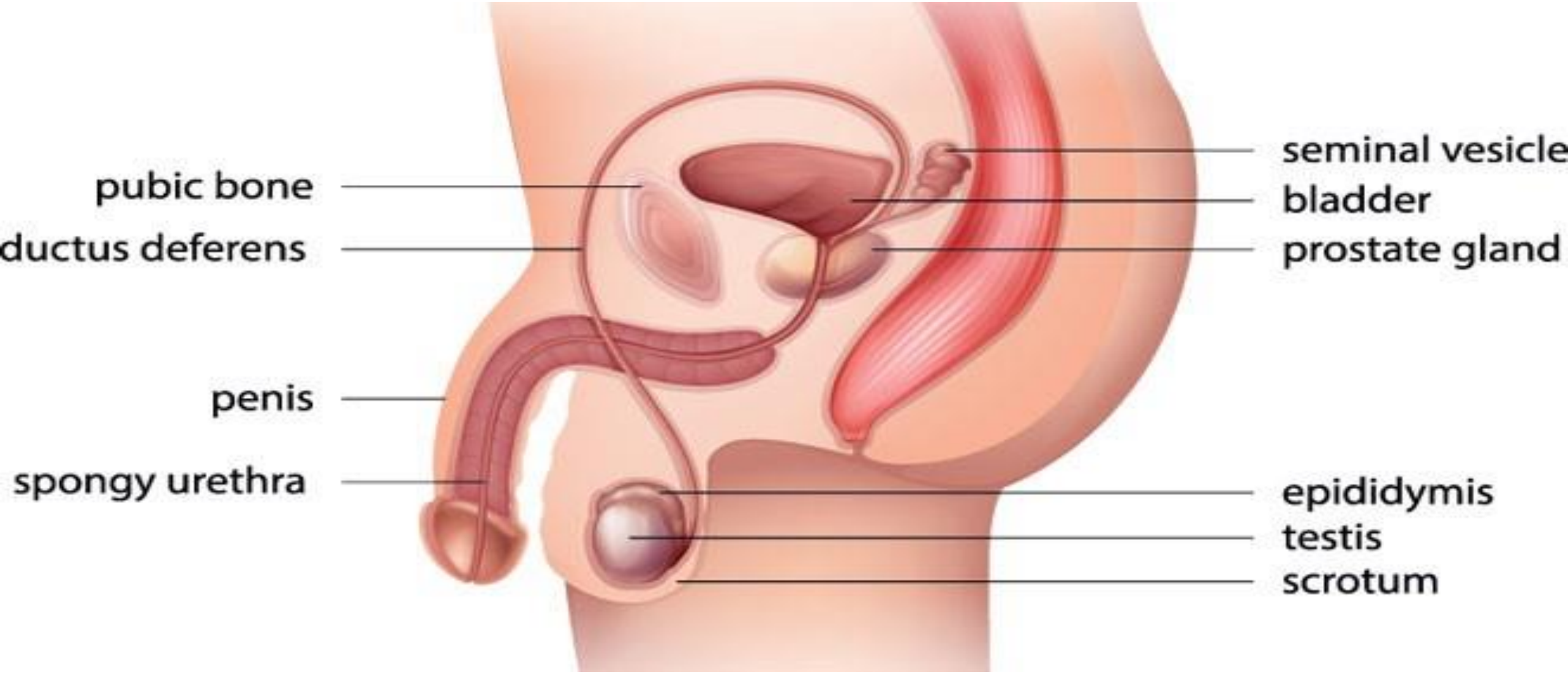
2. Taking into consideration the individual variation in growth, the school programmes must be adjusted accordingly to suit students variations.

3. Teachers and parents should consider the maturation of the pupils or students so they do not demand of students what is beyond their stage.

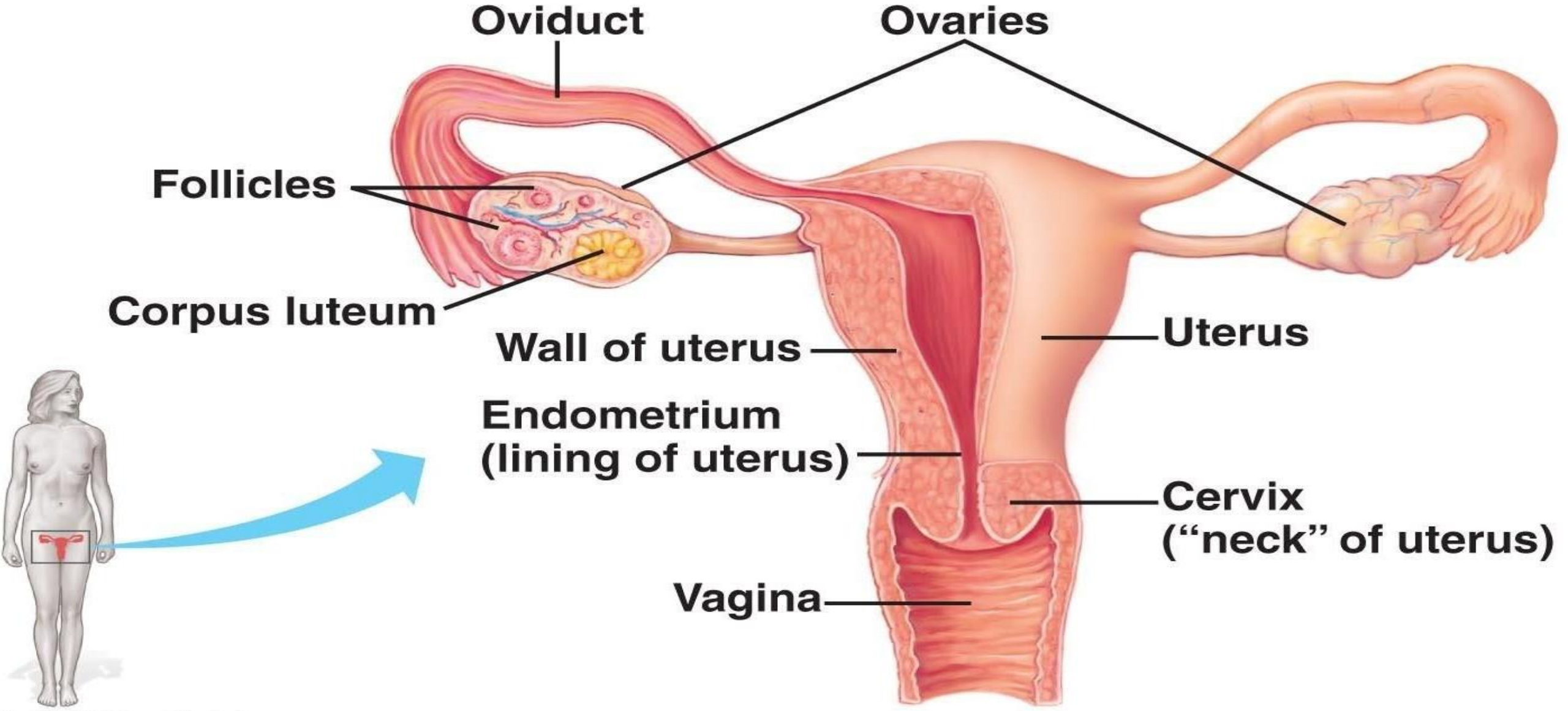
WEEK 2 - Conception and Prenatal Development

- Male and Female Reproductive Systems
- Conception
- Prenatal Development
- The germinal stage
- The embryonic stage
- The fetal stage
- Labour

Male Reproductive System



Female Reproductive System



Conception

- Foundation of life starts from **conception**
- Each month inside a woman's ovaries, a group of eggs starts to grow in small, fluid-filled sacs called follicles.
- Eventually, one of the eggs erupts from the follicle (**ovulation**). It usually happens about **2 weeks** before your next period.
- After the egg leaves the follicle, the follicle develops into something called the corpus luteum. The corpus luteum releases a hormone that helps thicken the lining of your uterus, getting it ready for the egg..
- The egg travels to the **Fallopian Tube**

Conception Cont'd

- After the egg is released, it moves into the fallopian tube. It stays there for about **24 hours**, waiting for a single sperm cell (48 hours) to fertilize it.

- After intercourse, conception occurs when a sperm cell combines with an egg cell to form zygote.

- If no sperm is around to fertilize the egg, it moves through the uterus and disintegrates. Your hormone levels go back to normal.

- Your body sheds the thick lining of the uterus, and your period starts (**menstruation**).

Conception Video

Types of Conception

1. Normal Conception: A Man must produce healthy sperms to be able to fertilise the healthy eggs produced by the woman.

Types of Conception

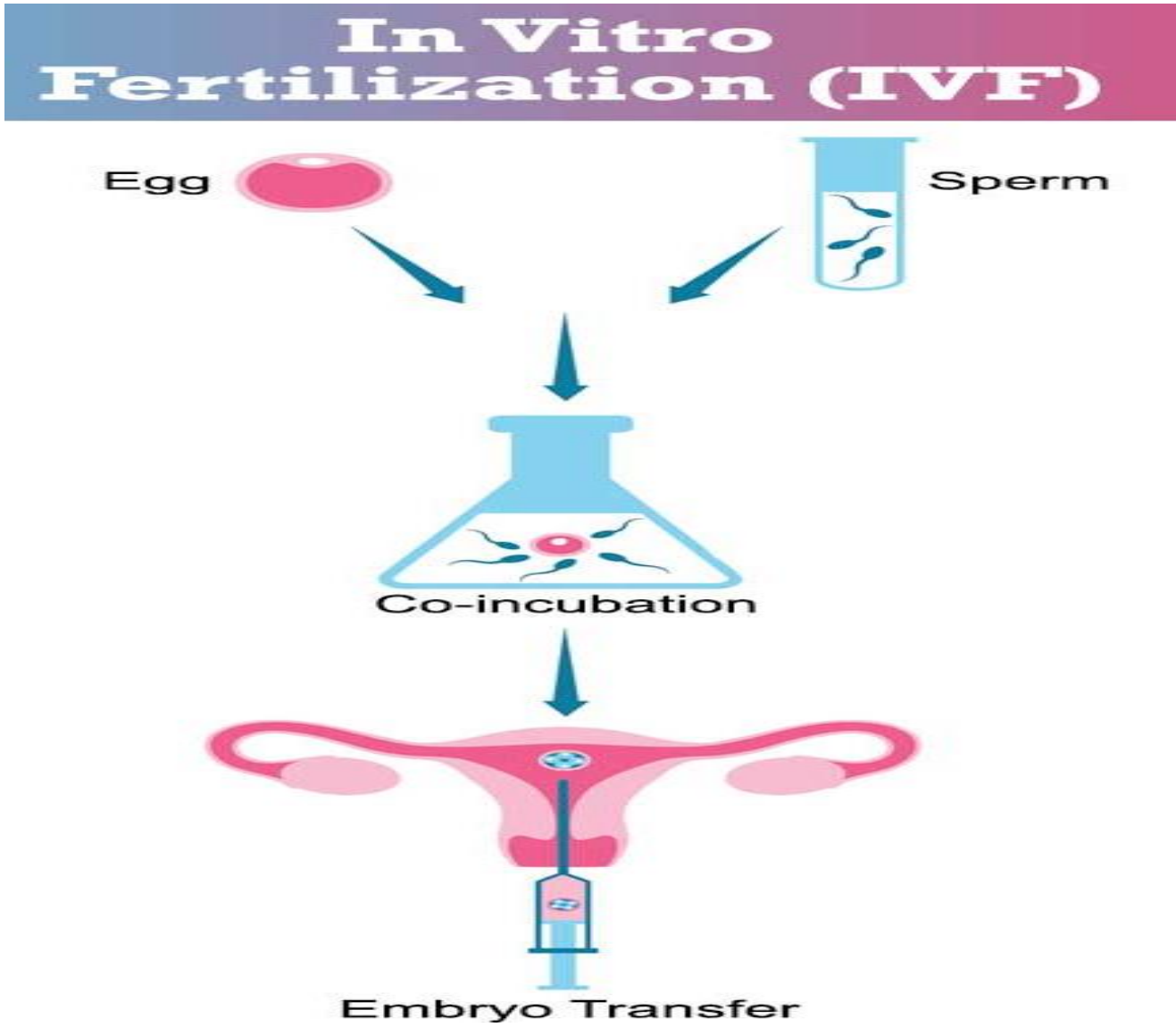
Artificial Conception

a) **Surrogate Mothering:** This method involves insemination of sperms from the intended father into the surrogate mother.

Types of Conception

Artificial Conception

b) In vitro Fertilization: This is a process of fertilisation where an egg is combined with a sperm outside the body (in vitro).



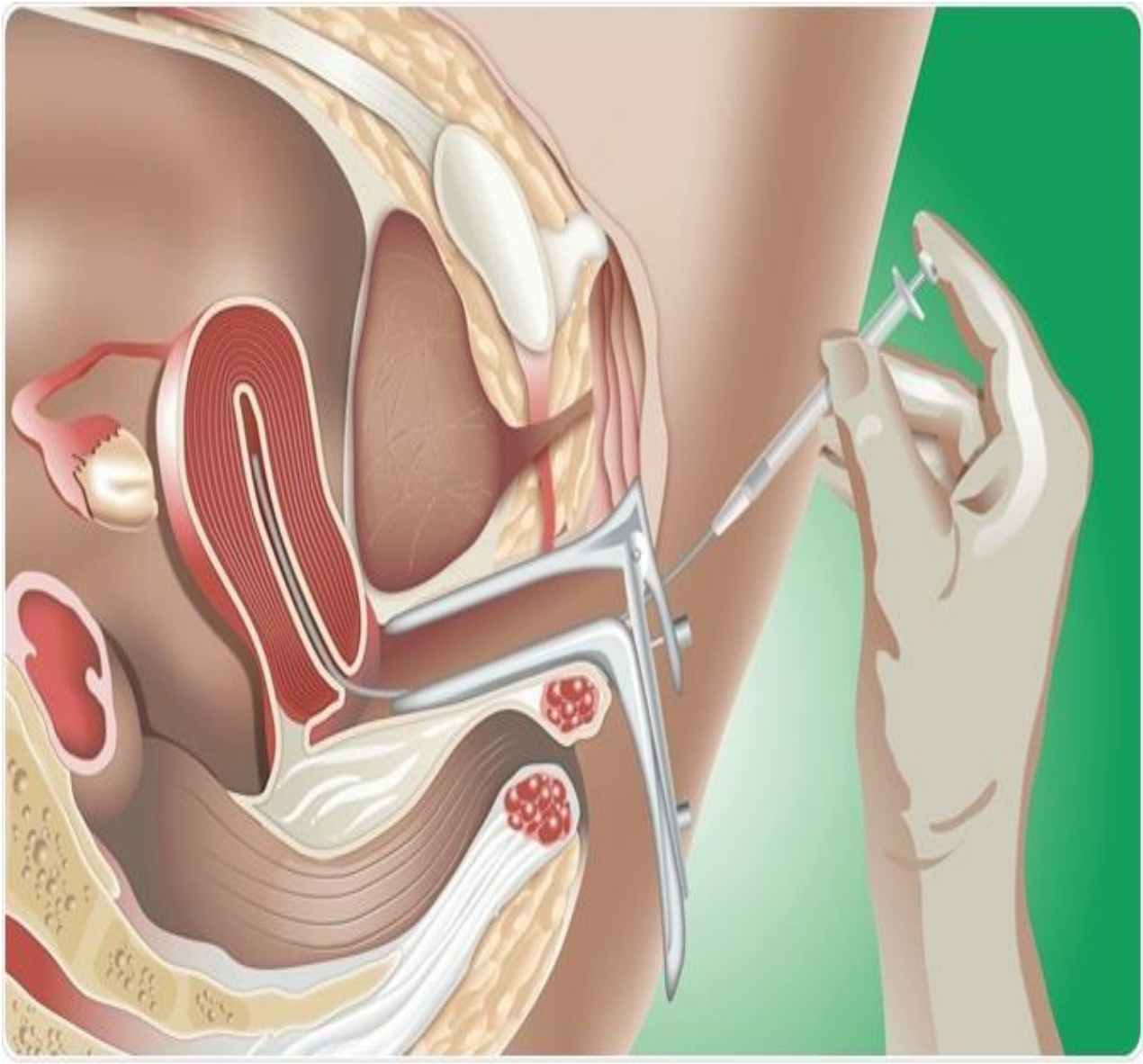
- The process involves monitoring and stimulating a woman's ovulatory process, removing an ovum or ova from the woman's ovaries and letting sperms fertilise them in a laboratory.

Types of Conception

Artificial Conception

c) Artificial Insemination:

Artificial insemination is the deliberate introduction of sperm into a female's cervix or uterine cavity for the purpose of achieving a pregnancy other than sexual intercourse.



Prenatal Development

- The life of every human being begins at the time of conception of a new individual when the nucleus of the sperm (male reproductive cell or gamete) fuses with the nucleus of the ovum (egg) in the fallopian tube (oviduct)

- The fertilised ovum is called Zygote.

- The Zygote immediately begins a process of growth and development.

- The reproductive cells contain the hereditary materials of life-chromosomes and deoxyribonucleic acid (DNA) molecules.

Prenatal Development

- The very time of conception (i.e., fusion of the gametes) marks the beginning of human life.
- Ovum and sperm respectively have 24 hours and 48 hours life span (Harris, 1983).
- A fertilised egg contains 23 pairs of chromosome – one pair is called the sex chromosome and is responsible for determining the sex of the child.
- In a normal female, the sex chromosomes are XX
- When eggs are formed, the XX chromosome pair segregates. Each contains a single chromosome.

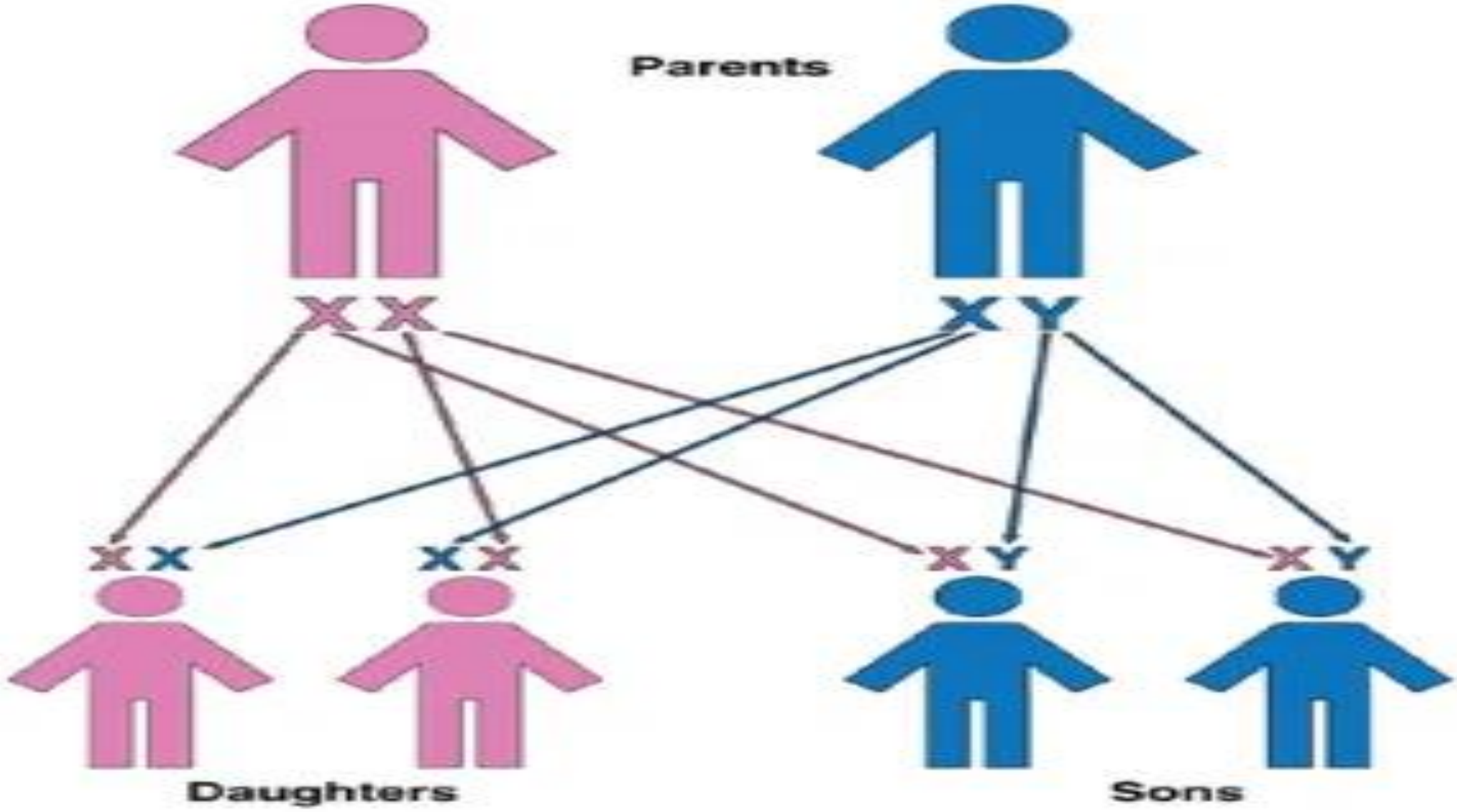
Prenatal Development

- In the normal male, one member of the pair is an X chromosome and the second member is a Y chromosome.

- If the male sperm with an X chromosome fertilises the ovum with an X chromosome, the result is a female child (XX).

- If the sperm with a Y chromosome fertilises an ovum with an X chromosome, the result is a male child (XY).

Gender/Sex Determination

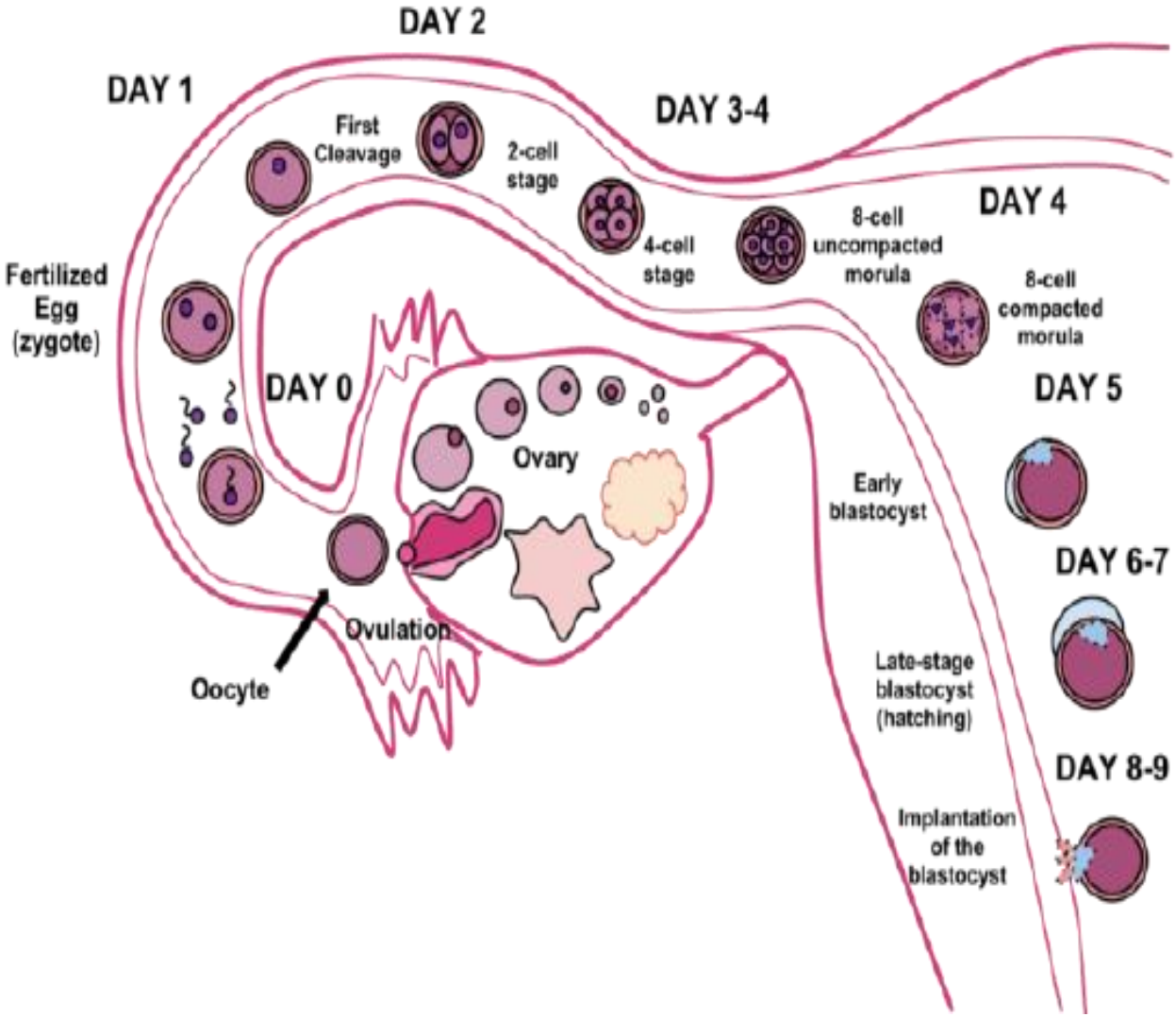


Prenatal Development

- Usually, it takes **9 months** for the baby to fully develop before birth.
- Different fields have different stages of characterizing the developmental stage before birth. In medicine, it is divided into **three trimesters (3x3)**.
- In Psychology, this period is divided into three stages:
- The **germinal stage** (0-2 weeks)
- The **embryonic stage** (3-8 weeks)
- The **fetal/foetal stage** (9 weeks-birth)

The Germinal Stage

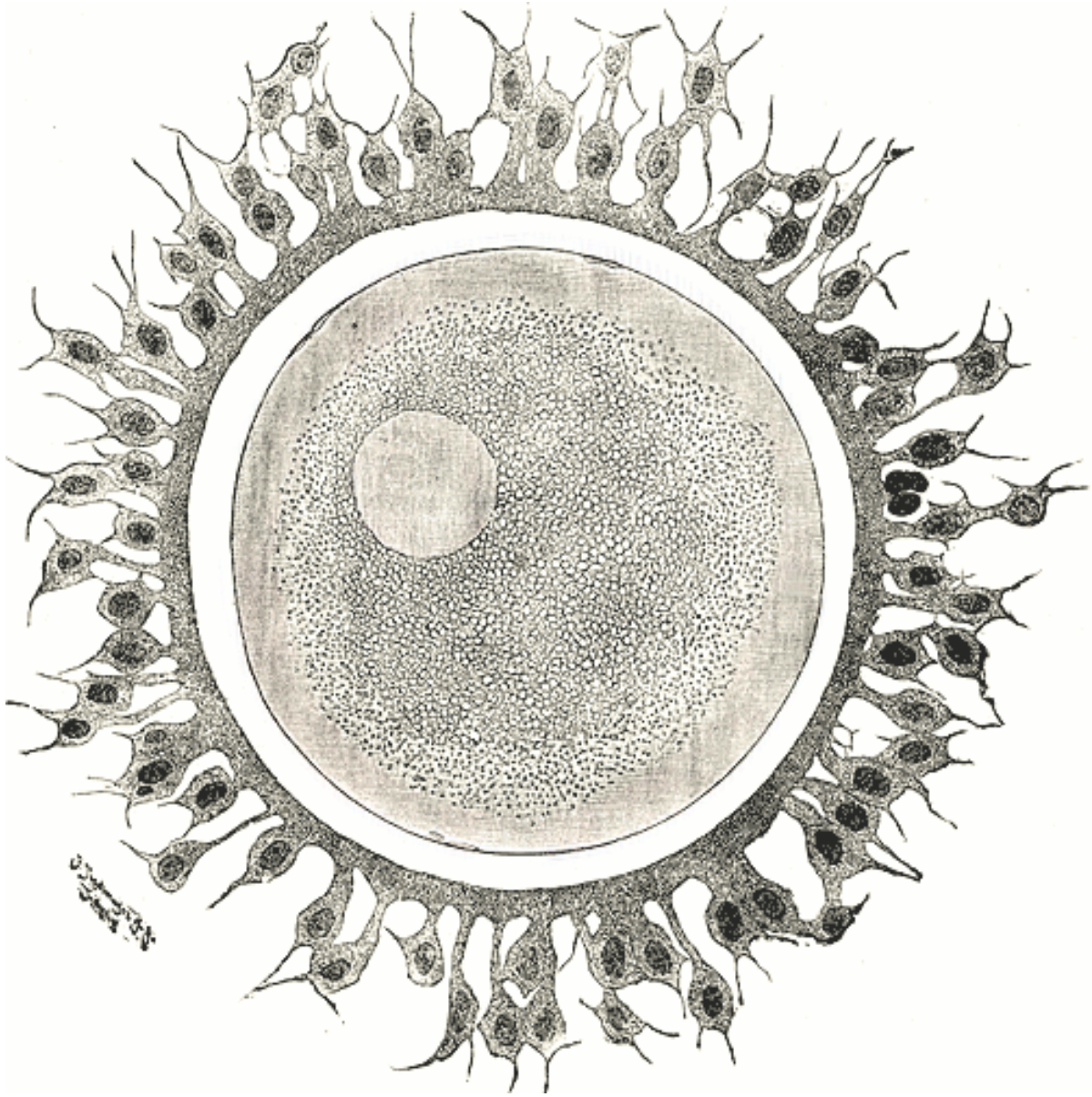
- Rapid cell divisions take place at this stage.
- The zygote soon begins to divide rapidly in a process called cleavage, first into two identical cells called **blastomeres or blastocyst,** which further divide to four cells, then into eight, and so on.
- The group of diving cells begins to move along the fallopian tube toward the uterus.



The Germinal Stage

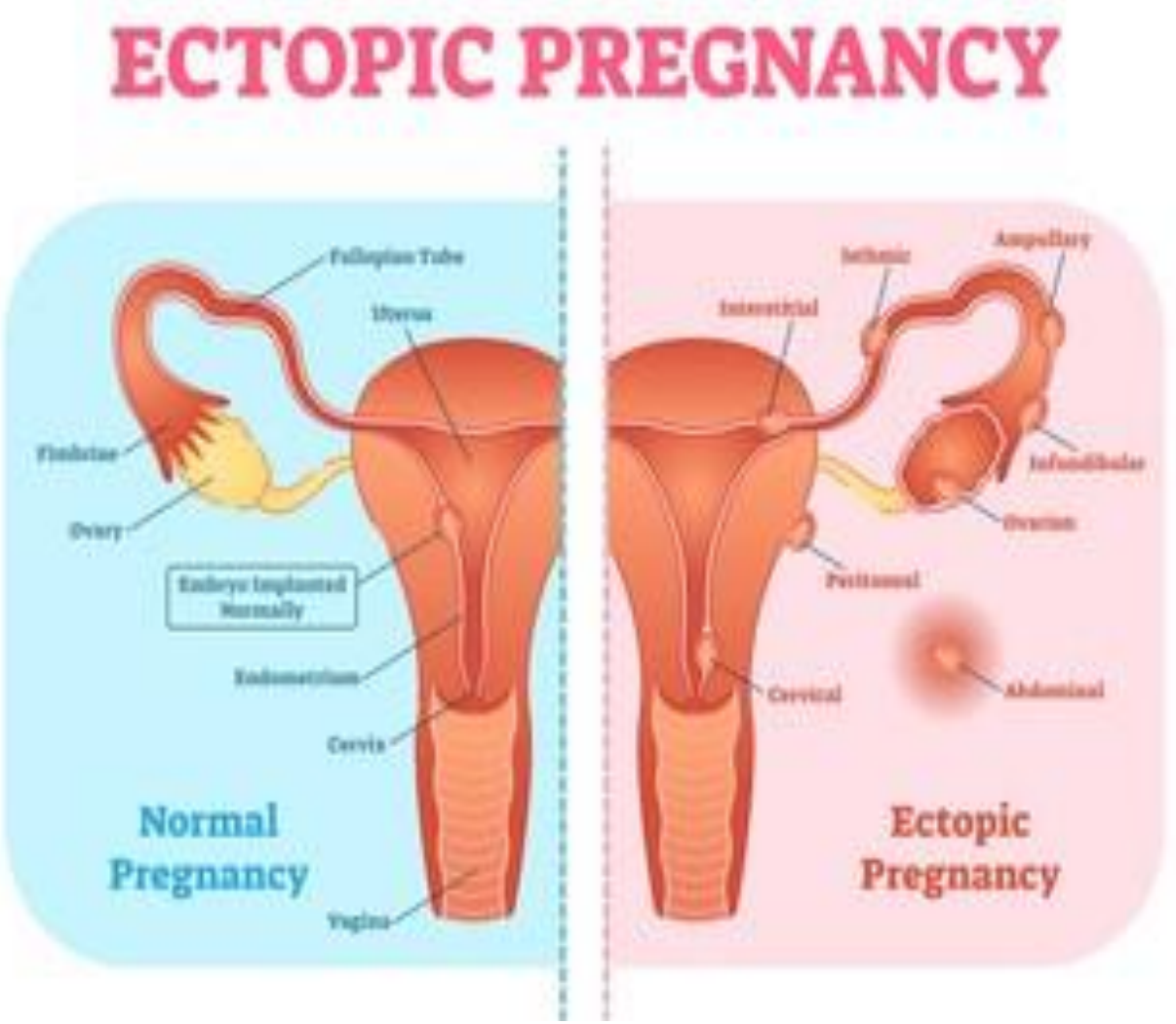
- About sixty hours after fertilization, approximately sixteen cells have formed and three days after fertilization, the cells enters the uterus.

- **Implantation,** the process in which the blastocyst implants into the uterine wall, occurs approximately six days after conception.



The Germinal Stage

- Implantation marks the end of the germinal stage and the beginning of the embryonic stage.
- However, if implantation fails, the pregnancy terminates.
- On the other hand, if it implants itself in the fallopian tube (oviduct), then ectopic pregnancy results.



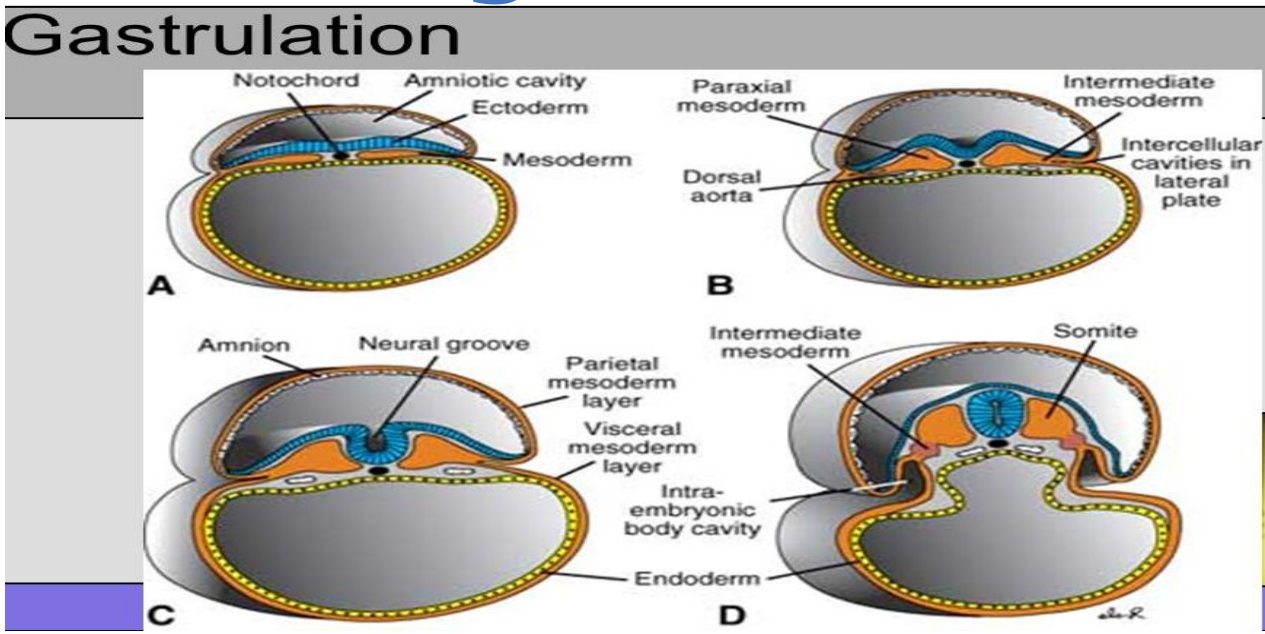
The Embryonic Stage

- The embryonic stage begins after implantation and lasts until eighth weeks after conception.

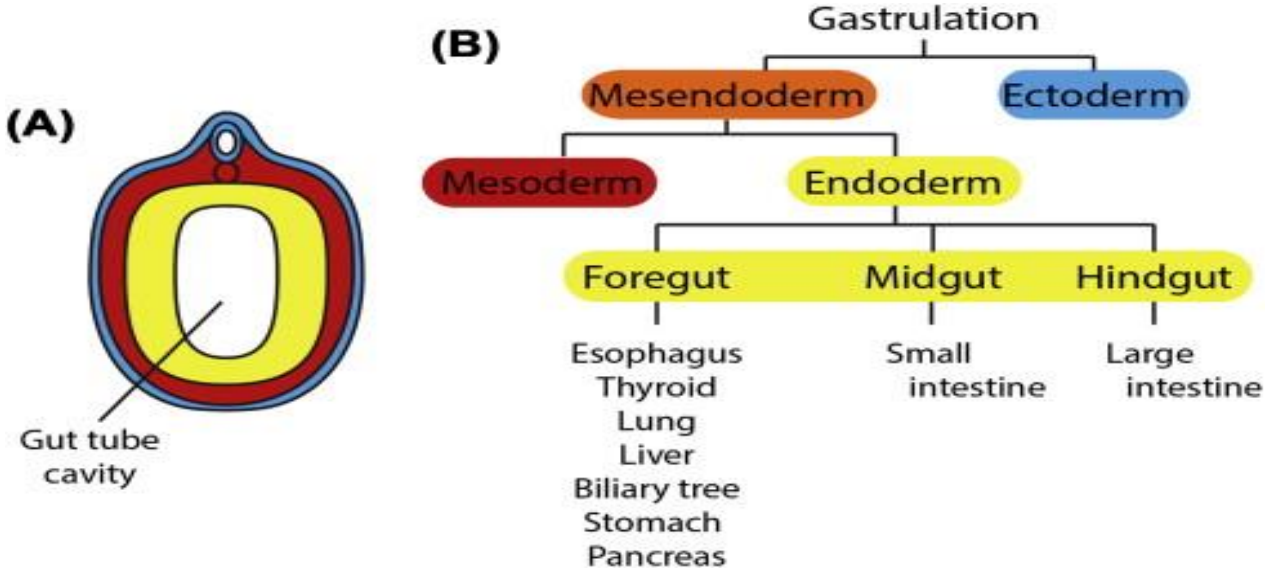
- Soon after implantation, the cells continue to rapidly divide and clusters of cells begin to take on different functions (called differentiation).

The Embryonic Stage

- A process **(gastrulation)** leads to the formation of three distinct layers called germ layers: the ectoderm (outer layer), the mesoderm (middle layer), and the endoderm (inner layer).

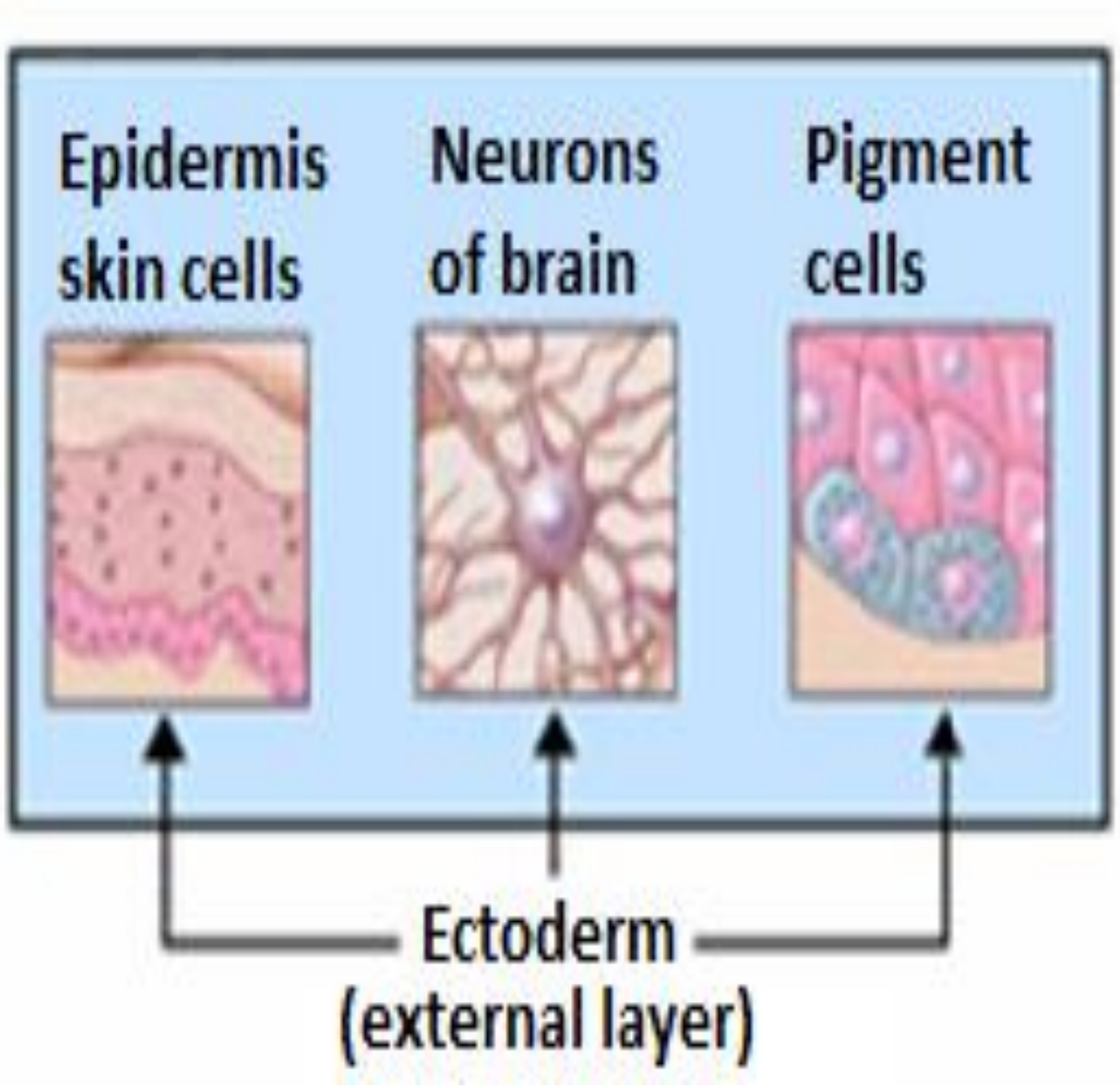


- As the embryo develops, each germ layer differentiates into different tissues and structures as indicated above.



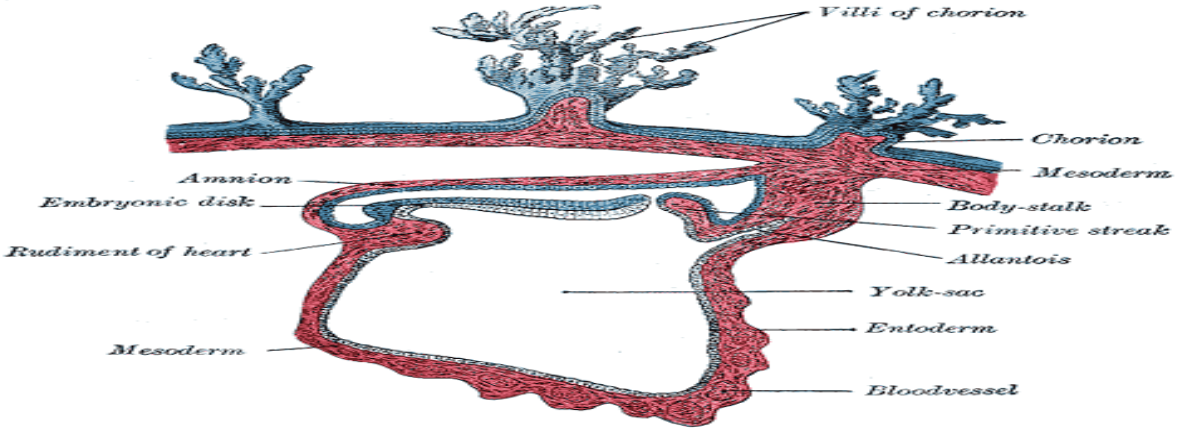
The Embryonic Stage

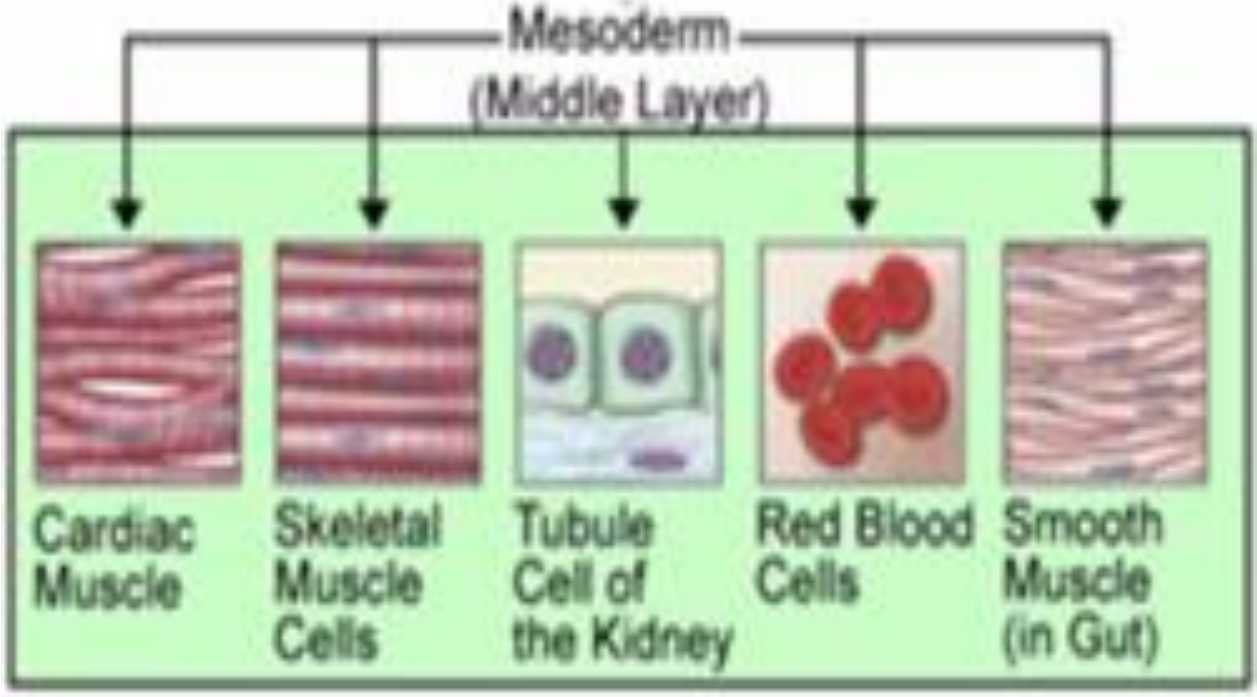
- **The ectoderm** - eventually forms skin, nails, hair, brain, nervous tissue and cells, nose, sinuses, mouth, anus, tooth enamel, and other tissues.



The Embryonic Stage

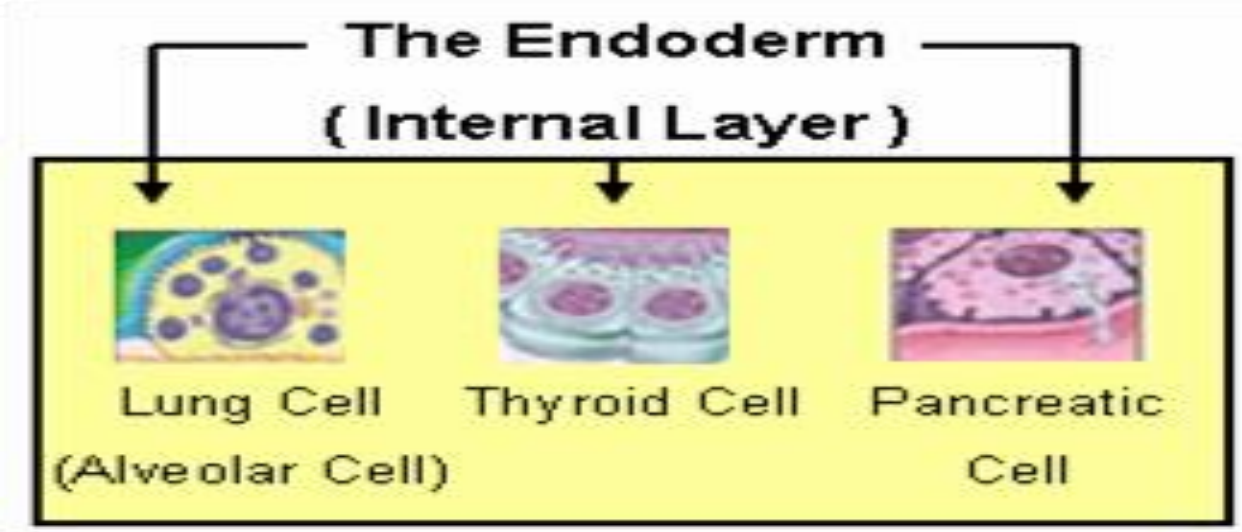
- **The mesoderm** - develops into muscles, bones, heart tissue, lungs, reproductive organs, lymphatic tissue, and other tissues.



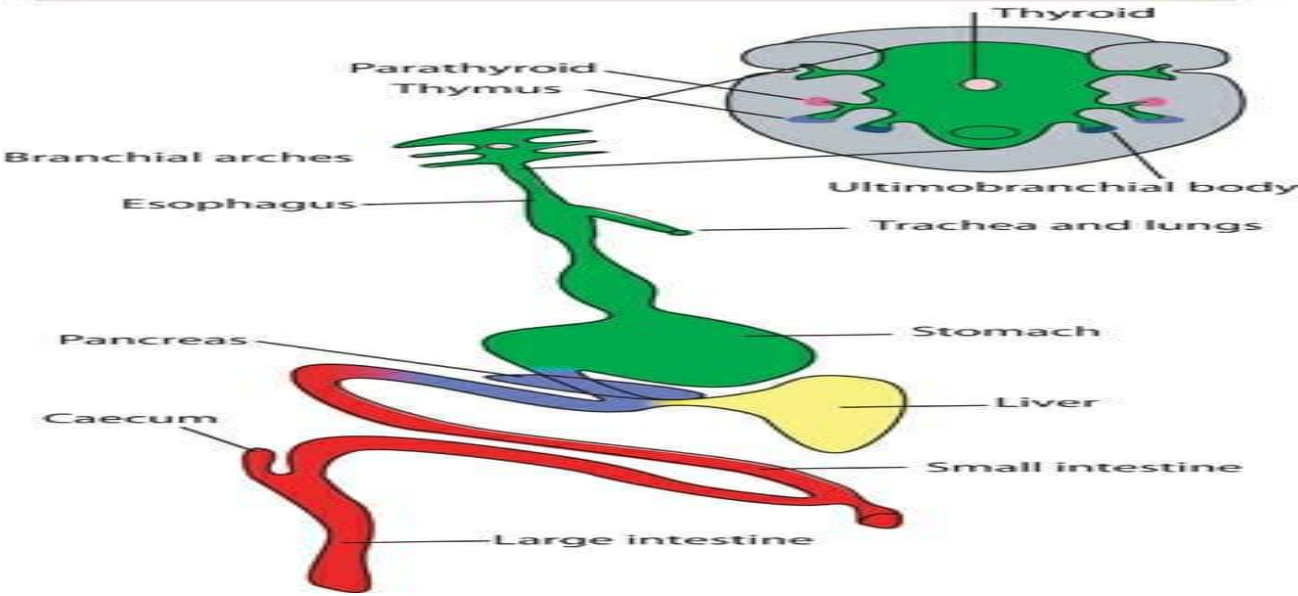


The Embryonic Stage

- **The endoderm -** forms the lining of lungs, bladder, digestive tract, tongue, tonsils, and other organs.



- The process of differentiation takes place over a period of weeks with different structures forming simultaneously.



The Embryonic Stage

- Some of the major events that occur during the embryonic stage are as follows:

- Week 3: Beginning development of the brain, heart, blood cells, circulatory system, spinal cord, and digestive system.

- Week 4: Beginning development of bones, facial structures, and limbs (presence of arm and leg buds); continuing development of the heart (which begins to beat), brain, placenta and nervous tissue.

The Embryonic Stage

- Week 5: Beginning development of eyes, nose, kidneys, lungs; continuing development of the heart (formation of valves), brain, nervous tissue, and digestive tract.

- Week 6: Beginning development of hands, feet, and finger nails; continuing development of brain, heart, and circulation system.

- Week 7: Beginning development of hair follicles, nipples, eyelids, and sex organs (testes or ovaries); first formation of urine in the kidneys and first evidence of brain waves.

The Embryonic Stage

- Week 8: Facial features more distinct, internal organs well developed, the brain can signal for muscles to move, heart development ends, external sex organs begin to form and amniotic sack develops.

- By the end of the embryonic stage, all essential external and internal structures have been formed. An appearance of a true bone cell ends the embryonic stage.

The Fetal/Foetal Stage

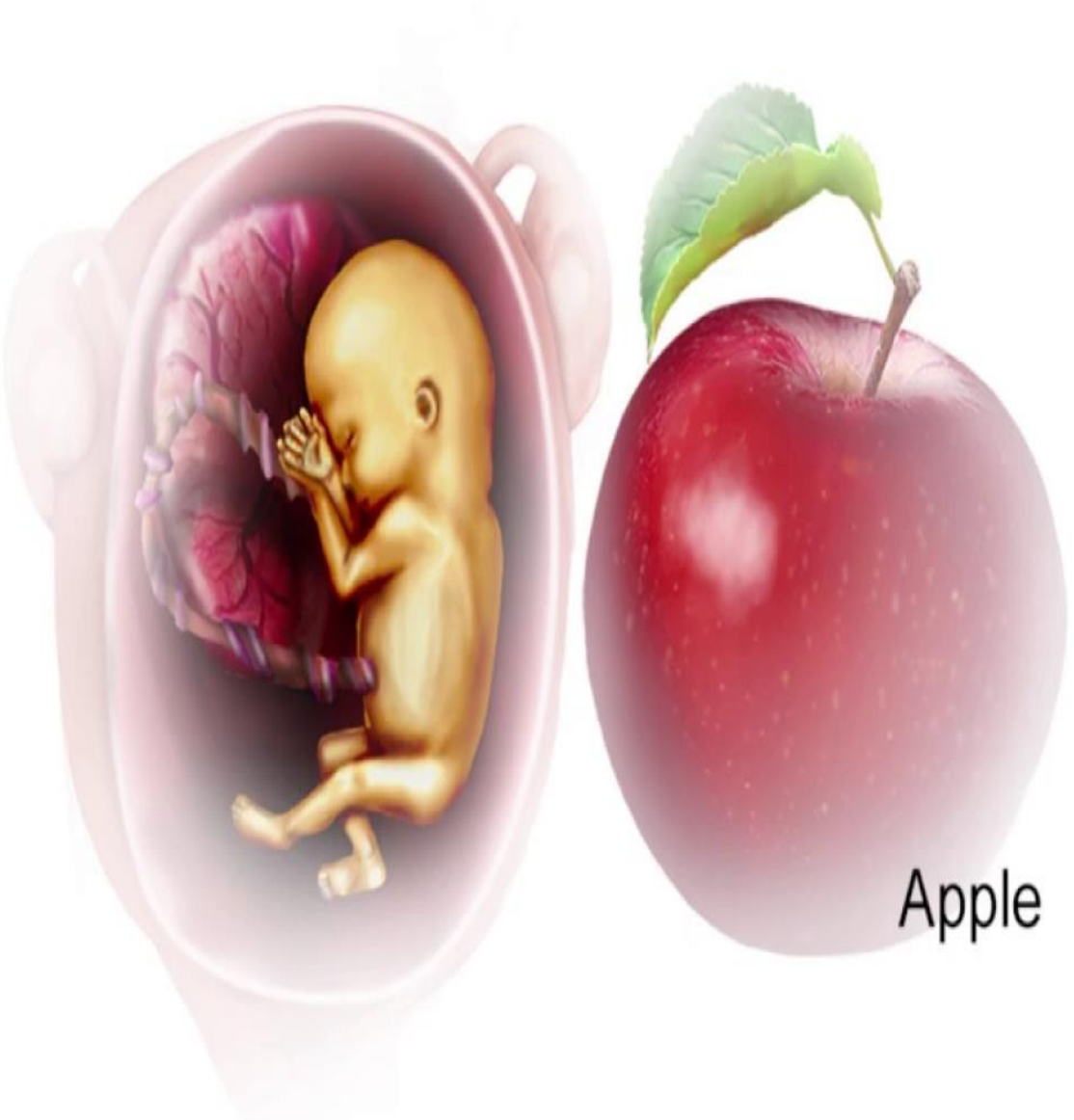
- Prenatal development is most dramatic during the fetal stage.

- When an embryo becomes a fetus at eight weeks, it is approximately 3 centimeters (1.2 inches) in length from crown to rump and weighs about 3 grams (0.1 ounce).

The Fetal/Foetal Stage

- By the time the fetus is considered full-term at 38 weeks gestation, he or she may be 50 centimeters (20 inches) or 3.3 kilograms (7.3 pounds).

- Although all of the organ systems were formed during embryonic development, they continue to develop and grow during the fetal stage.



The Fetal/Foetal Stage

- Examples of some of the major features of fetal development by week are as follows:

- **Weeks 9–12:** External features such as the face, neck, eyelids, limbs, digits, and genitals are well formed. The beginnings of teeth appear, and red blood cells begin to be produced in the liver. The fetus is able to make a fist.

- **Weeks 13–15:** Fine hair called lanugo first develops on the head; structures such as the lungs, sweat glands, muscles, and bones continue to develop. The fetus is able to swallow and make sucking motions.

The Fetal/Foetal Stage

- **Weeks 16–20:** Lanugo begins to cover all skin surfaces, and fat begins to develop under the skin. Features such as finger, toenails, eyebrows, and eyelashes appear. The fetus becomes more active, moves, cry, breathe, swallow, digest, excrete, suck thumbs.
- **Weeks 21–24:** Hair grows longer on the head, and the eyebrows and eye lashes finish forming. The lungs continue to develop with the formation of air sac (alveoli); the eyes finish developing. At this stage, the fetus and possesses all biological mechanisms for survival outside the womb.
- **Weeks 25–28:** The next few weeks mark a period of rapid brain and nervous system development. The fetus gains greater control over movements such as opening and closing eyelids and certain body functions. The lungs have developed sufficiently that air breathing is possible.

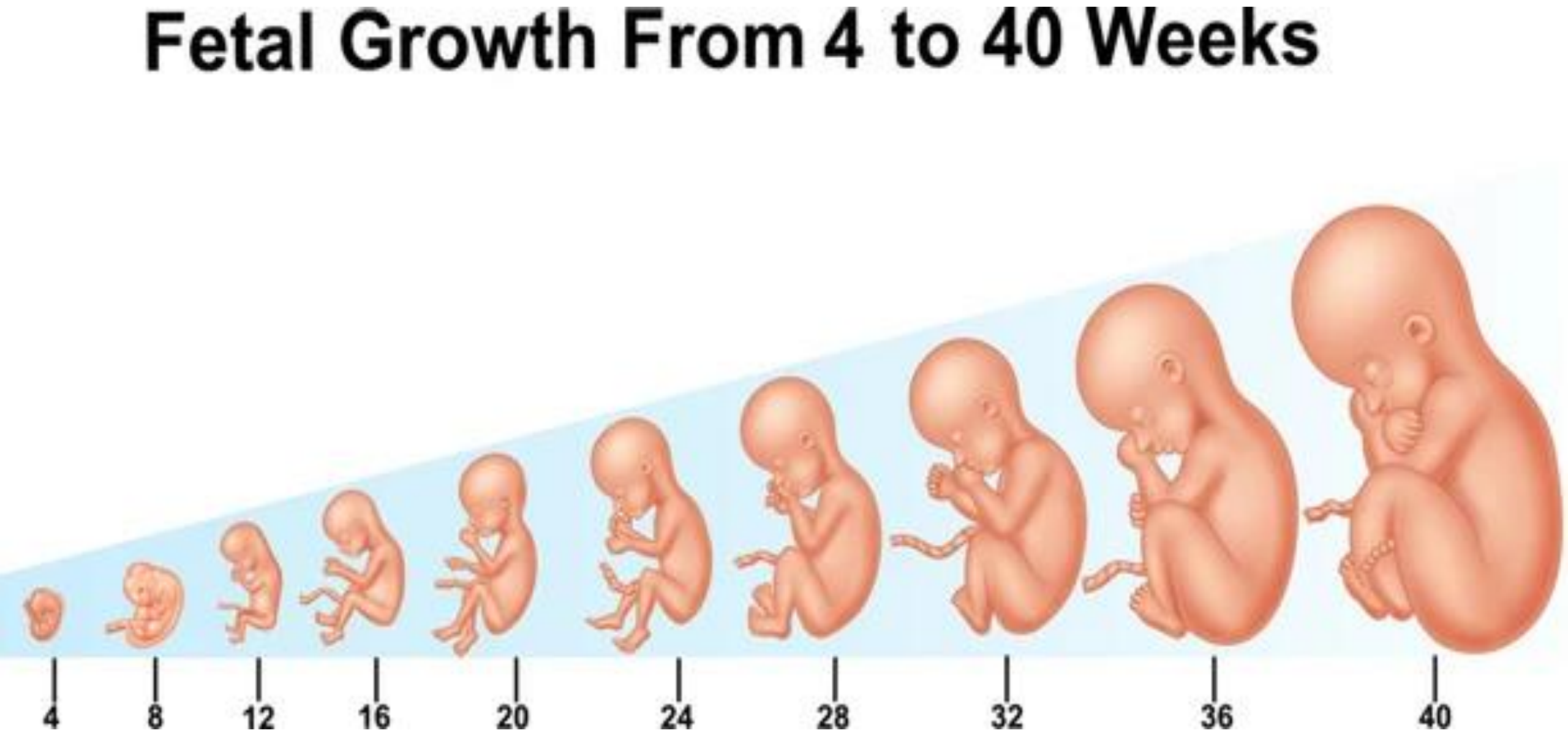
The Fetal/Foetal Stage

- **Weeks 29–32:** Fat deposits become more pronounced under the skin. The lungs remain immature but breathing movements begin. The fetus's bones are developed but not yet hardened.

- **Weeks 33–36:** Body fat continues to increase, lanugo begins to disappear, and fingernails are fully grown. The fetus has gained a high degree of control over body functions.

- **Weeks 36–38:** (19–21) in length is considered to be full-term by the end of this period. Lanugo has mostly disappeared and is replaced with thicker hair on the head. Fingernails have grown past the tips of the fingers. In a healthy fetus, all organ systems are functioning.

The Fetal/Foetal Stage



Labour

- This refers to periods when delicate and also important organs and systems in the body are formed.

- When the uterine wall is not conducive, there will be abnormalities

- The critical periods are first trimester after conception, the 7th month and the 9th month.

Labour

- Labour is the process by which the fetus and the placenta leave the uterus.
- Delivery can occur in two ways:

✓ Through the vagina

✓By cesarean section.

Stages of Labour

- The **first stage** begins with the woman's first contractions and continues until she is dilated fully (10 centimeters, or 4 inches), which means the cervix has stretched to prepare for birth.

- The **second stage** is the active stage, in which the pregnant woman begins to push downward. It begins with complete dilation of the cervix and ends with the actual birth.

- The **third stage**, or placental stage, begins with the birth and ends with the completed delivery of the placenta and afterbirth.

Factors Contributing to Caesarian Birth

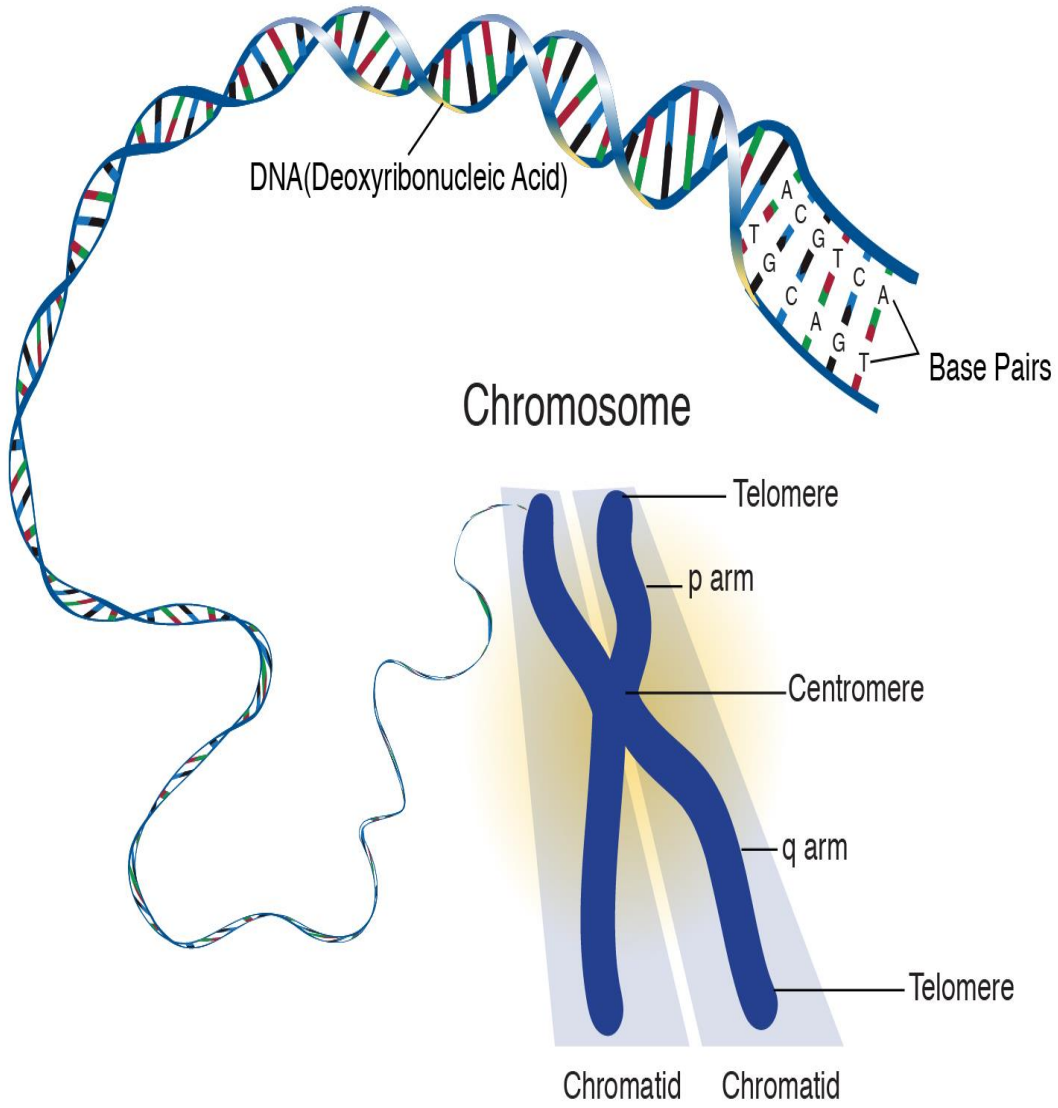
- Prolonged labor.
- Abnormal positioning.
- Fetal distress.
- Birth defects.
- Repeated cesarean births.
- Chronic health condition.

WEEK 3 – Threats to Prenatal Development

- ❑Chromosomes, DNA, Genes
- ❑Genotype and Phenotype
- ❑Genetic Inheritance
- ❑Threats to prenatal, perinatal and postnatal development
- ❑Autosomal and Sex-linked disorders
- ❑Environmental threats
- ❑Educational Implications

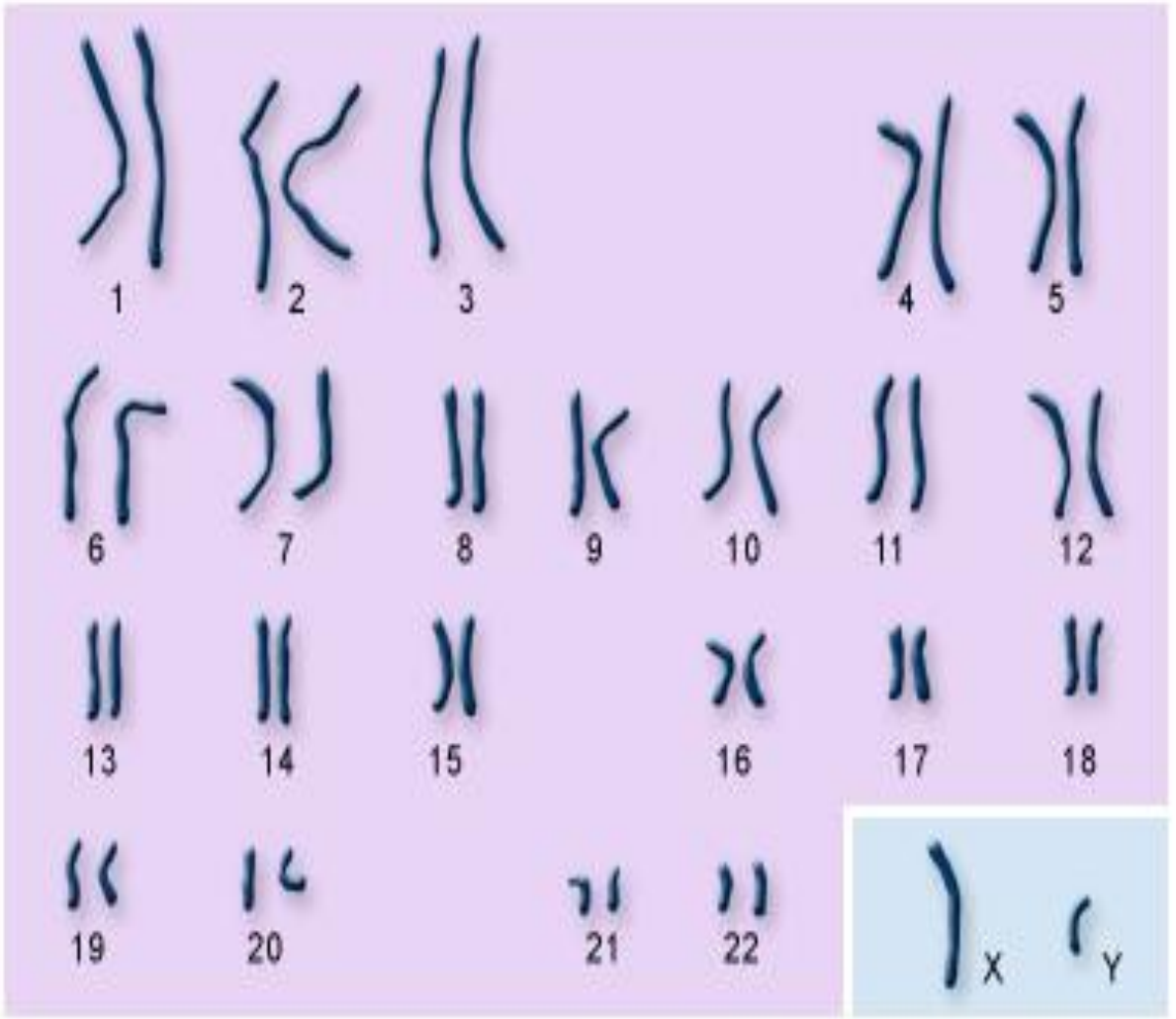
Chromosomes, DNA, Genes, Allele

- **Chromosomes:** They are thread-like structures located inside the nucleus of animal and plant cells.
- A chromosome is an organized package of DNA found in the nucleus of the cell.
- Different organisms have different numbers of chromosomes.
- Each human has **46 chromosomes, 23 each** from each parent.



Chromosomes, DNA, Genes, Allele

- Twenty-two (22) of these are called **autosomes** and the **23rd** is the **sex chromosome**.
- Autosomes look the same in both males and females.
- The **23rd pair**, the sex chromosomes, differ between males and females.
- Females have **XX** and males have **XY.**

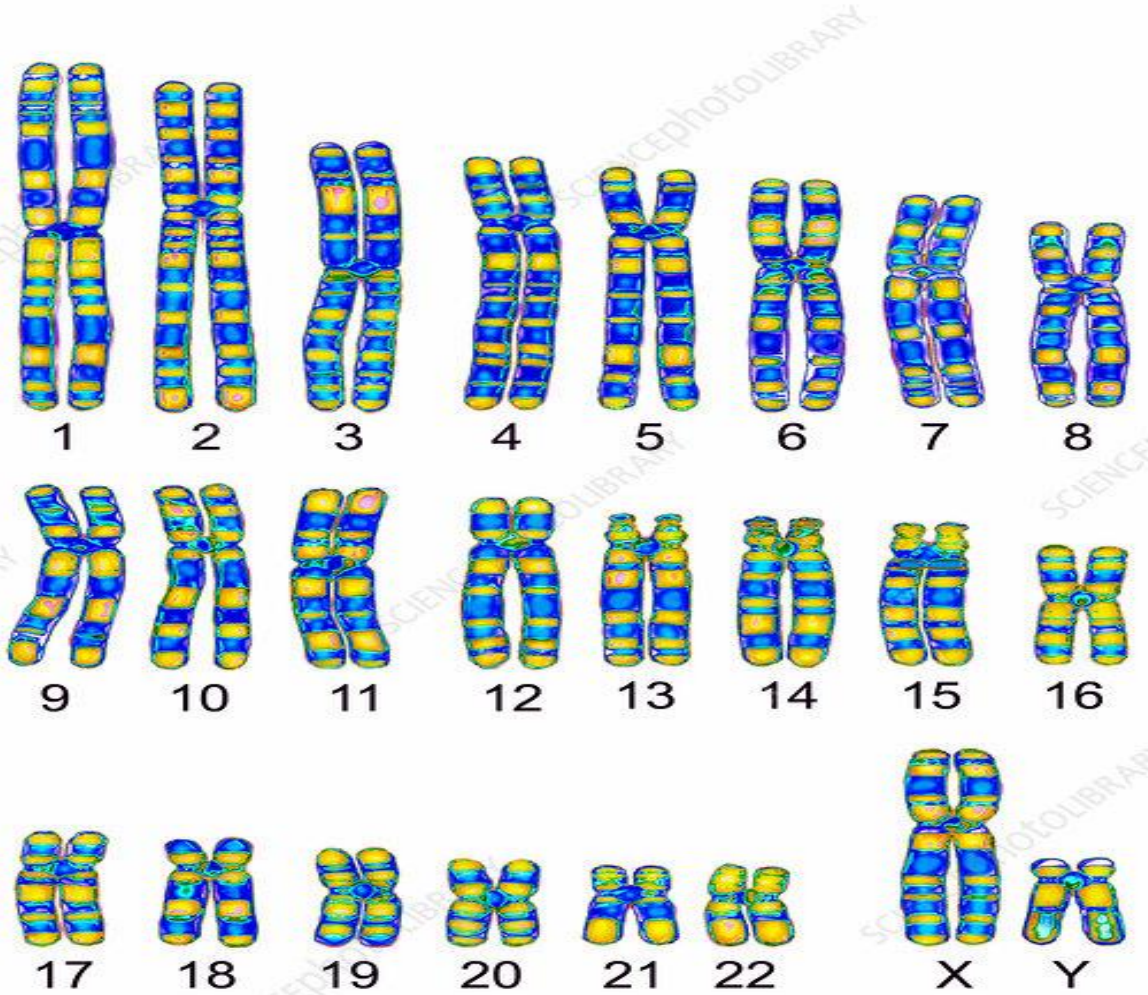


Chromosomes, DNA, Genes, Allele

- **Karyotype:** This is where all chromosomes appear in their exact pairs in humans or other organisms from a single cell.

- A karyotype is made up of **46 chromosomes** (44 autosomes/life chromosomes and 2 sex chromosomes)

- It is used to determine the sex, or possible genetic disorders of an individual.



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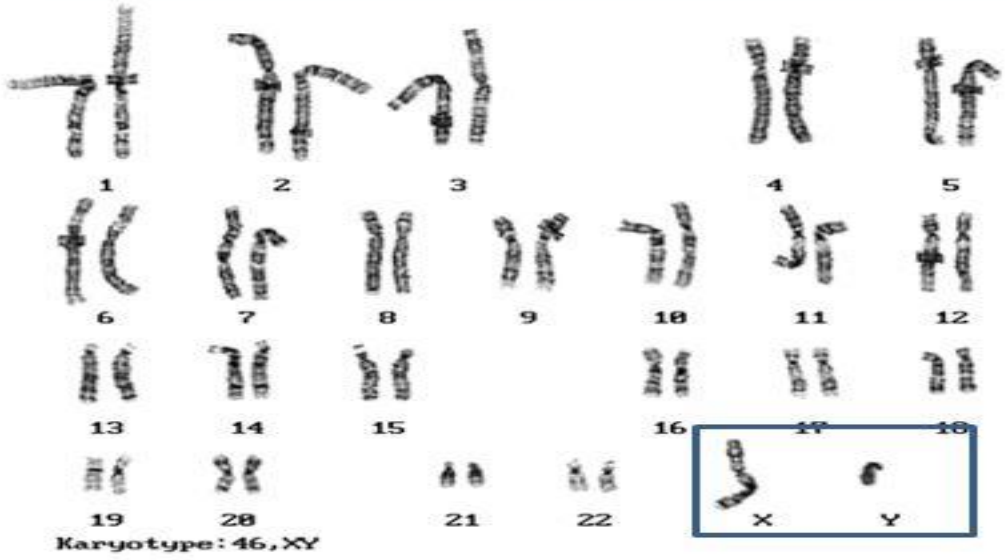
Normal Male and Female Karyotype

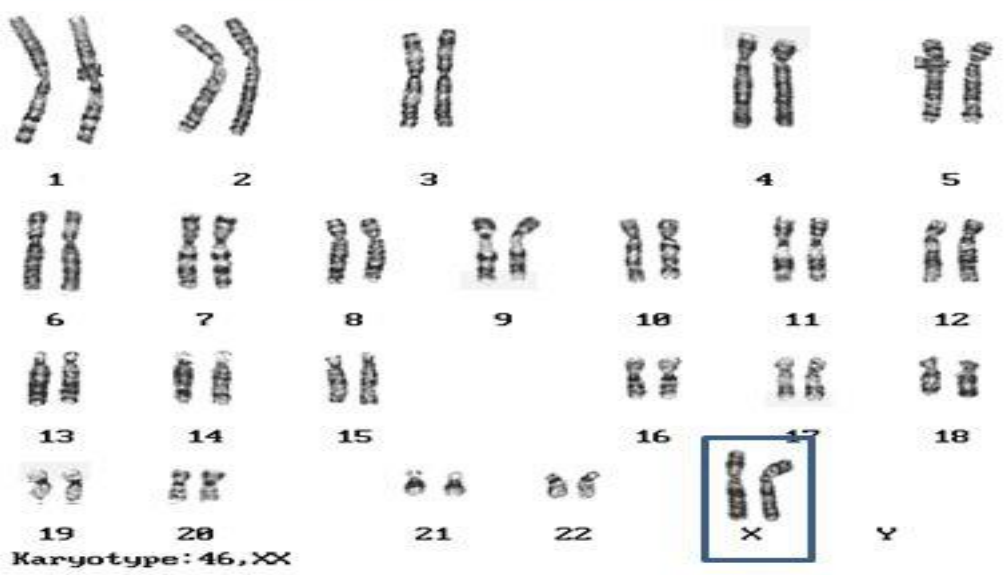
KARYOTYPE: EXAMPLE

After karyotyping- male or female?

NORMAL MALE



NORMAL FEMALE



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Chromosomes, DNA, Genes, Allele

- **Deoxyribonucleic Acid (DNA):** It is an extremely long chain of molecules that contains all the information necessary for the life functions of a cell.

- DNA contains the specific instructions that make each type of living creature unique in terms of development, survival and reproduction.

- To carry out these functions, DNA sequences must be converted into messages that can be used to produce proteins, which are the complex molecules that do most of the work in our bodies.

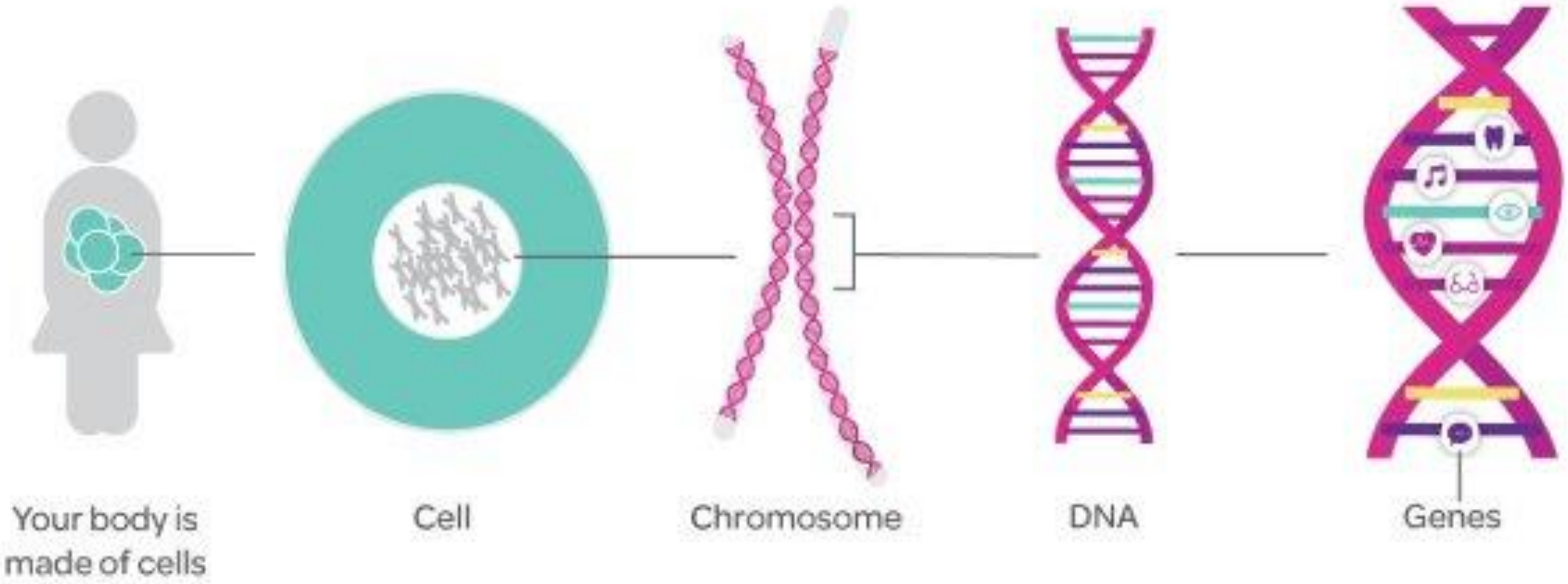
Chromosomes, DNA, Genes, Allele

- **Gene:** The fundamental unit of heredity; a specific section of DNA that tells a cell how to make a specific protein.

- Proteins are used by the cell to perform certain functions, to grow, and to survive.

Chromosomes, DNA, Genes, Allele

- **Allele**: An allele is **a variant form of a gene**.
- Some genes have a variety of different forms, which are located at the same position, or genetic locus, on a chromosome.
- Humans are called diploid organisms because they have two alleles at each genetic locus, with one allele inherited from each parent.
- If the two alleles are the same, the individual is homozygous for that gene.
- If the alleles are different, the individual is heterozygous.

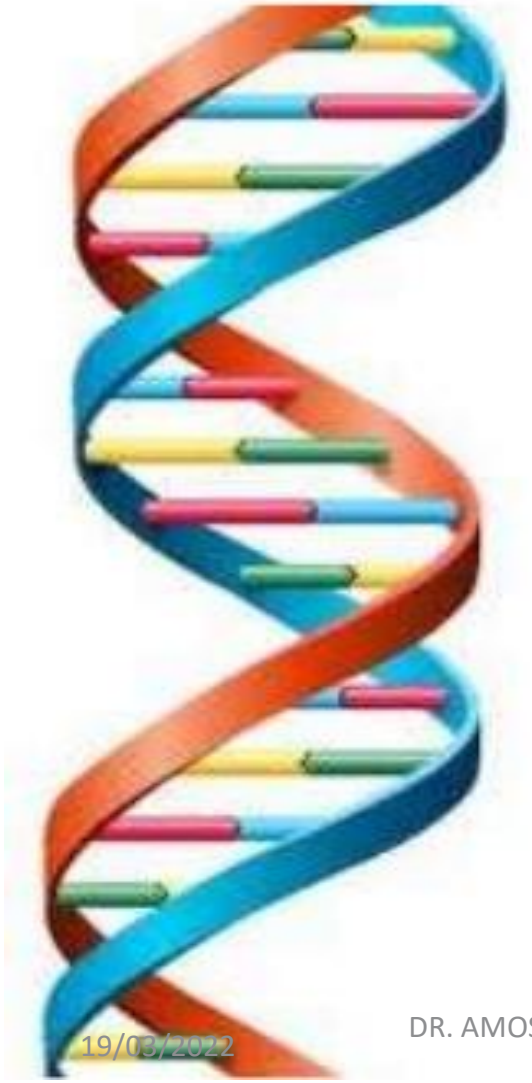

Your body is made of cells
Cell
Chromosome
DNA
Genes

Genotype and Phenotype

- The **genotype** is a person's unique combination of genes or genetic makeup.
- Thus, the genotype is a complete set of instructions on how that person's body synthesizes proteins and thus how that body is *supposed* to be built and function.

- A **phenotype** is an individual's observable traits, such as height, eye color, and blood type.
- Not all the instructions in the genotype may be carried out (or expressed).

Genotypes and Phenotypes



Dominant and Recessive Genes/Alleles

- Genes/Alleles can be **dominant** or **recessive**.

- **Dominant alleles** show their effect even if the individual **only has one copy of the allele** (also known as being heterozygous?). For example, the allele for brown eyes is dominant, therefore you only need one copy of the 'brown eye' allele to have brown eyes (although, with two copies you will still have brown eyes).

- If both alleles are dominant, it is called **codominance**?. The resulting characteristic is due to both alleles being expressed equally. An example of this is the blood group AB which is the result of codominance of the A and B dominant alleles.

Dominant and Recessive Genes/Alleles

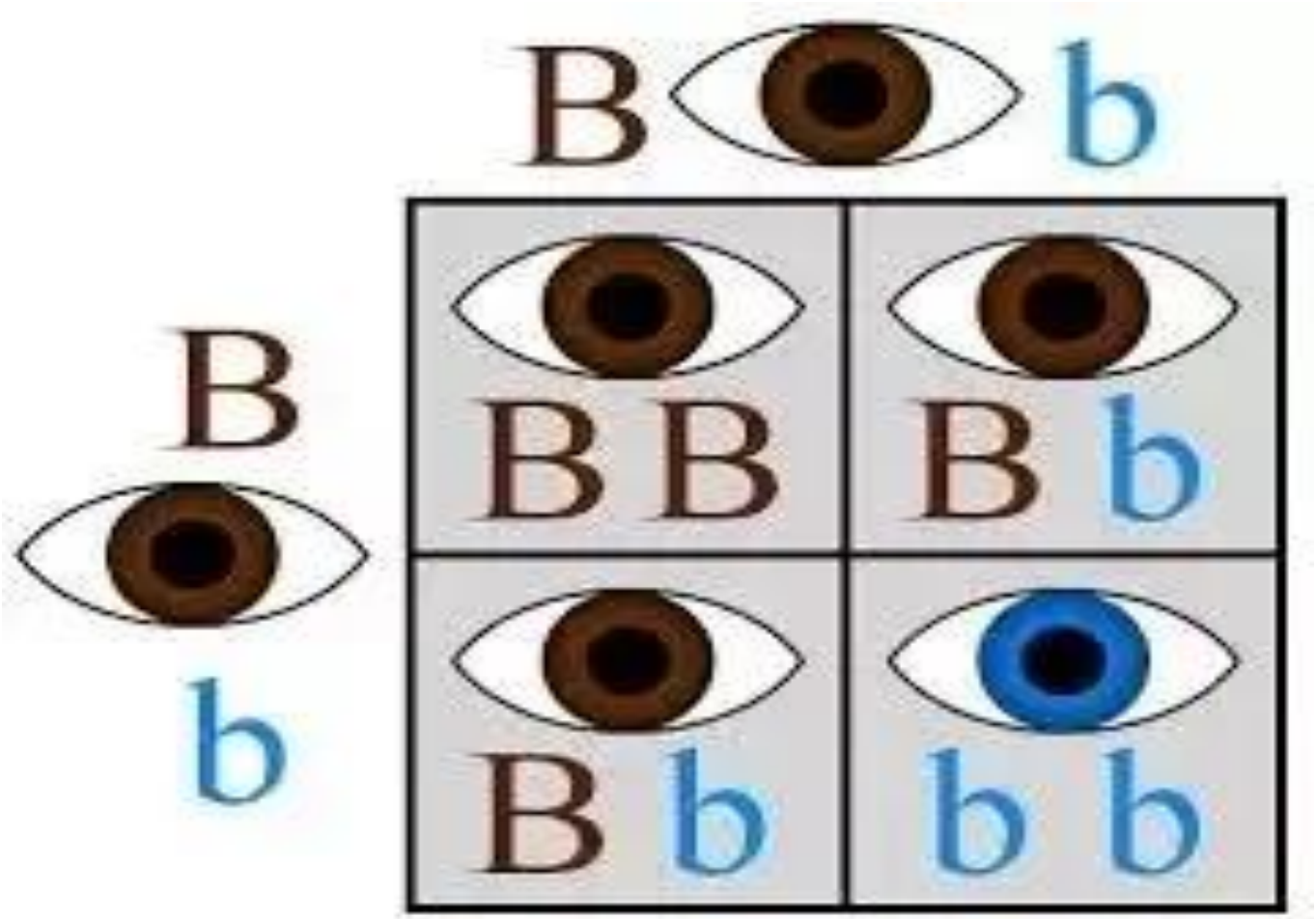
- **Recessive alleles** only show their effect if the individual has two copies of the allele (also known as being homozygous?). For example, the allele for blue eyes is recessive, therefore to have blue eyes you need to have two copies of the 'blue eye' allele.

- Some of the traits or characteristics passed through to children through genetic inheritance include **eye colour and blood type**. Some health conditions and diseases can be passed on genetically too

Eye Colour

- The allele for brown eyes (B) is dominant over the allele for blue eyes (b).
- So, if you have one allele for brown eyes and one allele for blue eyes (Bb), your eyes will be brown.
- This is also the case if you have two alleles for brown eyes, BB.
- However, if both alleles are for the recessive trait (in this case, blue eyes, bb) you will inherit blue eyes.

Eye Colour



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Blood Group

- For blood groups, the alleles are **A**, **B** and **O**.
- The **A allele is dominant over the O allele**. So, a person with one A allele and one O allele (AO) has blood group A.
- Blood group A is said to have a dominant inheritance pattern over blood group O.

- If a mother has the alleles A and O (AO), her blood group will be A because the A allele is dominant. If the father has two O alleles (OO), he has the blood group O.
- For each child that couple has, each parent will pass on one or the other of those two alleles. This means that each one of their children has a 50 per cent chance of having blood group A (AO) and a 50 per cent chance of having blood group O (OO), depending on which alleles they inherit.

Blood Group Inheritance

Father		AB	AB	AB	AB	B	A	A	O	O	O
Mother		AB	B	A	O	B	B	A	B	A	O
Child's blood type	O					X	X	X	X	X	X
	A	X	X	X	X		X	X		X	
	B	X	X	X	X	X	X		X		
	AB	X	X	X			X				

Dominant and Recessive Genes/Alleles

- Examples of inheritance patterns include:

- **Autosomal dominant** – where the gene for a trait or condition is dominant, and is on a non-sex chromosome
- **Autosomal recessive** – where the gene for a trait or condition is recessive, and is on a non-sex chromosome
- **X-linked dominant** – where the gene for a trait or condition is dominant, and is on the X-chromosome
- **X-linked recessive** – where the gene for a trait or condition is recessive, and is on the X-chromosome
- **Y-linked** – where the gene for a trait or condition is on the Y-chromosome
- **mitochondrial** – where the gene for a trait or condition is in your mitochondrial DNA, which sits in the mitochondria (powerhouse) of your cells.

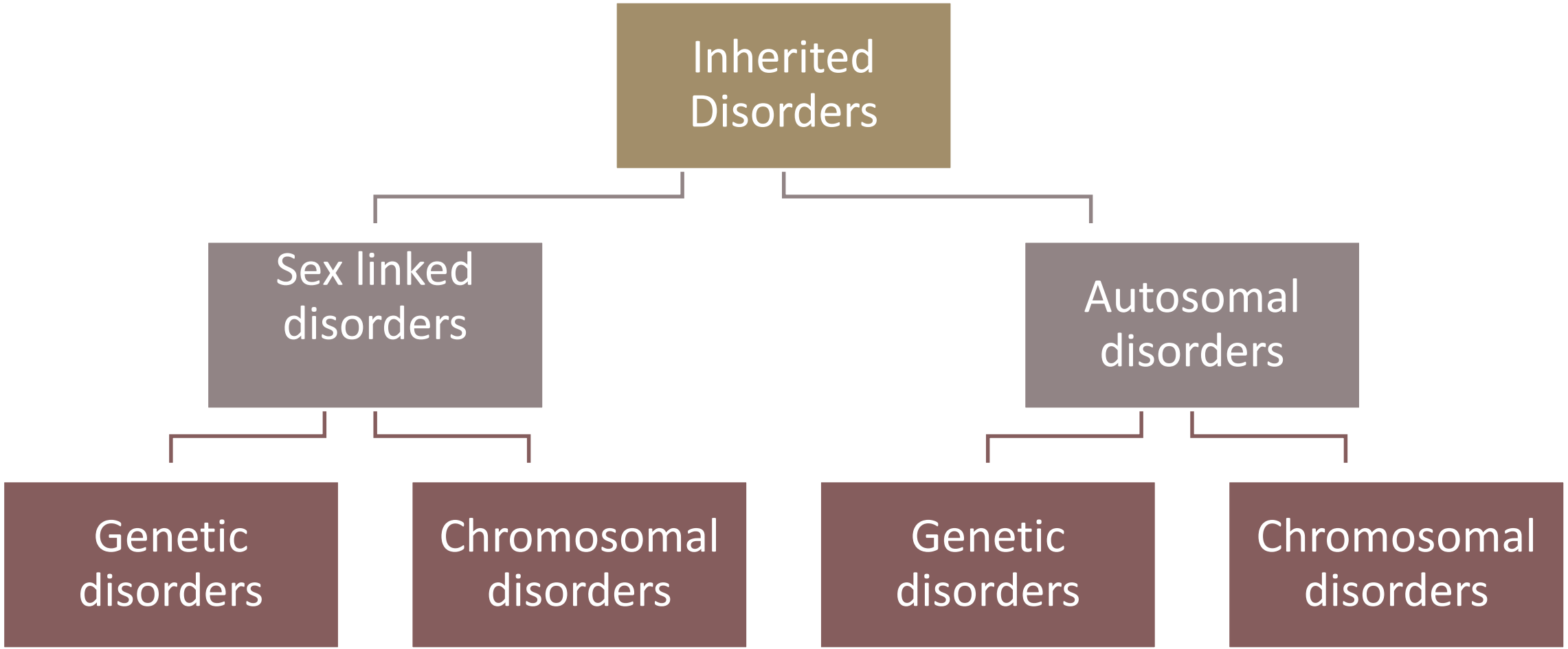
Gene Mutation

- A gene mutation is a **change** in one or more genes. It is an **alteration in the genetic material (the genome)** of a cell of a living organism that can be **transmitted** to the cell's or the offspring.

- Some mutations can lead to genetic disorders or illnesses.

- There are hundreds of diseases caused by mutations in a single gene.

Gene Mutation



Sex-Linked and Autosomal Disorders

- **Sex-Linked Disorders:** They involve the sex chromosome # 23 and occurs via dominant-recessive patterns
- A recessive gene on the X chromosome is more likely to be expressed as the phenotype in males because the Y chromosome has no allele that might contract the gene.

- **Autosomal disorders:** They are caused by mutations in genes on the autosomes, or numbered chromosomes. Individuals have two copies (alleles) of every autosomal gene, one inherited from each parent.

- Autosomal dominant disorders are those that result from a mutation in one copy of the gene.

Genetic and Chromosomal Disorders

- **Genetic Disorders:** These are abnormalities in chromosomes inherited from one or both parents produces diseases in offspring

- **Chromosomal Disorders:** These are abnormality of chromosome numbers or structure resulting from an error in cell division

Genetic Sex-Linked Disorders

1. Colour Blindness

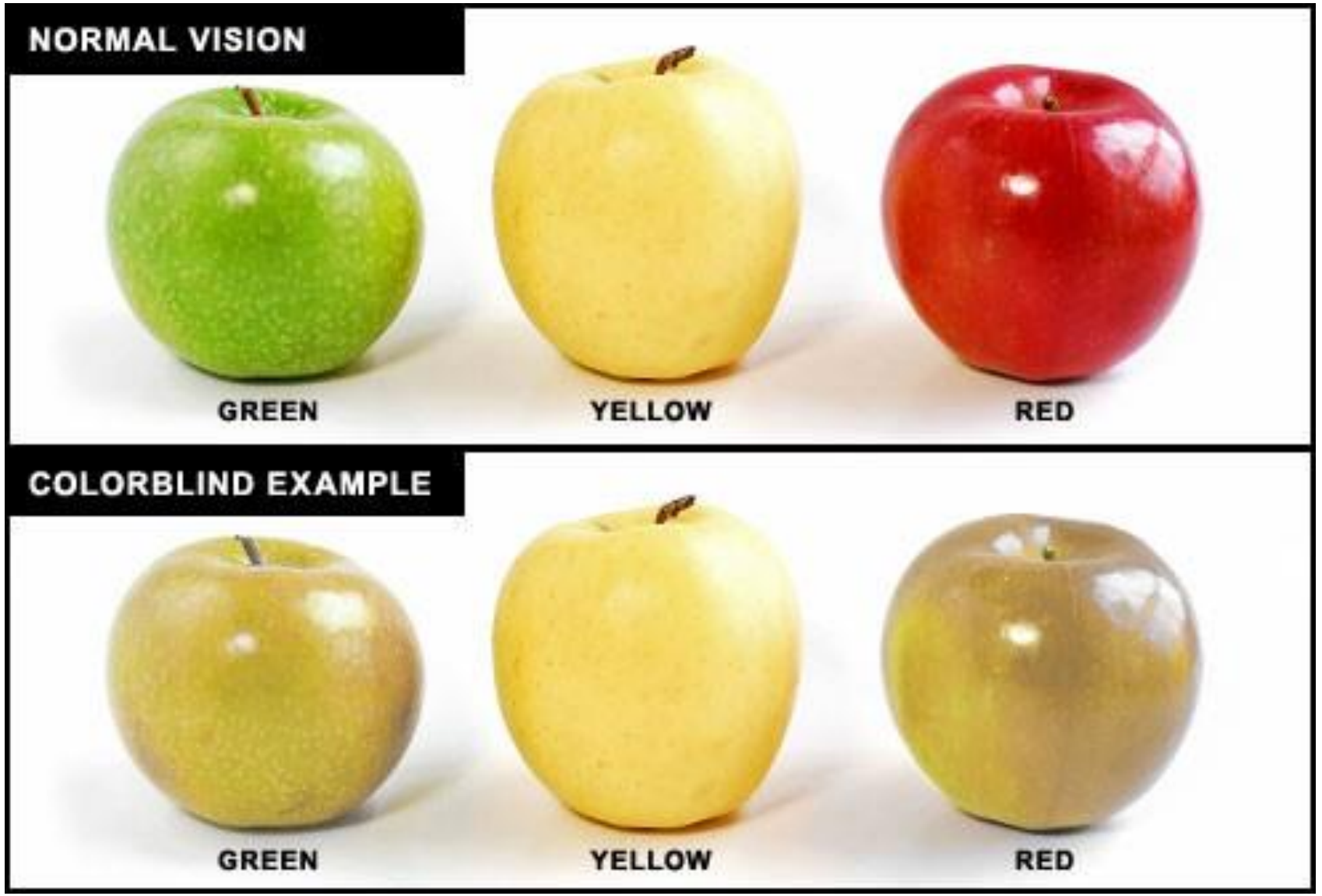
- A recessive sex-linked disorder characterised by the inability to distinguish between red and green colours due to a defect of the retina
- Dominant gene which permits for color vision is situated on the X chromosome
- Y chromosome does not have this gene
- Male's will be color blind if the X chromosome of the male gene has the gene for color blindness


Normal
Deuteranopia
Protanopia

Normal Vision

Colorblind Vision

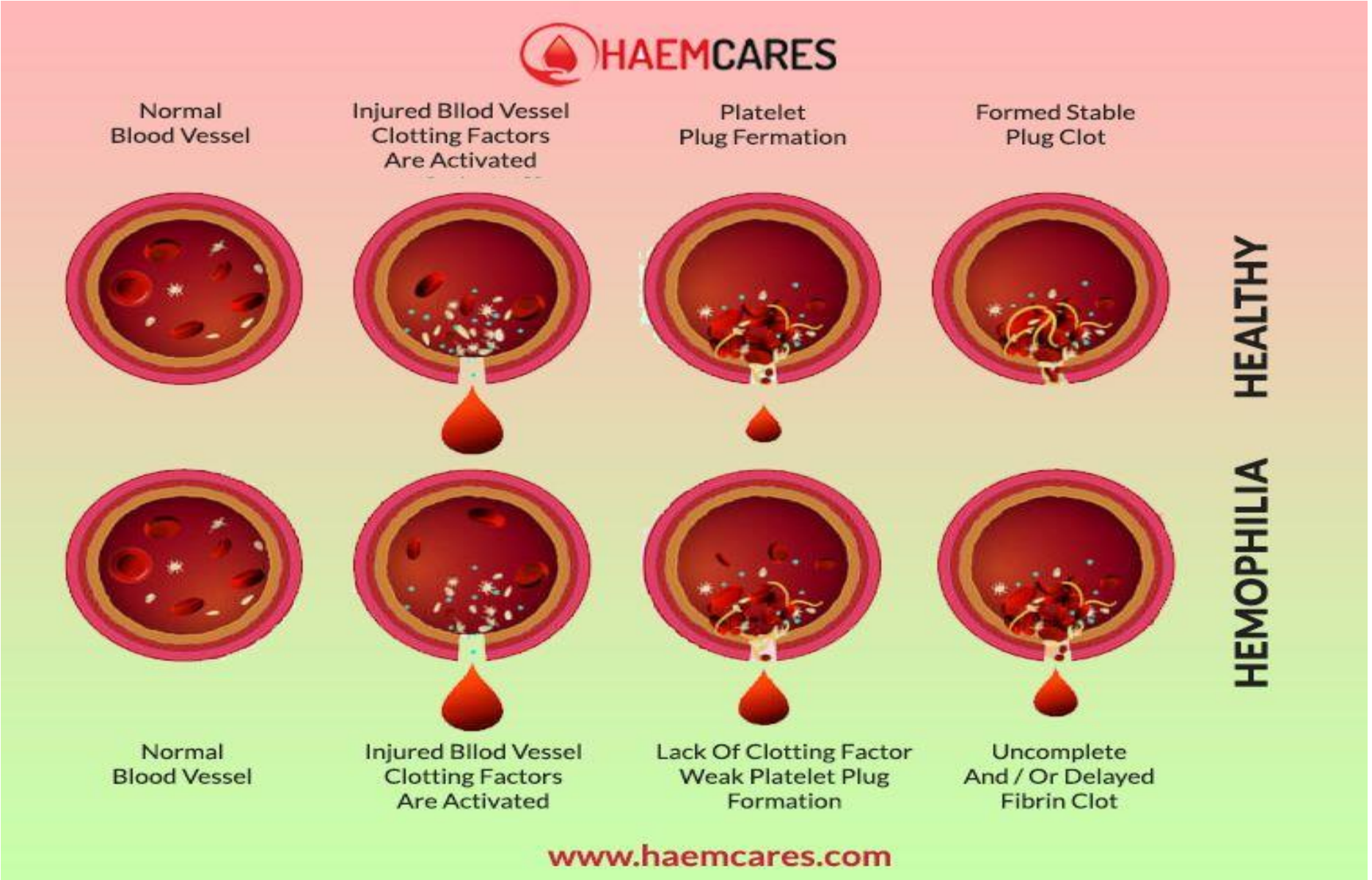
The term "color blindness" is a bit misleading — most "colorblind" people see colors, but their color perception is limited and inaccurate. The most common form of color vision deficiency causes inaccurate perception of the colors red and green, making it easy to confuse them.


NORMAL VISION
GREEN
YELLOW
RED
COLORBLIND EXAMPLE
GREEN
YELLOW
RED

Genetic Sex Linked Disorders

2. Hemophilia A and B or Bleeder's Disease

- A recessive sex-linked disorder carried on the X-chromosome which results in the inability of the blood to clot
- Prevalent in males (Occurs in 1 in 5000 males)
- Can lead to death from internal bleeding
- Inheritance follows the same pattern as color blindness


HAEMCARES
Normal Blood Vessel
Injured Bllod Vessel Clotting Factors Are Activated
Platelet Plug Fermation
Formed Stable Plug Clot
HEALTHY
HEMOPHILIA
Normal Blood Vessel
Injured Bllod Vessel Clotting Factors Are Activated
Lack Of Clotting Factor Weak Platelet Plug Formation
Uncomplete And / Or Delayed Fibrin Clot
www.haemcares.com

Genetic Sex Linked Disorders

3. Ocular Albinism

- Caused by a change in the GPR143 gene which plays a signaling role important in the pigmentation of the eye
- Similar pattern of inheritance as Colour Blindness and Hemophilia A and B
- Rarely occurs in females

Chromosomal Sex Linked Disorders

- Affects sex chromosomes as a result of an abnormality of chromosome number or structure. They are not passed from parents to children.

1. Fragile X Syndrome

- Results from the breakage of the tip of an X chromosome
- Results in severe mental retardation, speech defects and severe deficits in interpersonal interaction
- Usually, males are more severely affected by this disorder than females.
- Occurs in 1 out of 1200 males and 1 out of 2500 females

(A)

(B)

Examples of diseases

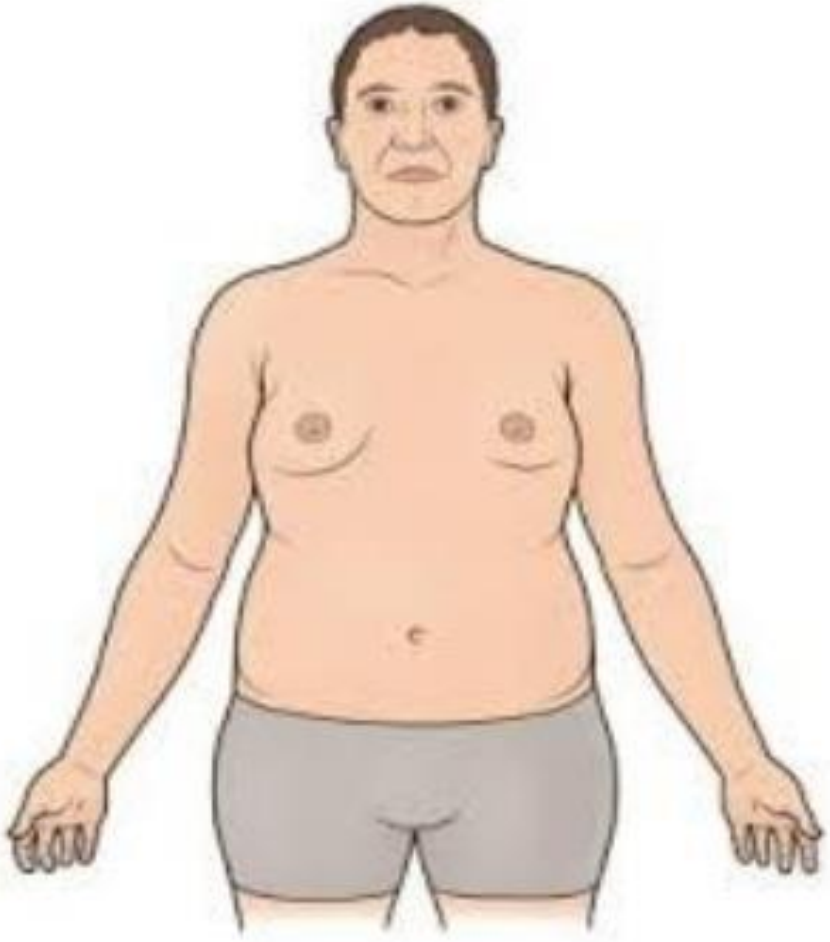
1. FRAGILE X SYNDROME

Chromosomal Sex Linked Disorders

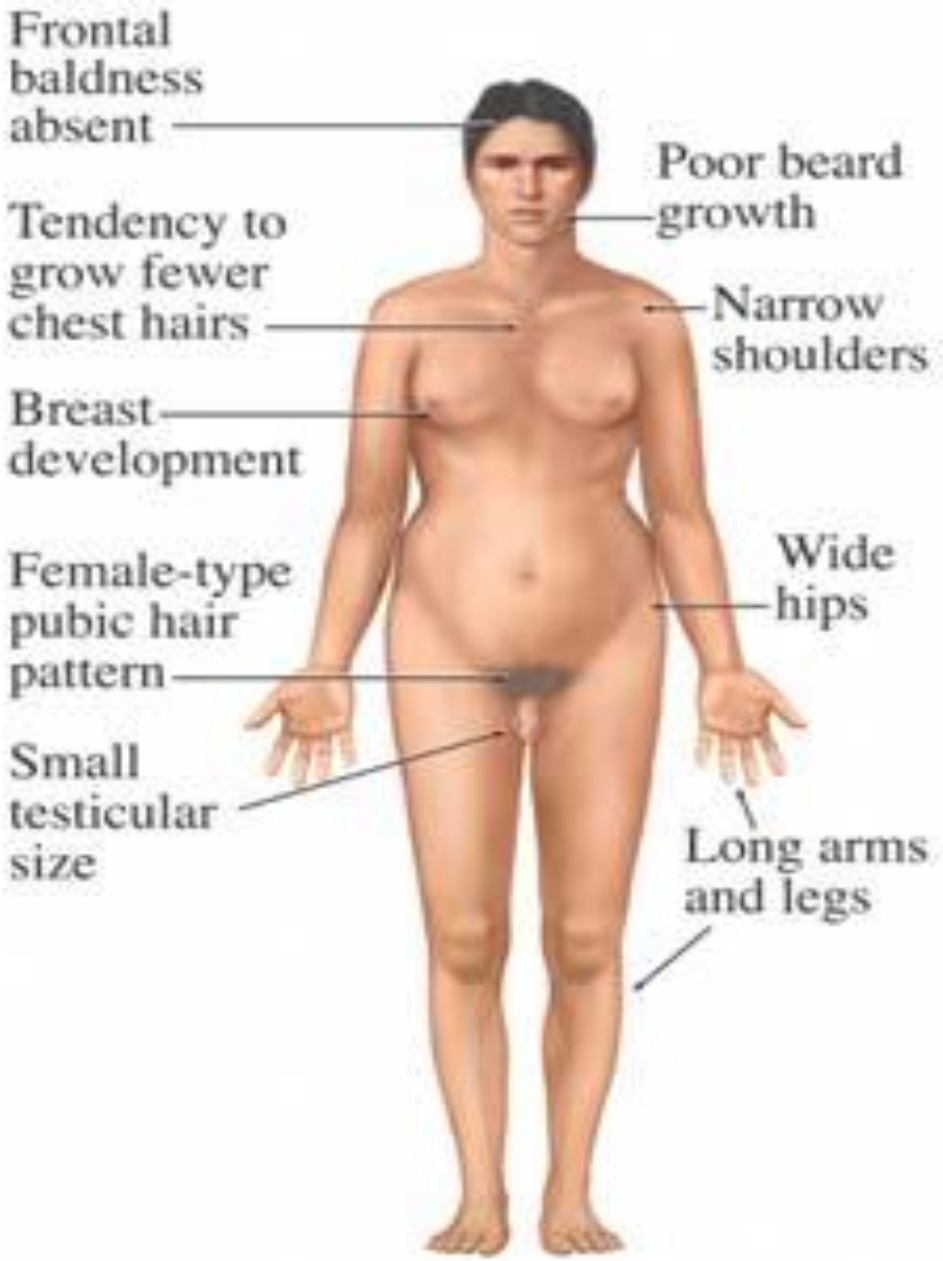
2. Klinefelter Syndrome (XXY)

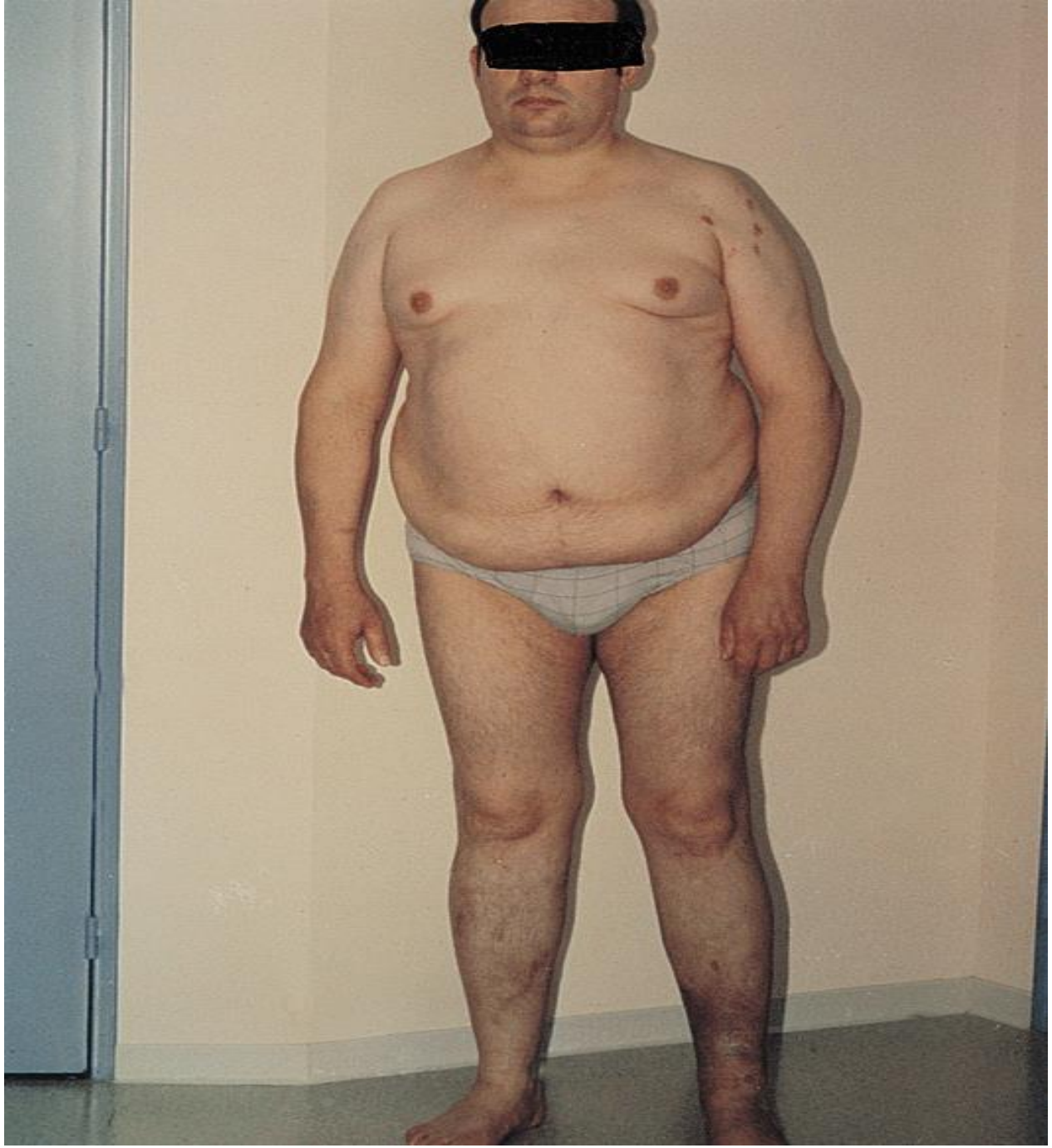
- A condition in males characterized by an extra X chromosome in most of their cells instead of the normal XY pattern.
- Characteristics of such males: Relatively high pitched voices, feminine contours, breast enlargement, little facial or body hair, sterile, small testes, an inch taller than the average male, likely to be overweight, learning difficulties as children

The signs.



- A taller less muscular body than males there age.
- Broader hips and longer legs.
- Larger breast.
- Weaker bones.
- A lower energy level.
- Smaller penis and testicles
- Delay in puberty or go a parcel amount.
- Less facial and body hair following puberty.


Frontal baldness absent
Tendency to grow fewer chest hairs
Breast development
Female-type pubic hair pattern
Small testicular size
Poor beard growth
Narrow shoulders
Wide hips
Long arms and legs



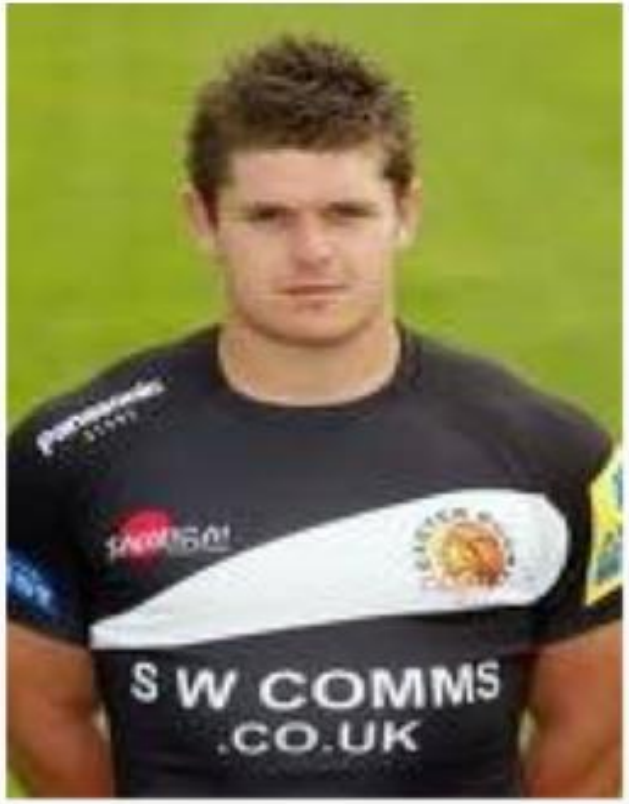
Chromosomal Sex Linked Disorders

3. Super Male Syndrome (XYY)

- A defect which occurs in males where they inherit an extra Y chromosome
- Characteristics of such males include: Height of above 6ft., slender during adolescence, severe facial acne, poor co-ordination
- Defect occurs in between 1 in 900 births or as rare as 1 in 1500 or 2000

XYY Syndrome

By: Andrew Ward



XYY syndrome is a genetic condition that occurs when a male's genes have an extra Y chromosome.

Chromosomal Sex Linked Disorders

4. Super Female Syndrome (XXX) or Trisomy 47

- Females with the defect inherit 3 or X chromosomes.
- Characteristics of such females: An inch taller than the average female, with long legs and slender torso, emotionally immature for size during childhood
- Usually fertile but may have slight learning difficulties and usually in the low range of normal intelligence


Can be unusually tall
Affects only females
Extra X chromosome

a.

b.

c.

Chromosomal Sex Linked Disorders

5. Turner's Syndrome (XO)

- A genetic disease caused by abnormal sex chromosomes which occurs in females who inherit 1 X chromosome instead of 2.

- Characteristic of such females: Short in stature (4ft. 7inches), webbed necks, small jaws and high arched palates, widely spaced breasts, broad shield shaped chests, turned elbows, ovaries do not develop normally and do not ovulate, slight mental retardation in some individuals.

- If diagnosed early injections of Growth Hormone can increase stature by a few inches and estrogen replacement therapy can result in some breast development and menstruation helping them to appear relatively normal

Genetic Autosomal Disorders

- Genetic Autosomal Disorders result from a defect on any of the first 22 pairs of chromosomes
- They can be passed on from parents to offspring

1. Huntington Disease

- A dominant gene on chromosome 4 is responsible for the disorder
- Defect manifests at the age of 35
- Defect causes the degeneration of neurons producing dementia and random jerking movements
- Death comes on an average of 12 years after the onset


Ackerman + Gruber

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Genetic Autosomal Disorders

2. Phenylketonuria (PKA)

- A recessive disorder that occurs in about 1 of 10,000 people. A defective gene on chromosome 12 is responsible.
- Children with PKU are unable to metabolize phenylalanine, an amino acid.
- As a result, phenylalanine and its derivative phenylpyruvic acid, build up in the body and cause permanent brain damage
- PKU can lead to intellectual disability, seizures, behavioral problems, and mental disorders. It may also result in a musty smell and lighter skin.
- Treatment is available and children can develop average intelligence

Symptoms of PKU

Genetic Autosomal Disorders

3. Rhesus factor (Rh) incompatibility

- Rh factor is either positive (present) or negative (absent)
- Rh factor is only significant with respect to pregnancies when an Rh+ child is born to an Rh- mother predisposing her to Rh disease

- If the blood of the Rh+ child's blood crosses into mother's blood during pregnancy, labor or delivery the mothers body produces antibodies to attack the baby's blood which is foreign to her body

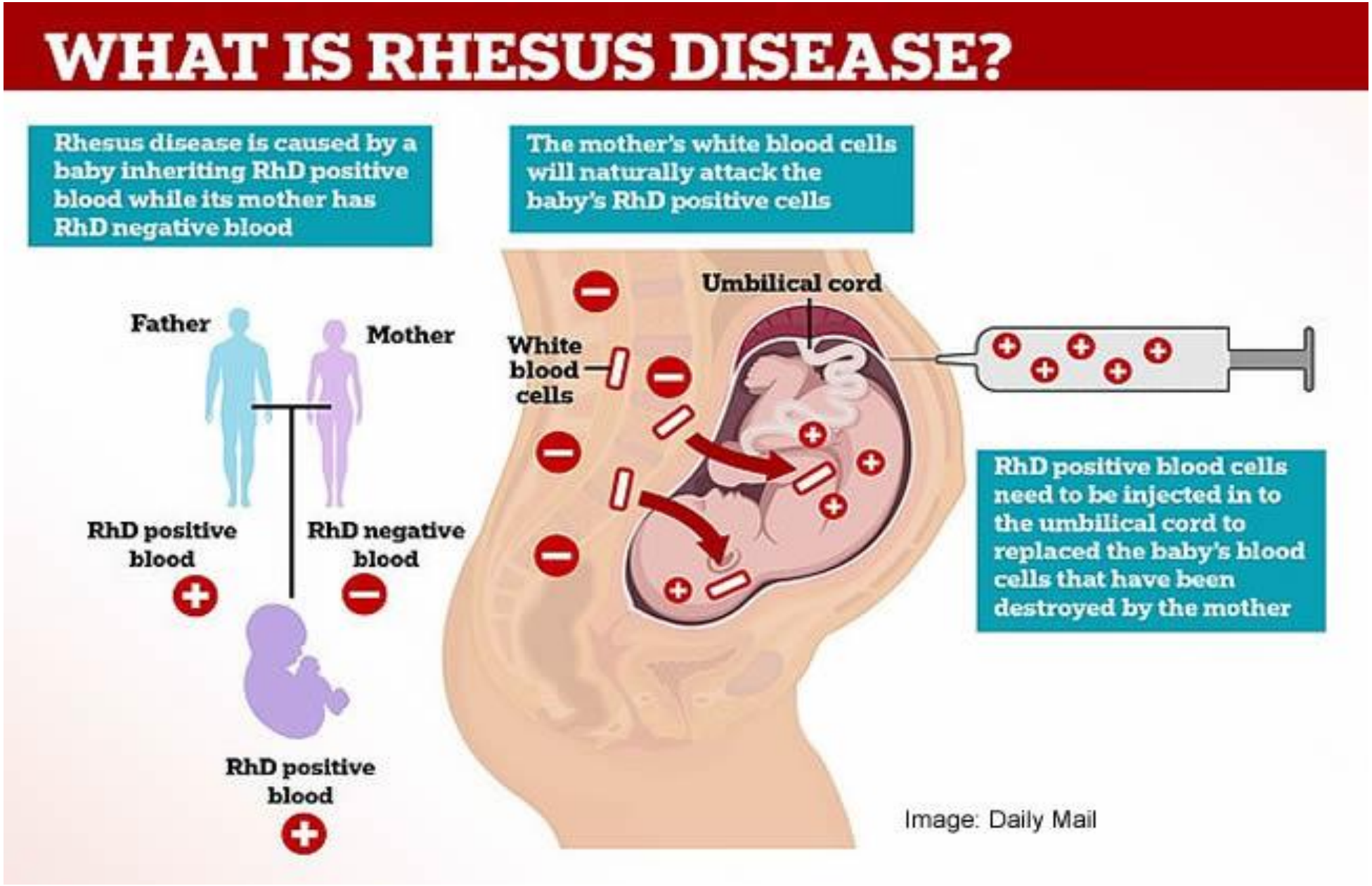
Genetic Autosomal Disorders

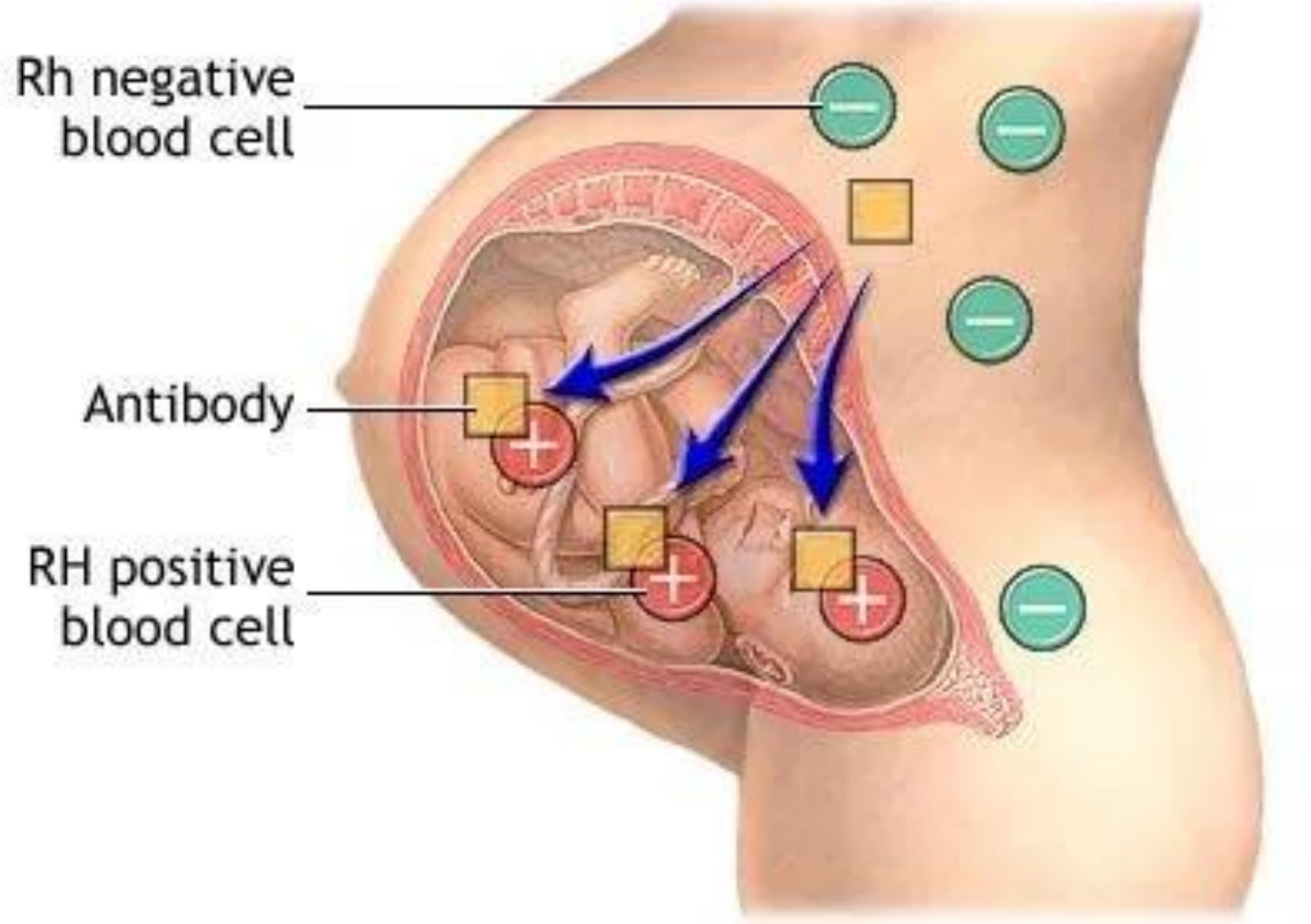
3. Rhesus factor (Rh) incompatibility

- The immune response of the mother to the baby's blood results in the break down of the baby's red blood cells

- The result of the incompatibility doesn't affect the health of the mother, but the child may suffer complications such as jaundice, anemia, brain or heart damage or death in severe cases

WHAT IS RHESUS DISEASE?

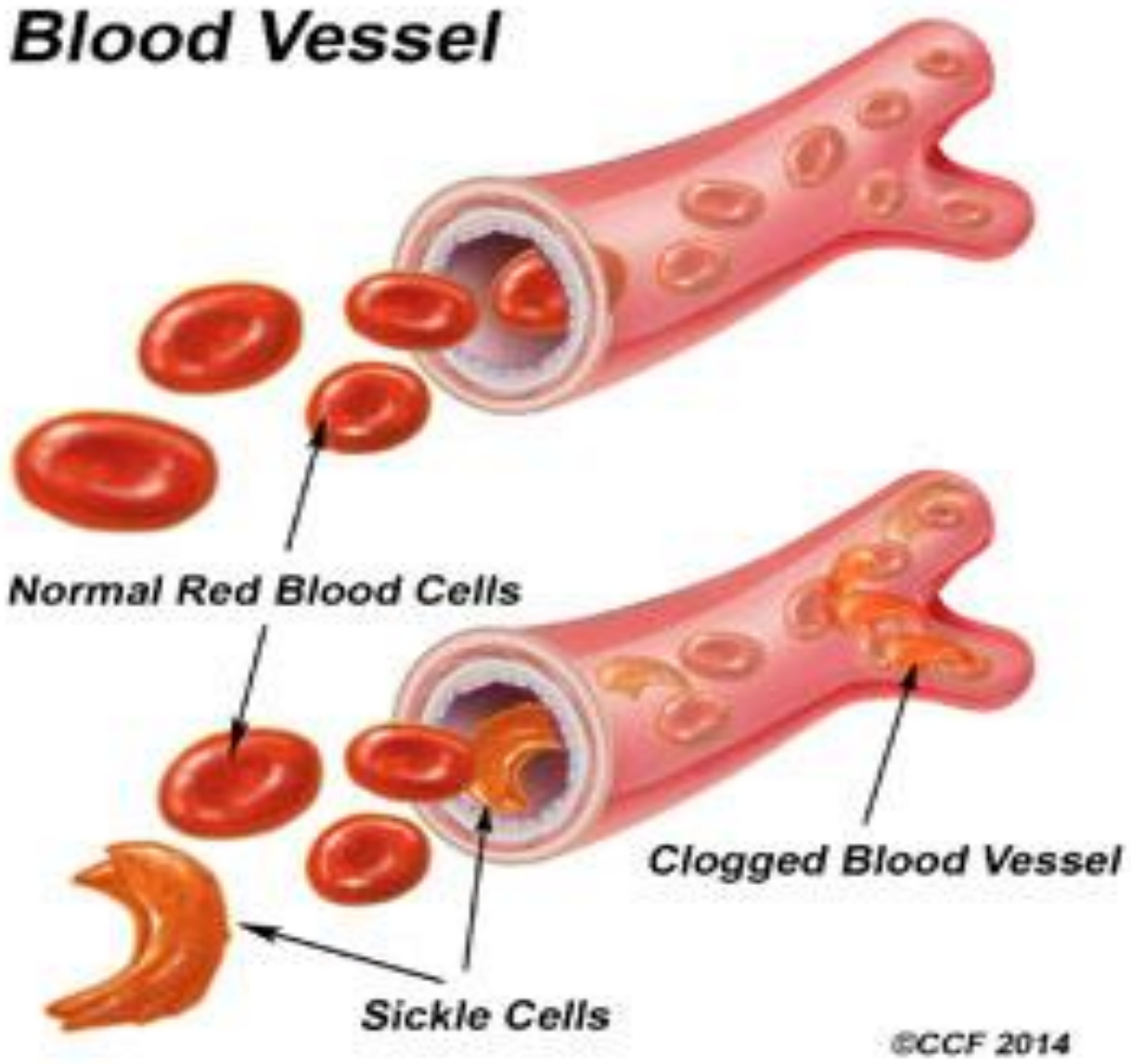



Rh negative blood cell
Antibody
RH positive blood cell

Genetic Autosomal Disorders

4. Sickle Cell Disease

- It is a genetic condition in which red blood cells are not shaped as they should be.
- Sickle Cell Disease occurs as a result of a mutation in a gene on chromosome 11 that codes for the beta subunit of the hemoglobin protein
- Red blood cells look like round discs but in sickle cell disease, they're shaped like sickles, or crescent moons, instead.
- These sickle shaped cells get stuck together and block small blood vessels.


Blood Vessel
Normal Red Blood Cells
Clogged Blood Vessel
Sickle Cells
©CCF 2014

Sickle Cell Cont'd

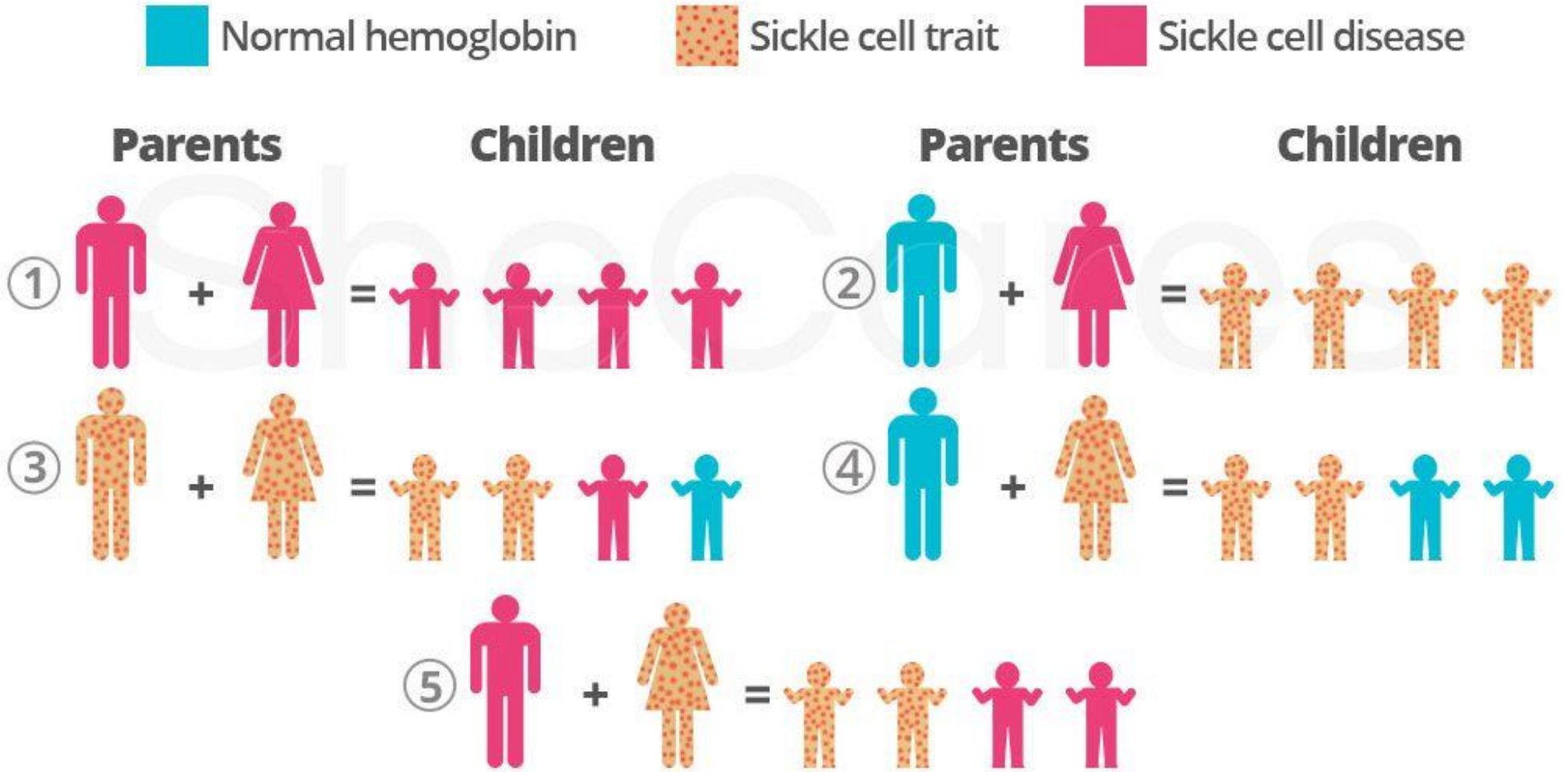
Symptoms include:

- **Anemia**: Sickle cells break apart easily and die, leaving you with too few red blood cells.
- **Episodes of pain**: Periodic episodes of pain, called pain crises, are a major symptom of sickle cell anemia.
- **Swelling of hands and feet**

- A child can only have sickle cell disease if they inherit sickling genes from either parents in an autosomal recessive manner

- The main sickling genotypes are AA, AS, SS, CC, AC and SC. There are those who are carriers of sickling genes but are do not necessarily have sickle cell disease

Sickle Cell Gene Inheritance



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Know Your Genotype

Compatibility Guide

AA + AA = ✓

AA + AS = ✓

AA + SS = ✓

AA + AC = ✓

AS + AS = ✗

AS + SS = ✗

SS + SC = ✗

SS + AC = ✗

SS + CC = ✗

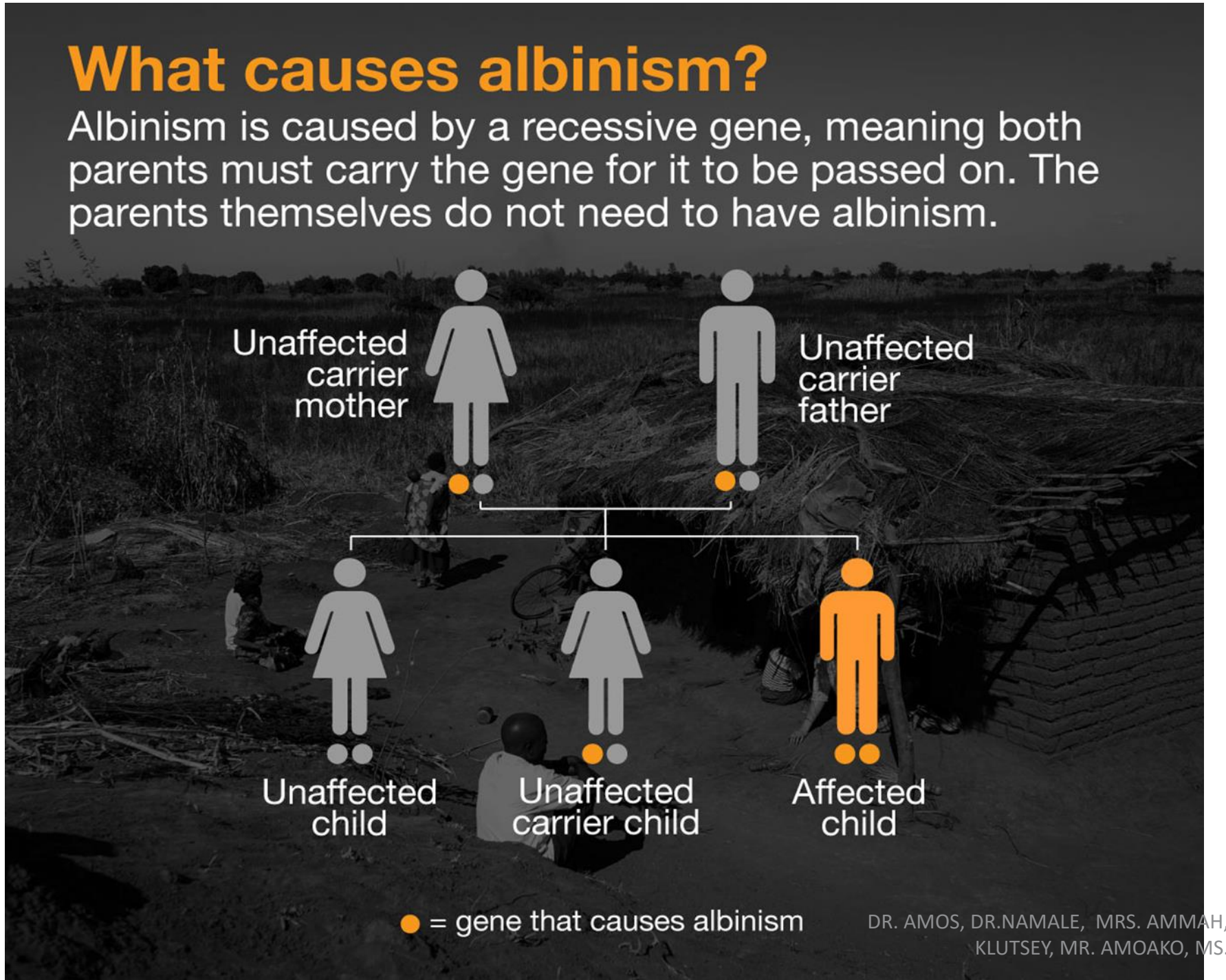
Genetic Autosomal Disorders

2. Albinism

- Albinism is a group of inherited disorders that results in little or no production of the pigment melanin, which determines the color of the skin, hair and eyes.

- It is caused by mutations in one of several genes, and most types are inherited in an autosomal recessive manner. Several genes provide instructions for making one of several proteins involved in the production of melanin.

- Different types of albinism can occur, based mainly on which gene mutation caused the disorder


What causes albinism?
Albinism is caused by a recessive gene, meaning both parents must carry the gene for it to be passed on. The parents themselves do not need to have albinism.
Unaffected carrier mother
Unaffected carrier father
Unaffected child
Unaffected carrier child
Affected child
= gene that causes albinism

Types of Albinism

- **Oculocutaneous albinism (OCA)**, the most common type, means a person inherited two copies of a mutated gene

- It's the result of a mutation in one of seven genes, labeled from OCA1 to OCA7.

- OCA causes decreased pigment in the skin, hair and eyes, as well as vision problems. The amount of pigment varies by type, and the resulting color of skin, hair and eyes also varies by and within types

Types of Albinism

- Albinism related to rare hereditary syndromes.
-
- For example, **Hermansky-Pudlak syndrome** includes a form of OCA as well as bleeding and bruising problems and lung and bowel diseases.

- **Chediak-Higashi syndrome** includes a form of OCA as well as immune problems with recurrent infections, neurologic abnormalities and other serious issues

Chromosomal Autosomal Disorders

1. Chromosomal Diseases (Down Syndrome)

- A chromosomal disorder characterized by features such as flat facial features, small head and ears, short neck, bulging tongue, eyes that slant upward, atypically shaped ears, poor muscle tone.

- Caused by a duplication or an extra copy of their 21st chromosome

Types of Down Syndrome

- **Trisomy 21:** Here, there's an extra copy of chromosome 21 in every cell. This is the most common form of Down syndrome.

- **Mosaicism:** Occurs when a child is born with an extra chromosome in some but not all of their cells. People with mosaic Down syndrome tend to have fewer symptoms than those with trisomy 21.

- **Translocation:** In this type of Down syndrome, children have only an extra part of chromosome 21. There are 46 total chromosomes. However, one of them has an extra piece of chromosome 2 attached.

Environmental Threats

- Harmful substances such as drugs or radiation that invade the womb and result in birth defects are called teratogens.

- Teratogens are especially damaging in the embryonic stage because it is a critical period in prenatal development.

- Environmental pollutants and toxic wastes are also sources of danger to unborn children. Some of these chemicals and radiations are:

Environmental Threats

- The term teratogen refers to any environmental agent that causes damage during the prenatal period. Scientists chose this label (from the Greek word teras , meaning “malformation”) because they first learned about harmful prenatal influences from cases in which babies had been profoundly damaged.

- But the harm done by teratogens is not always simple and straightforward.

- It depends on the following factors:

Environmental Threats

- **Dose** . As we discuss particular teratogens, you will see that larger doses over longer time periods usually have more negative effects.

- **Heredity** . The genetic makeup of the mother and the developing organism plays an important role. Some individuals are better able than others to withstand harmful environments.

- **Other negative influences**. The presence of several negative factors at once, such as additional teratogens, poor nutrition, and lack of medical care, can worsen the impact of a single harmful agent.
- **Age**. The effects of teratogens vary with the age of the organism at time of exposure. To understand this last idea, think of the sensitive or critical period concept.
- If the environment is harmful, then damage occurs, and recovery is difficult and sometimes impossible.

Environmental Threats

- Prescription and Non-prescription Drugs
- Illegal Drugs
- Tobacco
- Alcohol
- Radiation
- Environmental Pollution from chemicals
  (Mercury, Lead, Mercury, Pesticides, Carbon monoxide)
- Maternal Disease (Syphilis, Rubella, STD's, HIV/AIDs)

Environmental Threats

- Other Maternal Factors
- Exercise
- Nutrition
- Drugs
- Poverty
- Emotional state
- Mother’s age

Alcohol

- Exposure to alcohol can result in varied abnormalities in childhood and later years.
- A child exposed to alcohol in the womb can either have:

- Fetal alcohol spectrum disorder (FASD),
- Partial fetal alcohol syndrome (p-FAS), and
- Alcohol-related neurodevelopmental disorder (ARND)

Fetal Alcohol Syndrome

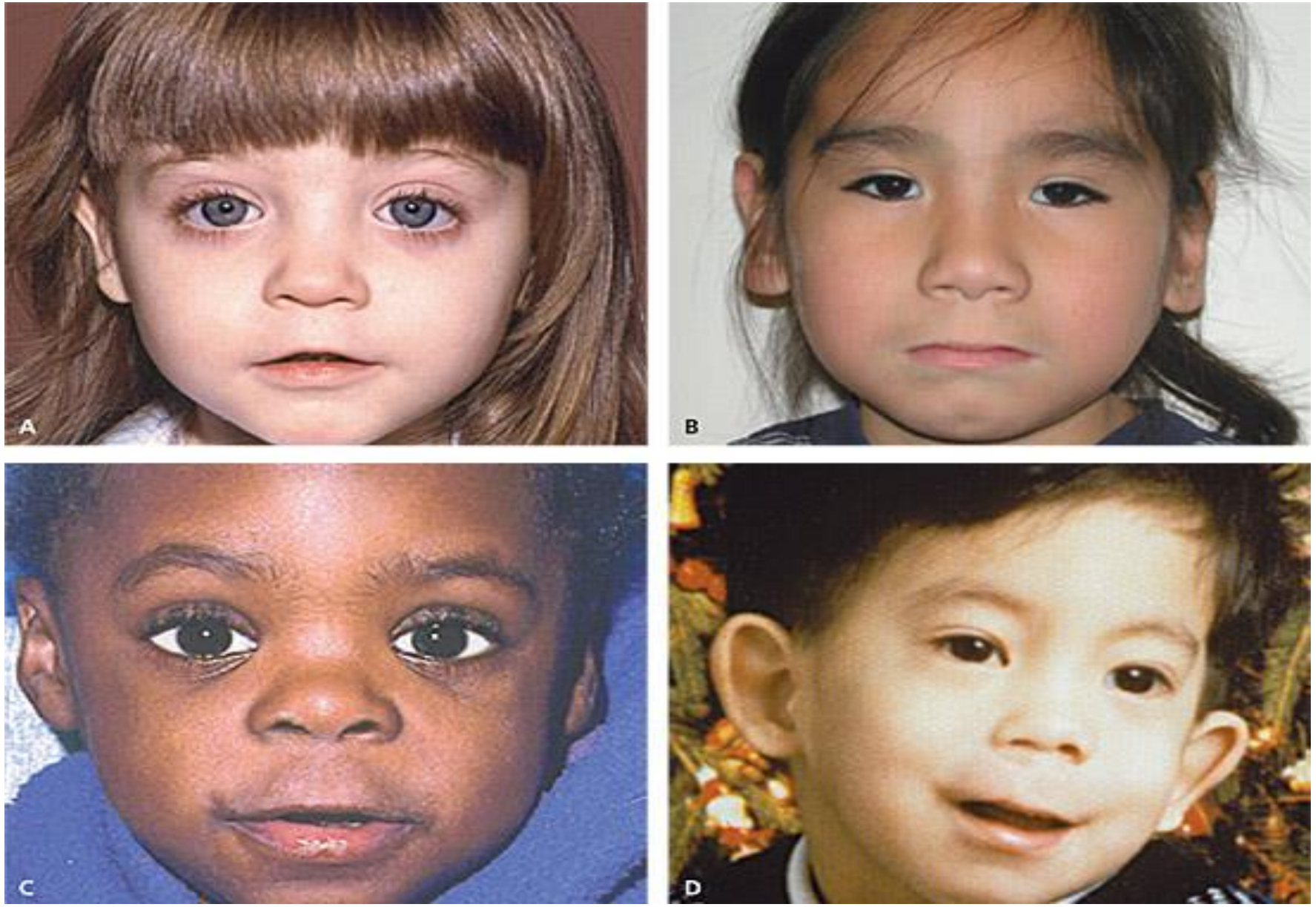
- It encompasses a range of physical, mental, and behavioral outcomes caused by prenatal alcohol exposure
- Fetal alcohol syndrome (FAS), distinguished by

(a)slow physical growth

(b) a pattern of three facial abnormalities (short eyelid openings; a thin upper lip; a smooth or flattened philtrum, or indentation running from the bottom of the nose to the center of the upper lip), and

(c) brain injury, evident in a small head and impairment in at least three areas of functioning—for example, memory, language and communication, attention span and activity level (overactivity), planning and reasoning, motor coordination, or social skills.


baby think it over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Partial Fetal Alcohol Syndrome

- Partial fetal alcohol syndrome (p-FAS), characterized by (a) two of the three facial abnormalities just mentioned and (b) brain injury, again evident in at least three areas of impaired functioning.

- Mothers of children with p-FAS generally drank alcohol in smaller quantities, and children's defects vary with the timing and length of alcohol exposure.

- Furthermore, recent evidence suggests that paternal alcohol use around the time of conception can induce genetic alterations, thereby contributing to symptoms (Ouko et al., 2009).

Alcohol-related neurodevelopmental disorder

- Alcohol-related neurodevelopmental disorder (ARND), in which at least three areas of mental functioning are impaired, despite typical physical growth and absence of facial abnormalities.

- Again, prenatal alcohol exposure, though confirmed, is less pervasive than in FAS (Chudley et al., 2005; Loock et al., 2005).

- The more alcohol a woman consumes during pregnancy, the poorer the child's motor coordination, speed of information processing, attention, memory, reasoning, and intelligence and achievement test scores during the preschool and school years (Burden, Jacobson, & Jacobson, 2005; Korkman, Kettunen, & Autti-Raemoe, 2003; Mattson, Calarco, & Lang, 2006).

WEEK 4 – Physical and Cognitive Development

- Periods of Development
- **Physical Development**
  - ✓ Infancy
  - ✓ Childhood
  - ✓ Adolescence
- **Cognitive Development**
  - ✓ Infancy
  - ✓ Childhood
  - ✓ Adolescence

DR. NAMALE, DR. AMOS, MRS. AMMAH, MR. MAHAMA, MS. KLUTSEY , MR. AMOAKO, MS EGGLEY

Periods of Development

- **Infancy** spans the first year in which a child is able to sit and do somethings with support from parents or caregivers.

- Toddlerhood spans the second, during which children take their first independent steps, marking a shift to greater autonomy.

- **Early childhood** spans from 2 to 11 years . The body becomes longer and leaner, motor skills are refined, and children become more self-controlled and self-sufficient. Children learn about the wider world and master new responsibilities that increasingly resemble those they will perform as adults.

- **Adolescence** spans from 11 to 18 years. This period initiates the transition to adulthood. Puberty leads to an adult-sized body and sexual maturity.

Physical Development in Infancy

- Growth is so rapid and the consequences of neglect are so severe that gains are closely monitored. Newborns gain an ounce a day for several months. Birthweight typically doubles by 4 months and triples by a year.

- An average 7-pound newborn will be 21 pounds at 12 months (9,52kg up from 3.17 kg at birth).

- Physical growth in the second year is slower but still rapid. By 24 months, most children weigh almost 28 pounds (13 kilograms).

Physical Development in Infancy

- Newborns also grow in height—from about 20 inches at birth to about 34 inches at age 2 (from 51 to 86 centimeters).

- Each of these numbers is a norm, which is a standard, for a particular population.

- Genetic diversity can allow for healthy newborns from other continents to be smaller or larger than these norms.

Physical Development in Infancy

- The word **motor** here refers to movement of muscles.
- Therefore, **motor skills** are the learned abilities to move some part of the body, in actions ranging from a large leap to a flicker of the eyelid.
- Motor skills start with the newborn making **reflexes or automatic movements** that are not learnt.
- Therefore, a **reflex** is an involuntary or automatic, action that the human body does in responding to something or situations without the person having to think about it. **Examples,** an individual decides to kick their leg, it just kicks. An individual blinks the eye an object draws close to it. The child yawns just to release internal tension.

Physical Development in Infancy

- **Reflexes that maintain oxygen supply:** The breathing reflex begins even before the umbilical cord, with its supply of oxygen, is cut. Others are reflexive hiccups and sneezes, as well as thrashing (moving the arms and legs about) to escape something that covers the face.

- **Reflexes that maintain constant body temperature:** When infants are cold, they cry, shiver, and tuck their legs close to their bodies. When they are hot, they try to push away blankets and then stay still.

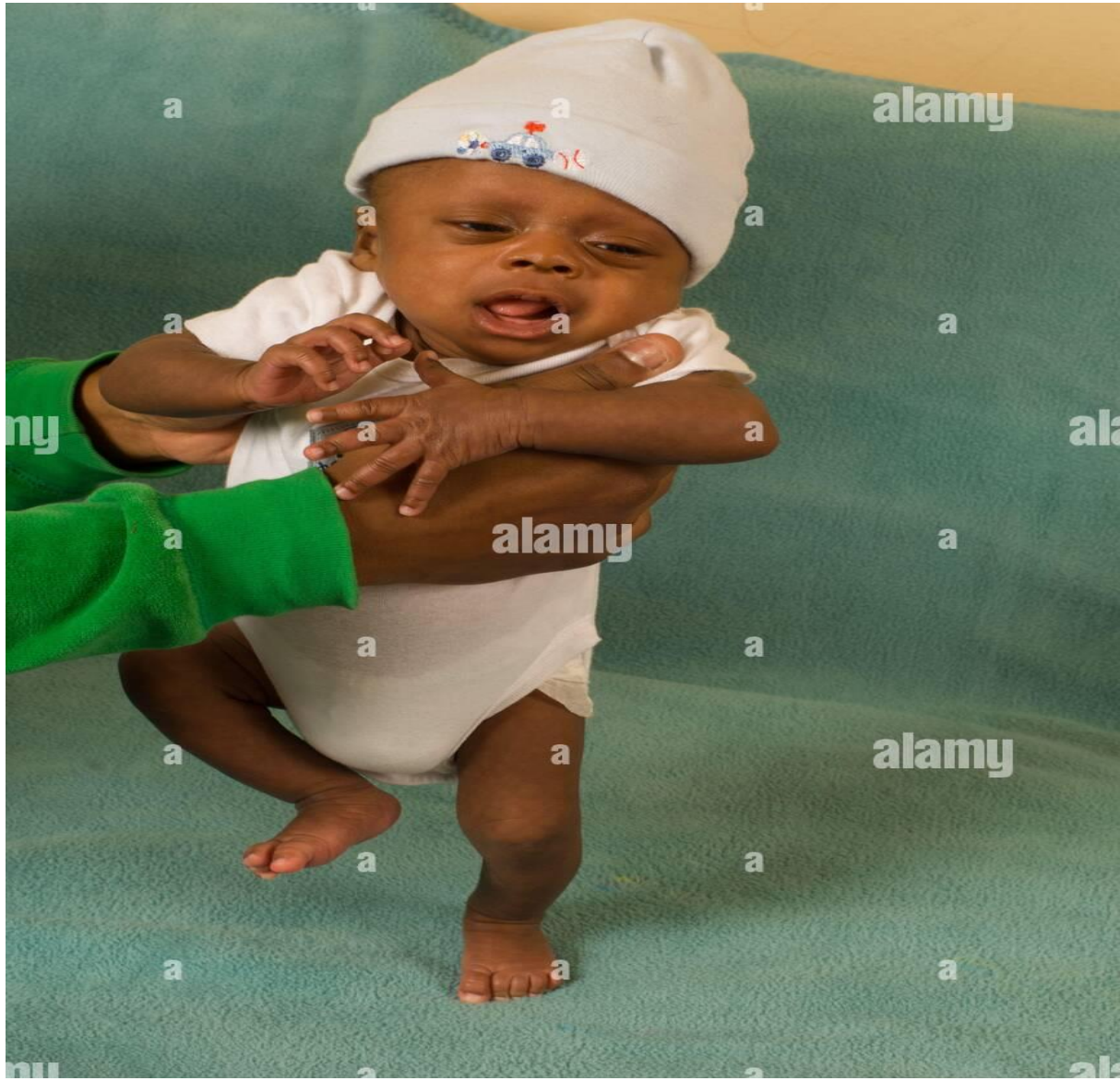
- **Reflexes that manage feeding:** The sucking reflex causes newborns to suck anything that touches their lips (fingers, toes, blankets, and rattles, as well as natural and artificial nipples of various textures and shapes. In the rooting reflex, babies turn their mouths toward anything that brushes against their cheeks (a reflexive search for a nipple and start to suck). Swallowing also aids feeding, as does crying when the stomach is empty and spitting up when too much is swallowed quickly.

Physical Development in Infancy

- **Babinski reflex** occurs when a newborn's feet are stroked, the toes fan upward.

Physical Development in Infancy

- **Stepping reflex** occurs when newborns are held upright, feet touching a flat surface, they move their legs as if to walk.



Physical Development in Infancy

- **Swimming reflex** occurs when held horizontally on their stomachs, newborns stretch out their arms and legs.

Physical Development in Infancy

- **Palmar grasping reflex** occurs when something touches the palms, newborns grip it tightly.

Physical Development in Infancy

- **Moro reflex** occurs when someone bangs on the table they are lying on, newborns fling their arms out and then bring them together on their chests, crying with wide open eyes.

Physical Development in Infancy

- **Gross Motor Skills:** Physical abilities involving large body movements, such as walking and jumping. (The word gross here means "big.")

- ✓They are in a cephalocaudal (head-down) and proximodistal (center-out) direction.
- ✓Supported sitting- 3 moths
- ✓Unsupported sitting- 6 months
- ✓Crawling- 8 to 10 months
- ✓Standing and walking- 1 year and above

Physical Development in Infancy

- **Fine Motor Skills:** Physical abilities involving small body movements, especially of the hands and fingers, such as drawing and eating using a spoon. The word fine here means "**small**."

- ✓The most valued fine motor skills are finger movements, enabling humans to write, draw, type, tie, and so on. Movements of the tongue, jaw, lips, teeth, and toes are fine movements, too.
- ✓Usually mouth skills precede hand skills by many months

Physical Development in Infancy

- **0- 2 months** -babies excitedly stare and wave their arms at objects dangling within reach.
- **3 months** - they can usually touch such objects, but because of limited eye–hand coordination, they cannot yet grab and hold on unless an object is placed in their hands.
- **4 months-** infants sometimes grab, but their timing is off: They close their hands too early or too late.
- **6 months-** most babies can reach, grab, and grasp almost any object that is of the right size.
- **1 year and above-** Almost all can hold a bottle, shake a rattle, and other objects

Physical Development in Infancy

❑Nutrition and Malnutrition

✓To ensure optimum growth, newborns need to be well breastfed.

✓The WHO recommends 6 months exclusive breastfeeding.

❑Benefits for Baby

✓Balance of nutrition (fat, protein, etc.) adjusts to age of baby

✓Breast milk has micronutrients not found in formula

✓Less infant illness, including allergies, ear infections, stomach upsets

✓Less childhood asthma and better vision

✓Less adult illness, including diabetes, cancer, heart disease

✓Protection against many childhood diseases, since breast milk contains antibodies from the mother

Physical Development in Infancy

❑Benefits for Mother

✓Easier bonding with baby

✓Reduced risk of breast cancer and osteoporosis

✓Natural contraception (with exclusive breast-feeding, for

✓several months)

✓Satisfaction of meeting infant's basic need

Physical Development in Infancy

- **Malnutrition:** Occurs when the child or newborn is not well fed. The child lacks nutrients in the right proportions. Example of malnutrition include protein calorie and stunting.

- **Protein-calorie malnutrition:** A condition in which a person does not consume sufficient food. This can result in illness, severe weight loss, and even death.

- **Stunting:** The failure of children to grow to a normal height for their age due to severe and chronic malnutrition.

Physical Development in Infancy

- ✓**Wasting:** The tendency for children to be severely underweight for their age as a result of malnutrition.

- ✓**Marasmus:** A disease of severe protein-calorie malnutrition during early infancy, in which growth stops, body tissues waste away, and the infant eventually dies.

- ✓**Kwashiorkor:** A disease of chronic malnutrition in which a protein-calorie deficiency makes a child more vulnerable to other diseases, such as measles, diarrhea, and influenza.

Physical Development in Childhood

- Mastery of gross and fine motor skills results not only from body growth and maturation but also from extensive, active play.

- Adults need to make sure children have a safe space to play, with ample time, appropriate equipment, and active playmates.

- "Safe space to play" cannot be taken for granted because the environment is the third teacher.

Physical Development in Childhood

- The environment has the power to enhance children's sense of wonder and capacity for learning"
- Good nutrition needed for healthy childhood development.

- Appetite decreases between ages 2 and 6 because young children naturally grow more slowly than they did as infants.
- Moreover, if children playless outside, they burn fewer calories.

- Children learn self help skills such as becoming self-sufficient at dressing and feeding and mastering shoe tying skills

Physical Development in Childhood

- The child also learns to draw and write. They scribbles to become pictures at 3-4 years and are able make more realistic drawing at 6.

- Middle childhood is a time of slow and steady growth, a little more than 2 inches and 5 pounds a year.

- Beyond the sheer fun of playing, the benefits of physical activity—especially games with rules, which children now can follow—last a lifetime.

- Exercise advances physical, emotional, and mental health. Exercise improves academic achievement.

Physical Development in Adolescence

- One of the major physical changes that occur in adolescence is the onset of puberty

- **Puberty:** The time at the end of childhood between the first onrush of growth hormones and full adult size. Puberty usually lasts three to five years. Many more years are required to achieve psychosocial maturity

- Different changes occur for both boys and girls.

Physical Development in Adolescence

- **Menarche:** A girl's first menstrual period, signaling that she has begun ovulation. Pregnancy is biologically possible, but ovulation and menstruation are often irregular for years after menarche.

- **Spermarche (Nocturnal Emission):** A boy's first ejaculation of sperm. Erections can occur as early as infancy, but ejaculation signals sperm production.

- Spermarche may occur during sleep (in a "wet dream") or via direct stimulation.

- These changes are made possible by hormones

Physical Development in Adolescence

❑Signs of Puberty in Boys

- ✓Testicles get bigger and the scrotum begins to thin and redden
- ✓Pubic hair also starts to appear at the base of the penis and underarm hair starts to grow
- ✓Breasts can swell slightly temporarily – this is normal and not the same as "man-boobs"
- ✓Boys start to sweat more
- ✓Boys may have "wet dreams" (involuntary ejaculations of semen as they sleep)
- ✓Their voice "breaks" and gets permanently deeper – for a while, a boy might find his voice goes very deep one minute and very high the next

Physical Development in Adolescence

❑Signs Of Puberty In Girls

- ✓Breasts begin to develop and grows larger in size.
- ✓Pubic hair also starts to grow, and some girls may notice more hair on their legs and arms.
- ✓Girls usually have their first period
- ✓Pubic hair becomes coarser and curlier
- ✓Underarm hair begins to grow – some girls also have hair in other parts of their body, such as their top lip, and this is completely normal

Physical Development in Adolescence

- ✓Girls start to sweat more
- ✓Girls have a white vaginal discharge
- ✓Girls often get acne – a skin condition that shows up as different types of spots, including whiteheads, blackheads and pus-filled spots called pustules
- ✓Most girls gain weight (which is normal) as their body shape changes – girls develop more body fat along their upper arms, thighs and upper back; their hips grow rounder and their waist gets narrower

Physical Development in Adolescence

- ✓Though these changes occur for both boys ang girls, there are variations in onset and duration which may result from the following

- ✓**Genetic:** African Americans reach puberty, on average, about seven months earlier than European or Hispanic Americans; Chinese Americans average several months later.

- ✓**Gender:** In height, the average girl is two years ahead of the average boy: The female height spurt occurs before menarche, whereas for boys the increase in height is relatively late, after spermarche

Physical Development in Adolescence

- **Nutrition:** Heavy girls reach menarche years earlier than malnourished ones do.

- **Stress:** Stress hastens the hormonal onset of puberty, especially if a child's parents are sick, drug-addicted, or divorced, or if the neighborhood is violent and impoverished.

Cognitive Development

❑Jean Piaget's theory of cognitive development

✓ His theory suggests that intelligence changes as children grow and that move through four different stages of mental development:

1. Sensorimotor stage: birth to 18-24 months
2. Preoperational stage: 2 to 7 years
3. Concrete operational stage: 7 to 11 years
4. Formal operational stage: ages 12 and up

Cognitive Development

- His theory focuses not only on understanding how children acquire knowledge, but also on understanding the nature of intelligence.

- The sequence of the stages is universal across cultures and follow the same invariant (unchanging) order.

- All children go through the same stages in the same order but not all at the same rate.

Cognitive Development

✓Stage 1- Sensori-motor

✓Piaget's term for the way infants think—by using their senses and motor skills—during the first period of cognitive development.

✓Stage One (birth to 1 month) Reflexes: sucking, grasping, staring, listening

✓Stage Two (1–4 months) The first acquired adaptations: accommodation and coordination of reflexes

✓Stage Three (4–8 months) Making interesting sights last: responding to people and objects

✓Example: clapping hands when mother says child's name

Cognitive Development

- ✓Stage Four (8–12 months) New adaptation and anticipation: becoming more deliberate and purposeful in responding to people and objects

- ✓Stage Five (12–18 months) New means through active experimentation: experimentation and creativity in the actions of the "little scientist"
- ✓Example: putting a teddy bear in the toilet and flushing it.

- ✓Stage Six (18–24 months) New means through mental combinations: thinking before doing, new ways of achieving a goal without resorting to trial and error

Cognitive Development

- **Object permanence:** The realization that objects (including people) still exist even if they can no longer be seen, touched, or heard.

Cognitive Development

❑Stage 2 - Preoperational

✓Preoperational intelligence is the second of Piaget's four periods of cognitive development.

✓Piaget used the prefix pre- because children do not yet use logical operations (reasoning processes)

✓Language skills enables **symbolic thought-** when an object or word can stand for something else, including something out of sight or imagined.

✓Words are used to symbolize an object or action; a child can talk about a dog without seeing the actual dog.

Cognitive Development

- ✓Symbolic thought helps explain **animism,** the belief of many young children that natural objects (such as a tree or a cloud) are alive and that nonhuman animals have the same characteristics as the child.

- ✓Many children's stories include animals or objects that talk and listen

- ✓**Centration** is the tendency to focus (to center) on only one aspect of a situation.

- ✓Young children may, for example, insist that Daddy is a father, not a brother, because they center on the role that he fills for them.

Cognitive Development

- ✓The daddy example illustrates a particular type of centration that Piaget called egocentrism—literally, "self- centeredness."

- ✓**Egocentrism**: Piaget's term for children's tendency to think about other people and their own experiences as if everything revolves around them.

- ✓**Focus on appearance**- A characteristic of preoperational thought in which a young child assumes that the visible appearance of someone or something is also their essence.

Cognitive Development

- ✓**Static reasoning-** A characteristic of preoperational thought in which a young child thinks that nothing changes. Whatever is now has always been and always will be.

- ✓**Irreversibility**- In preoperational thought, the idea that change is permanent, that nothing can be restored to the way it was before a change occurred.

- ✓**Conservation**- The principle that the amount of a substance remains the same (i.e., is conserved) even when its appearance changes.

Cognitive Development

❑Stage 3 - Concrete Operational

✓Piaget's term for the ability to reason logically about direct experiences and perceptions.

✓**Classification**- The logical principle that things can be organized into groups (or categories or classes) according to some characteristic they have in common.

✓**Seriation**-The concept that things can be arranged in a logical series, such as the number series or the alphabet.

Cognitive Development

❑Stage 4- Formal Operational

✓Adolescents move past concrete operational thinking and consider abstractions. Jean Piaget described a shift to formal operational thought, including "assumptions that have no necessary relation to reality" (Piaget, 1950/2010, p. 148).

✓**Adolescent egocentrism**: A characteristic of adolescent thinking that leads young people to believe in their own uniqueness, and to imagine that other people are also focused on them.

Cognitive Development

- **Personal fable**: The belief that one's own emotions, experiences, and destiny are unique, more wonderful or awful than anyone else's.

- **Invincibility fable**: The fantasy that a person cannot be harmed by anything that might defeat a normal mortal, such as unprotected sex, drug abuse, or high-speed driving.

- **Imaginary audience**: The other people who, in an adolescent's egocentric belief, watch his or her appearance, ideas, and behavior.

Cognitive Development

- ✓**Egocentrism** can coexist with more logical and abstract intelligence
- ✓**Hypothetical thought**: Reasoning that includes propositions and possibilities that do not reflect reality.
- ✓**Deductive reasoning**: Reasoning from a general statement, premise, or principle, through logical steps, to figure out (deduce) specifics. (Also called top-down reasoning.)
- ✓**Inductive reasoning**: Reasoning from specific experiences or facts to reach (induce) a general conclusion. (Also called bottom-up reasoning.)

Cognitive Development

❑Vygotsky: Social Learning

✓Vygotsky emphasized another side of early cognition, the social aspects. He stressed the power of culture, Learning is not done in isolation; according to many contemporary educators, it depends on joint engagement.

✓**Mentor-** Someone who teaches or guides someone else, helping a learner master a skill or body of knowledge.

Cognitive Development

- ✓**Zone of proximal development (ZPD)-** In sociocultural theory, a metaphorical area, or "zone," surrounding a learner that includes all the skills, knowledge, and concepts that the person is close ("proximal") to acquiring but cannot yet master without help.

- ✓**Scaffolding-** Temporary support that is tailored to a learner's needs and abilities and aimed at helping the learner take the next.

Week 5-Socioemotional and Moral Develoment

- ❑Socioemotional development in infancy, childhood and adolescence
- ❑Erik Erikson theory of psychosocial development
- ❑Moral development in infancy, childhood and adolescence
- ❑Piaget's theory of moral development
- ❑Kohlberg's theory of moral development
- ❑Educational Implications.

Socioemotional Development

- **Infancy:** Early Emotions- happiness, sadness, anger, fear

- **Social smile:** A smile evoked by a human face, normally first evident in full-term infants about 6 weeks after birth.

- **Separation anxiety:** Distress when a familiar caregiver or loved one leaves; most obvious between 9 and 14 months.

- **Stranger wariness:** An infant's expression of concern—a quiet stare while clinging to a familiar person, or a look of fear—when a stranger appears.

Socioemotional Development

- **Self-awareness:** A person's realization that he or she is a distinct individual whose body, mind, and actions are separate from those of other people.
- **Attachment:** According to Ainsworth, "an affectional tie" that an infant forms with a caregiver—a tie that binds them together in space and endures over time.
- Infants show their attachment through
- **i. Proximity-seeking** (such as approaching and following their caregivers) and through
- **ii. Contact-maintaining** (such as touching, snuggling, and holding).

Socioemotional Development

- **Secure attachment:** A relationship in which an infant obtains both comfort and confidence from the presence of his or her caregiver.

- **Insecure-avoidant attachment:** A pattern of attachment in which an infant avoids connection with the, caregiver, as when the infant seems not to care about the caregiver's presence, departure, or return.

- **Insecure-resistant/ambivalent attachment:** A pattern of attachment in which an infant's anxiety and uncertainty are evident, as when the infant becomes very upset at separation from the caregiver, such infants both resist and seek contact on reunion.

- **Disorganized attachment:** A type of attachment that is marked by an infant's inconsistent reactions to the caregiver's departure and return.

Socioemotional Development

❑Childhoold- PLAY

✓**Pretend Play**: This the play that often occurs when a child is alone

✓**Social Play**: This the play that occurs with playmates.

✓**Rough-and-tumble play:** Play that seems to be rough, as in play wrestling or chasing, but in which there is no intent to harm.

✓**Sociodramatic play**: Pretend play in which children act out various roles and themes in plots or roles that they create

Socioemotional Development

- **Adolescence – Relationships:** Adolescence is often characterized as a time when children distance themselves from their elders.

- Parent–adolescent relationships are pivotal, not always peaceful (Laursen & Collins, 2009) and disputes are common because the drive for independence.

- Parental friendship and monitoring is needed to guide adolescents and help them make the right choices.

- Parental monitoring: Parents' ongoing awareness of what their children are doing, where, and with whom.

Socioemotional Development

- Adolescents rely on peers to help them navigate the physical changes of puberty, the intellectual challenges of high school, and the social changes of leaving childhood.

- Peer relationships can help adolescents cultivate either good or bad behaviours

- **Peer pressure:** When people of the same age group encourage particular behavior, dress, and attitude.

- This is usually considered negative, when peers encourage behavior that is contrary to norms or morals, but can also be positive.

Socioemotional Development

- Of late it is very common to see adolescents in romantic relationships with early sexual debuts.

- Many adolescents have strong sexual urges but minimal logic about pregnancy and disease and this requires the need for extensive sex education; first from the family, school and other social institutions.

Erik Erikson-Psychosocial Stages of Development

Erik Erikson – Psychosocial Stages of Dev't

Stage	Psychosocial Crisis	Basic Virtue	Age
1.	Trust vs. Mistrust	Hope	0 - 1½
2.	Autonomy vs. Shame	Will	1½ - 3
3.	Initiative vs. Guilt	Purpose	3 - 5
4.	Industry vs. Inferiority	Competency	5 - 12
5.	Identity vs. Role Confusion	Fidelity	12 - 18
6.	Intimacy vs. Isolation	Love	18 - 40
7.	Generativity vs. Stagnation	Care	40 - 65
8.	Ego Integrity vs. Despair	Wisdom	65+

Trust vs. Mistrust

- This stage begins at birth continues to approximately 0-18 months of age. During this stage, the infant is uncertain about the world in which they live, and looks towards their primary caregiver for stability and consistency of care.

- If the care the infant receives is consistent, predictable and reliable, they will develop a sense of trust which will carry with them to other relationships, and they will be able to feel secure even when threatened.

- If these needs are not consistently met, mistrust, suspicion, and anxiety may develop

Autonomy vs. Shame

- This stage occurs between the ages of 18 months to approximately 3 years.
- According to Erikson, children at this stage are focused on developing a sense of personal control over physical skills and a sense of independence.
- Success in this stage will lead to the virtue of will.
- If children in this stage are encouraged and supported in their increased independence, they become more confident and secure in their own ability to survive in the world.

Initiative vs. Guilt

- During the initiative versus guilt stage, children assert themselves more frequently through directing play and other social interaction.
- It is a time of vigour of action and of behaviors that the parents may see as aggressive
- Central to this stage is play, as it provides children with the opportunity to explore their interpersonal skills through initiating activities.
- Success in this stage will lead to the virtue of purpose, while failure results in a sense of guilt.

Industry vs. Inferiority

- Occurs between ages of **5 and 12**. The child forms friendship with peers and now feels the need to win approval by demonstrating specific competencies that are valued by society and begin to develop a sense of pride in their accomplishments.

- If children are encouraged and reinforced for their initiative, they begin to feel industrious (competent) and feel confident in their ability to achieve goals.

- If this initiative is not encouraged, if it is restricted by parents or teacher, then the child begins to feel inferior, doubting his own abilities and therefore may not reach his or her potential.

Identity vs. Role Confusion

- Adolescence is often understood as a search for a consistent understanding of oneself.
- Self-expression and self-concept become increasingly important at puberty. Each young person wants to know, “Who am I?”
- This is a major stage of development where the child has to learn the roles he will occupy as an adult.
- It is during this stage that the adolescent will re-examine his identity and try to find out exactly who he or she is. Erikson suggests that two identities are involved: the sexual and the occupational.

Identity vs. Role Confusion

- **Identity achievement:** Erikson's term for the attainment of identity, or the point at which a person understands who he or she is as a unique individual, in accord with past experiences and future plans. This includes many identities—religions, sexual-gender, political-ethnic, and vocational.

- **Role confusion:** A situation in which people do not seem to know or care about their identity (sometimes called identity diffusion.)

- **Foreclosure:** Erikson's term for premature identity formation, when a person adopts parents' or society's roles and values wholesale, without questioning or analysis.

Moral Development

- The term moral comes from the Latin word **"mores"** meaning **manners or pattern of behaviour that conform to the standard of a group or society**.

- Morality refers to a **sense of ethics of right or wrong.**

- Moral development therefore is a process whereby individuals especially children come to adopt and internalized what is right or wrong in their society

Moral Development

- **Moral development** is the gradual development of an individuals concept of right or wrong – conscious, religious values, social attitudes and certain behaviour.

- Moral development involves changes in thoughts, feelings and behaviours regarding standards of right and wrong.

- Moral development involves an interpersonal and intrapersonal dimension.

Moral Development

- Interpersonal is about our view of right or wrong based on what others say in the environment.

- Intrapersonal is about our view of right or wrong based on personalized convictions and philosophies.

- Moral development involves four questions:

1. How do individuals *reason* or *think* about moral decisions?

Moral Development

2. How do individuals actually *behave* in moral circumstances?

3. How do individuals *feel* about moral matters?

4. What characterizes an individuals moral *personality*?

Agencies of Moral Development

1. The home: The home provides the first social environment where the child through his/her interaction with parents and siblings shapes the child moral development.

2. The school: one of the aims of education is to produce citizens that are honest and hardworking. These moral values are inherent in the Ghanaian culture. The aim of education therefore is to train the youth to develop sound morals that would help in nation building.

Agencies of Moral Development

3. The mass media: The various mass media namely TV, radio, internet, videos etc. teach children acceptable cultural practices and promote understanding of certain moral issues.

4. Peer group: Children as they grow turn to enjoy the company of their peers than their parents. As they are with their peers in the group, they learn to obey the rule and regulations of the group as well as respect for their colleagues which shapes their moral life.

5. Religious bodies: The church and Mosque teach acceptable behaviours through Sunday school and Qur'anic school and the preaching of sermons on morality during worships.

Theories of Moral Development

1. Piaget's Theory of Moral Development

2. Kohlberg Theory of Moral Development

3. Implication for Education

Piaget's (1932) Theory of Moral Development

- Out of the questions posed, Piaget proposed that children go through two stages of how they think about morality.

- Younger children (4-7) display *heteronomous morality.*

- Older children (10 and older) display *autonomous morality.*

Piaget's Theory of Moral Development

- **Heteronomous thinking (moral realism)** is typical of children younger than 7- or 8-years-old.

- These children regard rules and duties to others as unchangeable "givens"

  - ✓Justice is whatever authorities say is right
  - ✓Authorities' punishments are always justified

- Whether an action is good or bad is determined by the consequence of the action, not the motives or intentions behind it:

- Acts that are not consistent with the rules are "bad"; Acts that are consistent with the rules are "good".

Piaget's Theory of Moral Development

- Children judge behaviour **in absolute terms**: behaviour is totally right or totally wrong.

- Everyone see and judges the morality of people and the behaviour the same way they do. Children are inferior to adults because of fear, affection, and admiration.

- Morality easily conforms to the social pressures.

- Children are constraint in morality (morality of constraint) at because they have not achieved the concrete-operational stage of development.

Piaget's Theory of Moral Development

❑**Morality of constraint is due to two factors**;

1. Social factor: Parental control of children is coercive and unilateral which leads to children's unquestioning respect for adults and their rules.

2. Cognitive factor: Children's cognitive immaturity causes them to believe that rules are "real" things likes chairs or gravity. These rules exist outside people and are not the product of the human mind.

❑According to Piaget, children aged between 0-7 years are at the premoral period with little understanding of what a rule is and what purpose it serves.

Piaget's Theory of Moral Development

- **Autonomous morality (moral relativism)** is typical of children 12-years-old and older

- Children understand that rules are products of social interaction, agreement and can be changed if the majority of the group agrees to do so

- Punishments should fit the crime and punishments delivered by adults is not necessarily fair.

- They consider the motives and intentions when evaluating whether an action is good or bad

Piaget's Theory of Moral Development

- Fairness and equality are important factors to consider when constructing rules.
- Children alter or change rules to fit unusual situations.
- **Rules** are decisions made by those involved and can be changed at will as long as everyone agrees. With a higher level of moral reasoning comes the ability to see rules as changeable.
- Children at higher stages are superior to lower stages because they show greater understanding of society and thus are more socially adaptive.

Piaget's Theory of Moral Development

- One day, a girl named Justina was playing with her mommy called Daavi. Justina decided that it would be fun to have a fufu party with her mommy and her teddy bear.

- So, Justina went into the kitchen and got a packet of neat fufu. Justina carefully prepared the fufu in a steel bowl, but while she reached for the water, the bow accidentally slipped out of her hands and the fufu fell, became dirty and was disposed.

- Another girl, named Hariya, was playing with her boy friend called Yakubu. Hariya wanted to play marching band in the kitchen by ringing pot lids (covers) together.

Piaget's Theory of Moral Development

- When her boyfriend Yakubu said the he would not want to play marching band because it was too loud, Hariya became very upset.
- She was so angry that she grabbed a cup off the counter and threw it onto the floor, smashing it into pieces.
- These objective judgments give way to subjective judgments when children (around age 8) enter the stage of moral relativism.
- In this advanced stage, children consider motives when judging one's actions.

Piaget's Theory of Moral Development

- According to Piaget, young children who are in a stage of **moral realism,** judge right and wrong by the consequences of one's actions.

- Therefore, young children would say that **Justina** is more bad because she all threw the fufu away.

- According to Piaget, young children who are in a stage of **moral relativism,** judge right and wrong based on the circumstances and agreement.

- Therefore, young children would say that **Hariya** is more bad because breaking of the cup was needless.

Kohlberg's (1958) Theory of Moral Development

- This theory is a stage theory. In other words, everyone goes through the stages sequentially without skipping any stage.

- However, movement through these stages are not natural, that is people do not automatically move from one stage to the next as they mature.

- In stage development, movement occurs when a person notices inadequacies in his or her present way of coping with a given moral dilemma.

Kohlberg's Theory of Moral Development

- According to stage theory, people cannot understand moral reasoning more than one stage ahead of their own.

- For example, a person in Stage 1 can understand Stage 2 reasoning but nothing beyond that.

Kohlberg's Theory of Moral Development

Level 1-Pre-Conventional Moral Development

- Stage 1
- Stage 2

Level 2-Conventional Moral Development

- Stage 3
- Stage 4

Level 3-Post-Conventional Moral Development

- Stage 5
- Stage 6

Level 1: Preconventional Morality 0-9 years

- **Stage 1 - Obedience and Punishment**
- Especially common in young children, but adults are capable of expressing this type of reasoning. At this stage, children see rules as fixed and absolute.
- Obeys rules in order to avoid punishment.
- Determines a sense of right and wrong by what is punished and what is not punished.
- Obeys superior authority and allows that authority to make the rules, especially if that authority has the power to inflict pain.
- Is responsive to rules that will affect his/her physical well-being

Level 1: Preconventional Morality 0-9 years

- **Stage 2 – Naively Egotistical (self-interest/exchange)**
- At this stage of moral development, children account for individual points of view and judge actions based on how they serve individual needs.
- Reciprocity is possible, but only if it serves one's own interests. It is motivated by vengeance (revenge) or “an eye for an eye” philosophy.

- Is self-absorbed while assuming that he/she is generous.
- Believes in equal sharing in that everyone gets the same, regardless of need.
- Believes that the end justifies the means. Will do a favor only to get a favour. Expects to be rewarded for every non-selfish deed he/she does.

Level 2: Conventional Morality 10-15 years

- **Stage 3 – "Good Boy-Good Girl" Orientation**
- This stage of moral development is focused on living up to social expectations and roles. There is an emphasis on **conformity,** being "nice," and consideration of how choices influence relationships.

- Finds peer approval very important
- Feels that intensions are as important as deeds and expects others to accept intentions or promises in place of deeds
- Begins to put himself/herself in another's shoes and think from another perspective

Level 2: Conventional Morality 10-15 years

- **Stage 4 – Law and Social Order**
- At this stage of moral development, people begin to consider society as a whole when making judgments. The focus is on maintaining law and order by following the rules, doing one's duty, and respecting authority.

- Is a duty doer who believes in rigid rules that should not be changed
- Respects authority and obeys it without question

- Supports the rights of the majority without concern for those in the minority
- Is part of about 80% of the population that does not progress past stage 4

Level 3: Postconventional Morality – 16+

- **Stage 5 - Legalistic Social Contract**

At this stage, people begin to account for the differing values, opinions, and beliefs of other people. Rules of law are important for maintaining a society, but members of the society should agree upon these standards.

- Is motivated by the belief in the greatest amount of good for the greatest number of people
- Believes in consensus (everyone agrees), rather than in majority rule
- Respects the rights of the minority especially the rights of the individual

Level 3: Postconventional Morality – 16+

- **Stage 6 – Universal Ethical Principles**
  Kolhberg's final level of moral reasoning is based upon universal ethical principles and abstract reasoning. At this stage, people follow these internalized principles of justice, even if they conflict with laws and rules.
-
- Believes that there are higher moral principles than those represented by social rules and customs
- Is willing to accept the consequences for disobedience of the social rule he/she has rejected
- Believes that the dignity of humanity is sacred and that all humans have value

The Heinz Dilemma

A woman was near death from a special kind of cancer. There was one drug that the doctors thought might save her. It was a form of radium that a druggist in the same town had recently discovered. The drug was expensive to make, but the druggist was charging ten times what the drug cost him to produce. He paid $200 for the radium and charged $2,000 for a small dose of the drug.

The sick woman's husband, Heinz, went to everyone he knew to borrow the money, but he could only get together about $1,000 which is half of what it cost. He told the druggist that his wife was dying and asked him to sell it cheaper or let him pay later. But the druggist said: "No, I discovered the drug and I'm going to make money from it." So Heinz got desperate and broke into the man's store to steal the drug for his wife.

The Heinz Dilemma

According to Kohlberg,

Stage One

It’s wrong to steal the drug because "It’s against the law," or "It's bad to steal”

Stage Two

"Heinz might think it's right to steal the drug, the druggist would not." Since everything is *relative,* each person is free to pursue his or her *individual* interests.

The Heinz Dilemma

- **Stage Three:** It was okay to steal the drug- He was a good man for wanting to save her; his intentions were good. It was really the druggist's fault for overcharging.

- **Stage Four:** Concerned with *society as a whole;* emphasis is on obeying laws, respecting authority, and performing one's duties so that the social order is maintained.

- What would happen if we all started breaking the laws whenever we felt we had a good reason? The result would be chaos; society could not function.

Educational Implications

- **Stage Five:** What makes a "good society?" There is a social contract that we agree to uphold until changed democratically. Heinz may be defended, though, on moral right to live.

- **Stage Six:** A "just" society. Treat the claims of all in an impartial manner, basic dignity of all as individuals is maintained.

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THE PSYCHOLOGY OF HUMAN DEVELOPMENT AND LEARNING

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WHAT DO YOU KNOW ABOUT LANGUAGE?

Language Explained

- All children in every culture master the complicated system of their native language, unless severe deprivation or physical problems interfere. This knowledge is remarkable.

- To have a conversation, children must coordinate sounds, meanings, words and sequences of words, volume, voice tone, inflection, and turn taking rules.

- Yet, by about age 4, most children have a vocabulary of thousands of words and knowledge of the grammar rules for basic conversations (Colledge et al., 2002).

Language Explained

- Languages change over time to reflect changing cultural needs and values.

- Language is a **system of symbols** that we use to communicate with one another.

- That is, each word (and sometimes even parts of words) means something, stands for something or refers to something else.

Language Explained

- So long as we all share a common understanding of what words refer to then we can communicate.

- The precise word that we choose to represent something is to a certain extent unimportant.

- Language consists of sounds, which can be combined in various ways to make words, and those words each carry their own meanings.

Language Explained

- There are **grammatical rules** which govern how those words may be combined in order to construct sentences correctly, and social rules which govern how language is used appropriately in different situations.

- The foundations of this complex system of communication are laid well before a child even utters his first words.

- Language is a system of communication, although not all communication occurs through language.

Language and Speech: The Difference

- **Speech** is the verbal means of communicating. Speech consists of the following:

- **Articulation/Phonological Skills -** How speech sounds are made (e.g., children must learn how to produce the "r" sound in order to say "rabbit" instead of "wabbit").

- **Voice -** Use of the vocal folds and breathing to produce sound (e.g., the voice can be abused from overuse or misuse and can lead to hoarseness or loss of voice).

Language and Speech: The Difference

- **Fluency -** The rhythm of speech (e.g., hesitations or stuttering can affect fluency).

- When a person has trouble understanding others (**receptive language**), or sharing thoughts, ideas, and feelings completely (**expressive language**), then he or she has a **language disorder**.

- When a person is unable to produce speech sounds correctly or fluently, or has problems with his or her voice, then he or she has a **speech disorder**.

Why Language?

- It enables the child to express his or her thoughts.
- It enables the child to reflect on people, objects and events.
- It can help a child to convey his or her thoughts to others.

What Communication Exist Before Language?

- Infants are social and emotional beings, and are able to send emotional messages from the time that they are born.

- Using facial expressions and early vocalisations such as crying, screaming, smiling or laughing, we can interpret an infant's emotional state.

- In fact, some researchers suggest that there is a universal list of facial expressions that infants are born with, so that regardless of culture they are able to communicate their basic emotions and their primary physiological needs.

What are the Components of Language?

- Language is made up of four main component parts.

- These four components are: **phonology; semantics; syntax; and pragmatics.**

- We will now consider each of these in turn in order to get a better understanding of this complex system, and how the different parts of it develop.

What Phonology?

- When we talk about phonology, we are talking about the sound system of a language (e.g., “ba” vs. “pa”).

- Different languages contain different sounds, and if you have ever learned another language then you will know that just mastering the speech sounds that you need to be able to pronounce certain words can be a big challenge.

- In fact, there are significant phonological differences even between different dialects of our local languages that appear to be similar in Ghana.

What is Phonology?

- For example, yam is having different sounds from twi speaking people and fantsi speaking people.
- In twi, it is pronounced baayir3 but in fantsi it is pronounced baayir.
- Phonology also determines which sounds can precede or follow other sounds in a given language.

What is Phonology?

- It is important to note that it is not just the ability to produce the speech sounds of a language which is important in understanding children's phonological development, but also the ability to recognise and to tell the **difference**, or **discriminate**, between different phonemes within a language.

- **Phoneme:** the smallest units of sound in a language.
- **Morphology:** Governs the sequencing of morphemes – Morpheme: The smallest units of language that carry meaning (e.g., help vs. helper).

What is Semantic?

- Semantics refers to the part of language to do with the meanings of words, and also of sentences.

- As children learn language, they develop a vocabulary of words to which they attach certain meanings (not always correctly at first, as we will see later on).

- As children's vocabularies grow, they are able to organise the words they know into groups of words which are semantically related.

What is Semantic?

- The words ‘cat’ and ‘kitten’; ‘dog’ and ‘puppy’ have a lot in common in terms of their meanings and the animals to which they refer.

- They are therefore semantically related, but have key semantic differences in terms of the ages of the animals.

- Nevertheless, recognising that there are commonalities in their meanings is important in language development.

What is Semantic?

- Even sentences which are grammatically correct may not be semantically accurate, if they do not make sense.

- For example, the sentence 'The carrot sang to the boy' is constructed correctly from a grammatical point of view, but it contradicts our semantic knowledge that the word 'carrot' denotes a vegetable which cannot sing.

What is Syntax?

- Syntax refers to the way in which words can be acceptably combined to create sentences or phrases in a given language.

- The sentence 'I am going to the shop' is syntactically correct in English, but combining the same words in a different way to say, 'I am to the shop going' is syntactically incorrect.

- Again, 'The boy ate the food' is grammatically accurate but 'The food ate the boy' is grammatically incorrect.

- Nevertheless, we may still be able to infer the meaning of what someone is trying to say from a sentence which is syntactically incorrect.

What is Pragmatic?

- Pragmatics refers to the social part of language and determines how language can be used appropriately in different contexts, and how meanings can be conveyed which go beyond the words themselves.

- For example, the convention of taking turns during conversations is part of the pragmatic system, and this begins to develop even before children have developed any spoken language.

- Telling jokes, or using language deliberately to make people laugh, is part of this system as well, as is the ability to modify the way we use language depending upon whom we are talking to.

Milestones in Language Development

AGE RANGE	MILESTONE	STRATEGIES TO ENCOURAGE DEVELOPMENT
Between 2 and 3	Identifies body parts; calls self "me" instead of name; combines nouns and verbs; has a 450-word vocabulary; uses short sentences; matches 3–4 colors; knows *big* and *little*; likes to hear same story repeated; forms some plurals; answers "where" questions	• Help the child listen and follow instructions by playing simple games • Repeat new words over and over • Describe what you are doing, planning, thinking • Have the child deliver simple messages for you • Show the child you understand what he or she says by answering, smiling, and nodding your head • Expand what the child says. Child: "more juice." You say, "You want more juice?"
Between 3 and 4	Can tell a story; sentence length of 4–5 words; vocabulary about 1,000 words; knows last name, name of street, several nursery rhymes	• Talk about how objects are the same or different • Help the child to tell stories using books and pictures • Encourage play with other children • Talk about places you've been or will be going
Between 4 and 5	Sentence length of 4–5 words; uses past tense; vocabulary of about 1,500 words; identifies colors, shapes; asks many questions like "why?" and "who?"	• Help the child sort objects and things (e.g., things to eat, animals) • Teach the child how to use the telephone • Let the child help you plan activities • Continue talking about the child's interests • Let the child tell and make up stories for you
Between 5 and 6	Sentence length of 5–6 words; average 6-year-old has vocabulary of about 10,000 words; defines objects by their use; knows spatial relations (like "on top" and "far") and opposites; knows address; understands *same* and *different*; uses all types of sentences	• Praise children when they talk about feelings, thoughts, hopes, fears • Sing songs, rhymes • Talk with them as you would an adult
At Every Age		• Listen and show your pleasure when the child talks to you • Carry on conversations with the child • Ask questions to get the child to think and talk • Read books to the child every day, increasing in length as the

Language Use in Humans and Animals

- Research shows that man alone among all living organisms, is capable of displaying through his use of oral and written language, communicative patterns marked by complexity of structure and function (Cohen, 1971).

- Therefore, language use is a distinct accomplishment of the human organism.

Stages of Language

1. Prelinguistic Stage: All normal, healthy infants are capable of vocalizing at birth, and their prelinguistic vocalizations develop in a predictable sequence over the first 10-12 months of life.

- Infants cry to signal their distress and may even emit different kinds of cries to communicate different needs.

- The next vocal milestone, at about 3 to 5 weeks of age, is cooing: repeating vowel - like sounds such as "cocoh", "aaah".

Stages of Language

- About 3 to 4 months of age, infants begin to add consonant sounds to their vocal repertoires and will soon start to babble.

- This babbling, which may begin at any time between 4 to 6 months of age, is easily recognizable.

- A baby will repeat vowel/consonant combinations such as "mama" or "papa" that may sound like words but are not used meaningfully (de Villiers & de Villiers, 1979).

Stages of Language

- Before uttering their first "words" infants have already began to use sounds to refer to actions, objects or situations.
- Some of these early vocals may be approximations of adult words; others are the child's own creations (Ferguson, 1977).
- For example, children might utter the vocal "mmmmmm" when the see or hear a car coming.
- According to Charles Ferguson (1977), infants who produce these vocables, are now aware that certain speech sounds have consistent meanings and about ready to talk.

Stages of Language

2. Holophrastic Stage: This stage is marked by the child's ability to say or use single words consistently and intentionally to refer to objects, people or events.

- At first the child's productive vocabulary is limited to one or two very simple words that may be intelligible only to close companions. For example "ba" (for 'ball") or "awa" (for "I want").

- Although there are variations in the types of words acquired and used at this stage (Nelson, 1981 Peters, 1982) young children's early words appear to relate to food, toys, body parts, animals and people and are primarily concrete nouns and verbs (Helms & Turner, 1986).

Stages of Language

- A holophrase is a one-word utterance that represents an entire phrase or sentence e.g. book may mean I want my book or this is my book etc.

- At it must be noted that not all words spoken at this stage are clearly understood by the child.

- Many words are initially learned through pure imitation and the youngster does or may not know what they actually represent (Meshave, 1980).

- Before and during the holophrastic stage, there exists a gap between the words that a child can understand and those that can be verbally expressed.

Stages of Language

- This **gap is known as the receptive and expressive lag.** This linguistic phenomenon means that even though words cannot be expressed, children can nevertheless, understand words or directions spoken by adults.

- For example, a child of eleven months might be able to follow the direction "come here" or give me the book; yet lacks the linguistic ability to express the same sentence or even parts of it.

3. Telegraphic Stage: At about **18 to 24 months** of age, children begin to combine words into "simple sentences" that are remarkably similar across languages.

Stages of Language

❖These early combinations are sometimes called telegraphic speech because they resemble the abbreviated language of a telegram.

4. Rule Acquisition Stage: This is the final stage of language development. This begins at the age of **2 ½** years.

➢The child uses reflections, plurals, prepositions, articles, pronouns etc.

Theories of Language Development

1. Nativists Perspective (Biological)

- Noam Chomsky is a leading linguist who has suggested that humans are born with something called a **language acquisition device (LAD).**

- Chomsky does not believe that learning in infancy can account for all of the different aspects of language development.

- In particular, the suggestion that children can develop an understanding of the complex rules of grammar or syntax of a language through simple learning by imitation and reinforcement is unlikely.

Theories of Language Development

- If you listen to adults talking, it is rare that they speak in fully formed, grammatically correct sentences, making it improbable that children would be able to learn the rules which govern language in this way.

- **Language acquisition device:** a hypothetical (latent/imaginary) cognitive structure predisposed towards the acquisition of language and sensitive to rule-based regularities in everyday speech, therefore allowing for the development of grammar and syntax.

- Chomsky has also pointed out the predictability of the way in which language develops, and the fact that, regardless of country, culture or which specific language is to be learned, children reach certain developmental language milestones at roughly the same points in development.

Theories of Language Development

- In fact, there are numerous websites that parents can visit which contain information on the speech and language abilities that typically developing children are expected to reach at different ages.

- This lends further weight to the argument that learning from environmental influences and behaviour cannot be solely responsible for language development.

- If it were then we would expect to see far more variation in language development as a result of variations in the learning environment.

Theories of Language Development

- A **LAD**, if there is such a thing, would have to have some sort of biological basis, but it is not entirely clear what this might be.

- It is possible that the **LAD** might represent a particular part of the brain (**Broca's and Wernicke's Area**), and there is certainly evidence that there are particular parts of the brain which are involved in language.

- Individuals whose speech and language are affected by damage to this area are often referred to as suffering from **Broca's aphasia**, which means that they have problems with expressive language, their sentences will be short and their speech very broken and sometimes distorted.

Theories of Language Development

- Wernicke's area is most important for the comprehension of language (Wernicke, 1908).

- Individuals with damage to this area are able to produce speech that has the same kind of sound and rhythm as normal speech, but which does not have any real meaning, and they have difficulty in understanding language (**Wernicke's aphasia**).

- It is thought that **Wernicke's area** is important for language development.

- Damage to the area means that children will be unable to make sense of the language that they are exposed to, thus seriously impairing its development.

Theories of Language Development

- Other nativists like Slobin (1985) make similar claims. Slobin (1985), for example, does not assume that children have any innate knowledge of language as Chomsky did, but he thinks that they have an inborn **Language-Making Capacity (LMC).**

- This is a set of cognitive and perceptual abilities that are highly specialised for language learning.

- Presumably, these innate mechanisms **(LADs or LMCs)** enable young children to process linguistic input and to infer the phonological regularities, semantic, relations and rules of syntax that characterize whatever language they are listening to.

Theories of Language Development

- The nativists also propose the critical period hypothesis.
- It often seems as if preschool children acquire their first language far more easily than college students learn a foreign tongue.
- Is this really the case?
- Nativists believe it is; they have argued that human beings are most proficient at language learning during the period between age 2 and puberty.

Theories of Language Development

- Lenneberg (1967), the strongest proponent of the critical period hypothesis for language learning notes that prepubescence children can easily acquire two **or** more languages simultaneously and will speak each tongue with a trace of an accent from the other languages.

- By contrast, he argues, people who acquire a second language after puberty must study intently to become fluent in that language and they are likely to speak their new tongue with a "foreign " accent.

- According to Nativists, the critical period for language learning is a product of biological maturation.

Theories of Language Development

- Lenneberg (1967) proposes that the brain is not fully specialized for language functions until it is fully mature at puberty.

- Chomsky and his associates claim that certain "universal features" common to all languages e.g. **subject, verbal and object** terms appear in sentences in all language are innate.

- To the nativists, sentences are more than the sum total of the words of which they are composed, but involves a certain relationship between the words.

Theories of Language Development

- They explain that a child's speech begins from "holophrastic" utterances.
- Tripp (1973) determined that is situation occurs in children in all cultures.
- They may involve a combination of two of the following; verb, noun, adjective, pronoun.
- Gradually, these utterances are appropriately integrated into sentences, syntactically similar to those of adults.

Theories of Language Development

2. Behavioural Perspective (Skinner and Bandura)

- In 1957, Skinner argued in a book entitled "Verbal Behaviour" that children learn to speak appropriately because they are reinforced for grammatical speech.

- Skinner believed that adults begin to shape a child's language by selectively reinforcing those aspects of babbling that are most like adult speech, thereby increasing the probability that these sounds will be repeated.

- Once they have shaped sounds into words, adults then, withhold further reinforcement until the child begins combining words.

Theories of Language Development

- Skinner maintains that language acquisition is a form of operant behaviour in which children add new words to their vocabulary, primarily, through three techniques called the tact, the mand and the echoic acquisition methods.

- **The Tact Method:** This is a system that enables children to learn new words through responses to stimulus objects in their environment.

- By responding to such stimulus objects as "mama", "car or "toy" they are developing tact or names of familiar stimuli or objects to which they wish to respond. That is the objects they come into contact with.

Theories of Language Development

- **The Mand Method:** Through the mand or (demand) method, a child acquires words simply because the words meet a need.

- Thus, children learn the word food and some of its sub-classes such as toffee and meat because they know that these names represent objects that satisfy their hunger.

- Other conditions such as thirst and fatigue cause children to learn other new words to verbalise needs.

- **The echoic method:** This is verbal acquisition through imitation of adult speech. Imitation is, however, not the only principle in operation here.

Theories of Language Development

- Reinforcement is particularly important.

- When a child speaks appropriate words or uses correct grammar and parents, adults or teachers reinforce them, they are motivated to learn other new words.

Theories of Language Development

3. Interactionists Perspective (Piaget and Vygotsky)

Like the nativists, interactionists believe that the human organism is biologically well equipped for learning language, however, they stress that these realities do not mean that language development is automatic and therefore that environment is irrelevant.

Like the behaviourists, they believe that verbal exchanges with parents and others play a critical role in developing language skills.

Thus, interactionist theorists maintain that both an innate predisposition and a supportive environment contribute to language development of a person.

Theories of Language Development

- As Piaget recorded the chattering of preschool children, he noticed that they often talked to themselves as they went about their daily activities, almost as if they were play-by-play announcers ("Put the big piece in the corner. Not that one, the pink one").

- Piaget called these self-directed utterances egocentric speech.

- Thus, talk not addressed to anyone in particular and not adapted in any meaningful way so that a companion might understand it.

Theories of Language Development

- From Vygotsky's viewpoint, language plays two critical roles in cognitive development:

- (1) serving as the primary vehicle through which adults pass culturally valued modes of thinking and problem solving to their children, and

- (2) eventually becoming one of the more powerful "tools" of intellectual adaptation in its own right.

Theories of Language Development

- Vygotsky agreed with Piaget that the child's earliest thinking is prelinguistic and that early language often reflects what the child already knows.

- However, he argued that thought and language eventually merge and that many of the non-social utterances that Piaget called "egocentric" actually illustrate the transition from pre-linguistic to verbal reasoning.

- Vygotsky concluded that non-social speech is not egocentric but communicative; it is a "speech for self," or private speech, that helps young children plan strategies and regulate their behaviour so that they are more likely to accomplish their goals.

Factors Affecting Language Development

1. Bilingualism and its effects on language development: This is a situation where the child is constantly and regularly exposed to two or more languages by his or her parents at a tie of acquiring language.

2. Chromosomal abnormality: This condition has something to do with the genes. The mutation of causes abnormality in the child and his or her physical development and features are affected

3. Hearing impairment: This is a damage or weakness or loss of some organs of the ear either during the pre-natal, peri-natal or post-natal development stage of the child. The causes of hearing impaired may be as a result of genetic or environmental factors.

Factors Affecting Language Development

4. Severe possession of cleft palate: This situation is as a result of an opening in the upper part of the child's mouth which makes it impossible for proper speech.

- Again, improper (increase) teeth formation, absence of teeth development or missing upper teeth or the incisors, may also affect the child's speech. This resulting into a language disorder.

5. Diseases (measles, mumps, meningitis): During pregnancy, when the mother contracts some of these diseases, it may affect the internal organs of the foetus causing damage to the brain and some of the hearing organs that support language development.

Factors Affecting Language Development

6. Malformation of speech organs: The malformation of certain speech organs contributes to the child's language retardation.

- In certain children, the speech organs do not form properly.This may be due to malnutrition and the intake of drugs.

- When there is malformation, certain organs are seriously affected especially the hearing organs, visual organs, as well as the vocal organs or the throat.

- The improper development of these organs may cause language or speech retardation.

Factors Promoting Language Development

1. Motivation
2. Guidance
3. Read to the child
4. Opportunity for practice

Teachers/Parents Role Language Development

- Teachers can help sustain natural language development by providing environments full of language development opportunities.

- Here are some general guidelines for teachers, parents, and other caregivers:

1. Understand that every child's language or dialect is worthy of respect as a valid system for communication. It reflects the identities, values, and experiences of the child's family and community.

2. Treat children as if they are conversationalists, even if they are not yet talking. Children learn very early about how conversations work (taking turns, looking attentively, using facial experiences with conversing adults.

3. Encourage interaction among children. Peer learning is an important part of language development, especially in mixed-age groups.

❖Activities involving a wide range of materials should promote talk.

❖There should be a balance between individual activities and those that nurture collaboration and discussion, such as dramatic play, block building, book-sharing, or carpentry.

4. Remember that parents, caregivers, teachers, and guardians are the chief resources in language development. Children learn much from each other, but adults are the main conversationalists, questioners, listeners, responders, and sustainers of language development and growth in the child-care center or classroom.

5. Continue to encourage interaction as children come to understand written language. Children in the primary grades can keep developing oral abilities and skills by consulting with each other, raising questions, and providing information in varied situations. Every area of the curriculum is enhanced through language, so that classrooms full of active learners are hardly ever silent.

Week 8 – Learning

- Definition and meaning of learning
- Types of Learning

1. Associative Learning

✓Classical conditioning

✓Operant conditioning

✓Latent Learning

2. Cognitive Learning

✓Rote Learning

3. Social learning theory

- Educational Implications and applications

Learning

- Almost all behaviours are learned. Talk of writing, eating, walking, dancing etc.
- You would be unable to read, write, or speak etc. if you had not learnt how to engage in these behaviours

- **Learning** is defined as a relatively permanent change in behavior due to experience (Domjan, 2010).

- **Note:** This definition excludes both temporary changes and more permanent changes caused by motivation, fatigue, maturation, disease, injury, or drugs. Each of these can alter behavior, but none qualifies as learning.

Types of Learning

- **Associative learning:** Occurs whenever a person or an animal forms a simple association among various stimuli and/or behaviors.
- In associative learning, responses/behaviors are preceded by an antecedent and followed by consequences

- **Antecedents** Events that precede a response.
- **Consequences** Effects that follow a response.
- The two major types of associative learning are **classical conditioning** and **operant conditioning.**

Types of Learning

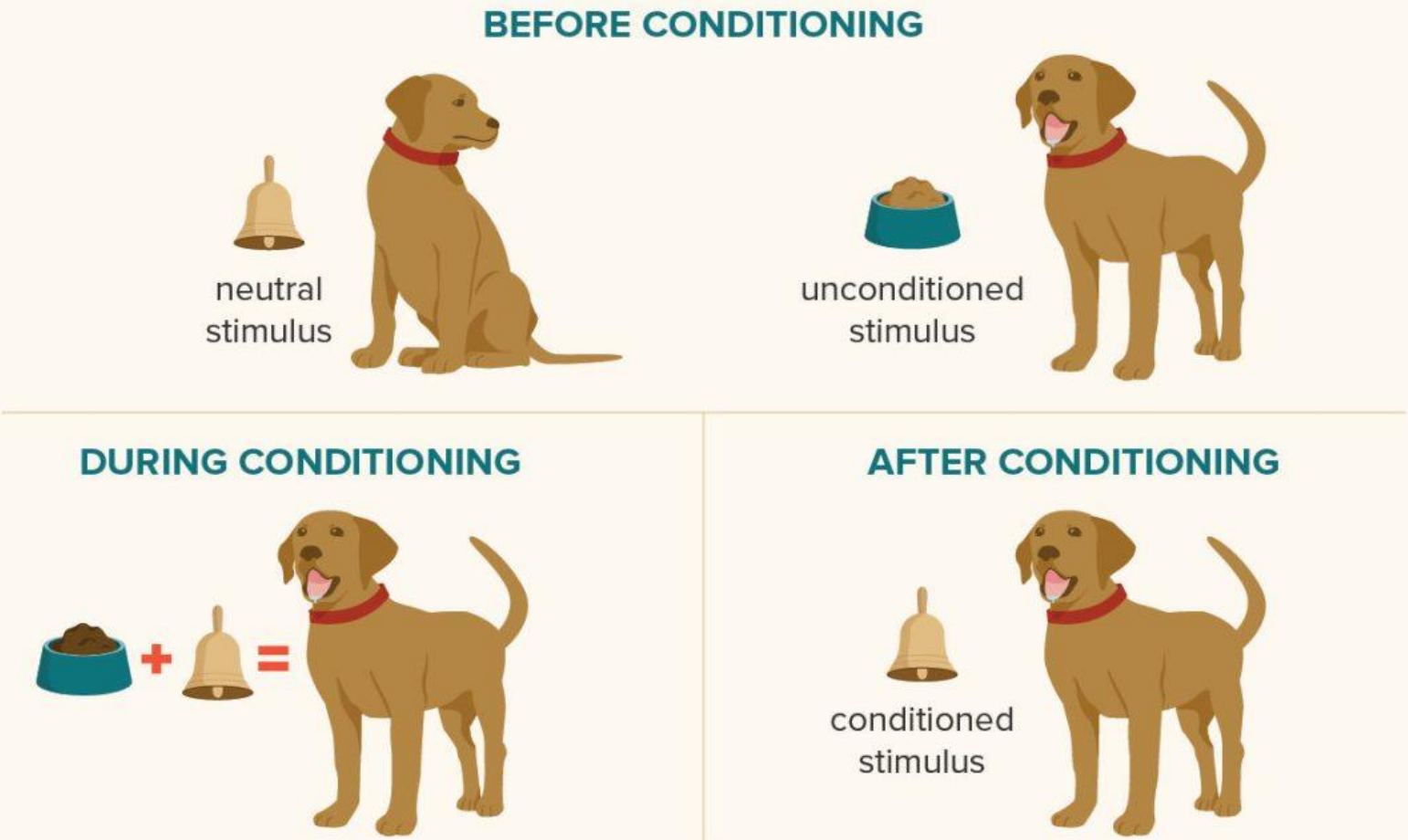
Classical Conditioning.

- Propounded by **Ivan Pavlov**, a Russian psychologist

- It learning that takes place when two stimuli are linked together to produce a new learned response in a person or animal.

- He did the famous classical conditioning experiment with a **dog, meat powder** and **a bell**.

CLASSICAL CONDITIONING



Classical Conditioning

Elements of Classical Conditioning

1. Unconditioned stimulus (US) A stimulus innately capable of eliciting a response e.g. Meat powder

2. **Unconditioned response (UR)** An innate reflex response elicited by an unconditioned stimulus e.g. Reflex salivation to the US

3. Neutral stimulus (NS) A stimulus that does not evoke the unconditioned response e.g. Bell before conditioning

Classical Conditioning

4. Conditioned stimulus (CS) A stimulus that evokes a response because it has been repeatedly paired with an e.g. unconditioned stimulus Bell after conditioning

5. Conditioned response (CR) A learned response elicited by a conditioned stimulus e.g. Salivation *to the CS*

Classical Conditioning

- **Principles of Classical Conditioning**

- **Acquisition** The period in conditioning during which a response is strengthened.

- **Expectancy** An anticipation concerning future events or relationships.

- **Extinction** The weakening of a conditioned response through removal of reinforcement.

Classical Conditioning

- **Spontaneous recovery** The reappearance of a learned response after its apparent extinction.

- **Stimulus generalization** The tendency to respond to stimuli similar to but not identical to, a conditioned stimulus.

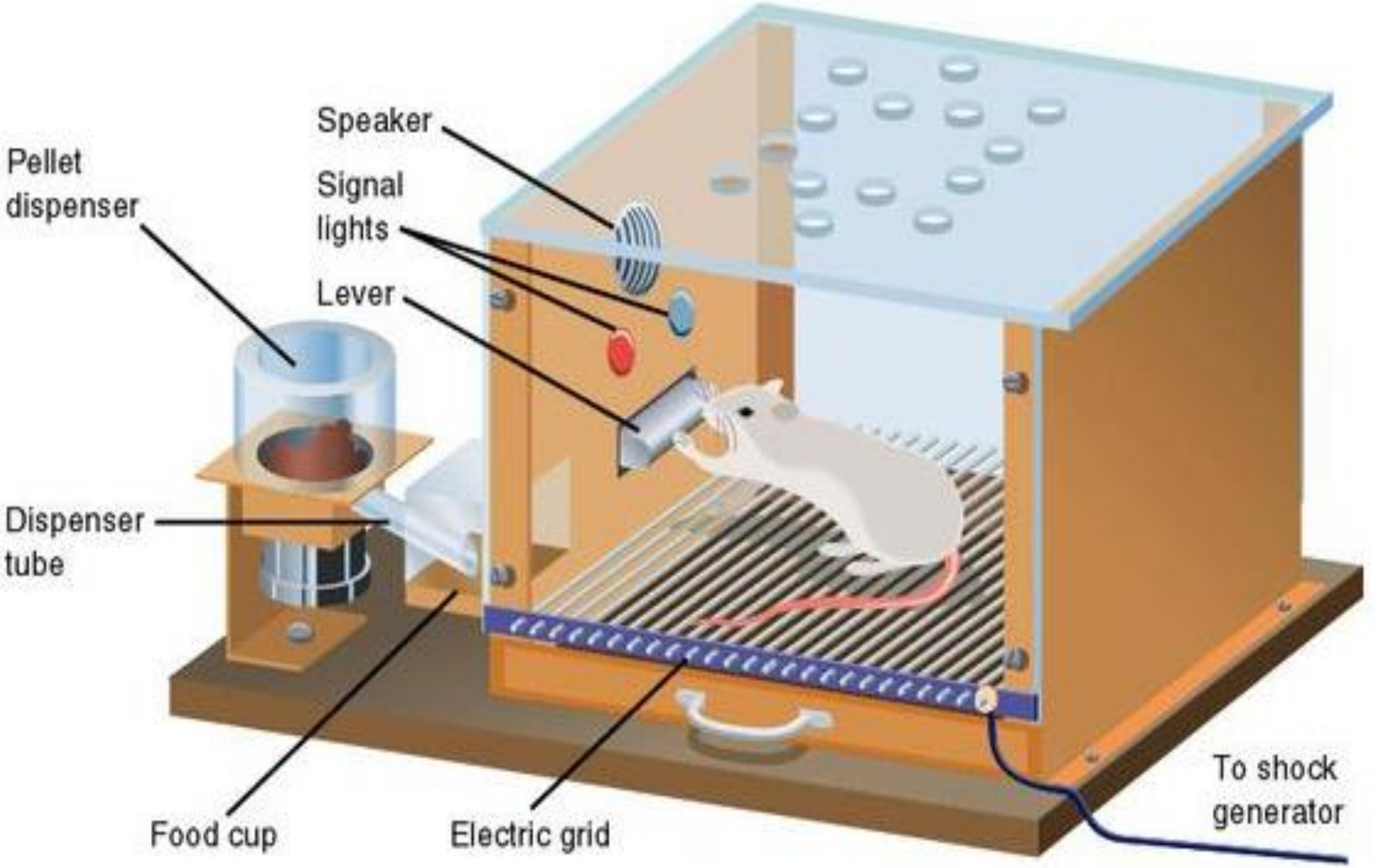
- **Stimulus discrimination** The learned ability to respond differently to similar stimuli.

Everyday Examples of Classical Conditioning

- When you reflexively reached your cellphone while hearing the same chime as yours.
- When a particular song, object or place that reminds you of your past or past events or incidents.
- If a student is bullied at school they may learn to associate the school with fear.
- It could also explain why some students show a particular dislike of certain subjects that continue throughout their academic careers.

Operant Conditioning

- Propounded by **Edward Thorndike** and **B.F Skinner**
- It is also called **instrumental conditioning**
- Operant conditioning is a method of learning where the **consequences** of a response determine the probability of it being repeated.
- Consequences are either **reinforcement or punishment**
- Skinner did the famous **Skinner box experiment** while Thorndike did the **puzzle box experiment.**


Speaker
Pellet dispenser
Signal lights
Lever
Dispenser tube
Food cup
Electric grid
To shock generator

Operant Conditioning

- Skinner placed a hungry rat inside the Skinner box. The rat was initially inactive inside the box, but gradually as it began to adapt to the environment of the box, it began to explore around.

- Eventually, the rat discovered a lever, upon pressing which; food was released inside the box. After it filled its hunger, it started exploring the box again, and after a while it pressed the lever for the second time as it grew hungry again.

Operant Conditioning

- This phenomenon continued for the third, fourth and the fifth time, and after a while, the hungry rat immediately pressed the lever once it was placed in the box. Then the conditioning was deemed to be complete.

- B.F. Skinner also conducted an experiment that explained negative reinforcement. Skinner placed a rat in a chamber in the similar manner, but instead of keeping it hungry, he subjected the chamber to an unpleasant electric current.

Operant Conditioning

- The rat having experienced the discomfort started to desperately move around the box and accidentally knocked the lever. Pressing of the lever immediately seized the flow of unpleasant current.

- After a few times, the rat had smartened enough to go directly to the lever in order to prevent itself from the discomfort.

Operant Conditioning

- **Puzzle Box Experiment**

- Thorndike placed a cat in the puzzle box, which was encourage to escape to reach a scrap of fish placed outside.

- Thorndike would put a cat into the box and time how long it took to escape. The cats experimented with different ways to escape the puzzle box and reach the fish.

Operant Conditioning

- Eventually they would stumble upon the lever which opened the cage. When it had escaped it was put in again, and once more the time it took to escape was noted.

- In successive trials the cats would learn that pressing the lever would have favorable consequences and they would adopt this behavior, becoming increasingly quick at pressing the lever.

Operant Conditioning

- Thorndike came up with three laws the laws of effect, readiness and exercise

- The **"Law of effect"** which stated that any behavior that is followed by pleasant consequences is likely to be repeated, and any behavior followed by unpleasant consequences is likely to be stopped.

Operant Conditioning

- A law which states that, in learning, the more frequently a stimulus and response are associated with each other, the more likely the particular response will follow the stimulus.

- The law implies that one learns by doing and one cannot learn a skill, for instance, by watching others. It is necessary to practice the skill, because by doing so the bond between stimulus and response is strengthened.

Operant Conditioning

- A law which states that learning is dependent upon the learner's readiness to act, which facilitates the strengthening of the bond between stimulus and response.

- Thus, an student who is highly motivated and eager to learn is more likely to be receptive to learning than one who is poorly motivated.

Everyday Examples of Classical Conditioning

- A student tends to complete his/her homework daily; because he/she knows that he/she will be rewarded with a candy (action) or praise (behavior).

- A child may learn to clean his/her room regularly; because he/she will be rewarded with extra TV hours every time he/she cleans up.

- Workers are often offered with the incentives and bonus in return of completing their targets in time or for regular attendance. It makes the workers to perform better, so that, they can continuously get those incentives and bonus.

Reinforcement

- It refers to anything that increases the likelihood of a behavior being repeated
- **OR**
- Any stimuli which strengthens or increases the probability of a specific response. For example, if you want your dog to sit on command, you may give him a treat every time he sits for you. Reinforcements strengthen behaviour.

- **Reinforcer:** Any event, item that reliably increases the probability or frequency of responses it follows. E.g. Meat powder

Reinforcement

- **TYPES**
- **Positive Reinforcement:** It is given by adding something in order to increase a response e.g. pens, erasers etc.

- **Negative Reinforcement:** It is given by taking something away in order to increase a response e.g. withhold a child from watching favorite TV program

Schedules of Reinforcement

- **Fixed Ratio.** A fixed ratio schedule refers to applying the reinforcement after a specific number of behaviors. Giving a child time-out a if you have to ask him three times to clean his room is an example.

- **Fixed Interval.** Applying the reinforcer after a specific amount of time is referred to as a fixed interval schedule.
- An example might be getting a raise every year and not in between. A major problem with this schedule is that people tend to improve their performance right before the time period expires so as to "look good"

Schedules of Reinforcement

- **Variable Ratio:** This refers to applying a reinforcer after a variable number of responses. Variable ratio schedules have been found to work best under many circumstances

- **Variable Interval:** Reinforcing someone after a variable amount of time is the final schedule. If you have a boss who checks your work periodically, you understand the power of this schedule.
- Because you don't know when the next 'check-up' might come, you have to be working hard at all times in order to be ready

Punishment

It refers to anything that decreases the likelihood of a behavior being repeated

TYPES

Positive Punishment

What most people refer to punishment is typically positive punishment. This is when something aversive is added in order to decrease a behavior. The most common example of this is disciplining (e.g. beating) a child for misbehaving

Punishment

Negative Punishment

When you remove something in order to decrease a behavior, this is called negative punishment. You are taking something away so that a response or unwanted behavior is decreased. Putting a child in a time-out until they can decrease their aggressive behavior, for instance, is an example of a negative punishment.

WHY IS POSITIVE PUNISHMENT DISCOURAGED?

Drawbacks of Punishment

- Punished behavior is not forgotten, it's suppressed- behavior returns when punishment is no longer eminent.

- Creates fear that can generalize to desirable behaviors, e.g. fear of school, learned helplessness, depression.

- Often ineffective unless it is given immediately after the undesirable behavior and each time the that behavior occurs.

Drawbacks of Punishment

- Causes increased aggression- shows that aggression is a way to cope with problems- Explains why aggressive delinquents and abusive parents come from abusive homes.

- Signals that an inappropriate behavior has occurred but does not specify what should be done instead.

Making Punishment Work

- To make punishment work:
- Punishment should be swift.
- Punishment should be certain-every time.
- Punishment should be limited in time and intensity.
- Punishment should clearly target the behavior, not the person.
- Punishment should not give mixed messages.
- The most effective punishment is often omission training-negative punishment.

Shaping

- The process of gradually molding responses to a final desired pattern. In shaping, successive attempts towards the desired behaviour are rewarded instead of waiting till the final behaviour is exhibited.

- It is used in animal training. *This is why animals on television and at amusement parks taught to perform complicated tricks?*

Superstitious behavior

- The behavior that results from **accidental reinforcement** of an action so that the organism continues to repeat it. For example, a rat that turned in a circle before accidentally hitting a bar and obtaining food might continue turning in a circle before each bar press.

- **Superstitious behavior** arises when the delivery of a reinforcer or punisher occurs close together in time (temporal contiguity) with an independent **behavior**.
- Therefore, the behavior is accidentally reinforced or punished, increasing the likelihood of that behavior occurring again.

Cognitive Learning.

- It refers to understanding, knowing, anticipating, or otherwise making use of information-rich higher mental processes. More complex forms of cognitive learning, such as learning from written language, are unique to humans.

- Some of the cognitive learning theorist include Piaget, Vygotsky, and Bruner

- Let's take a look at **Bruner's Cognitive Learning Theory**

Bruner's Cognitive Learning Theory.

- Unlike Piaget stage theory of cognitive development and learning, Bruner believed that a learner even of a very young age is capable of learning any material so long as the instruction is organized appropriately.

- He proposed that learners construct their own knowledge and do this by organizing and categorizing information using a coding system.

Bruner's Cognitive Learning Theory.

- He proposed three modes of representation which entails the way in which information or knowledge are stored and encoded in memory.

- These are enactive, iconic and symbolic representations.

Bruner's Cognitive Learning Theory.

- **Enactive (0-1 years):** It involves encoding action-based information for storage in our memory – e. g. an infant recalls shaking a rattle by developing a 'muscular memory' of the task.

- Infants, and adults, recall tasks via muscular memory. For instance, miming operating a lawn mower is much quicker and easier than a complex verbal explanation.

Bruner's Cognitive Learning Theory.

- **Iconic (1 – 6 years):** This is the ability to store a mental picture 'in the mind's eye'. Information is stored as sensory images (icons), usually visual ones, like pictures in the mind

- This may explain why, when we are learning a new subject, it is often helpful to have diagrams or illustrations to accompany the verbal information.

Bruner's Cognitive Learning Theory.

- **Symbolic (7years and above):** This is where information is stored in the form of a code or symbol, such as **language**.

- In the symbolic stage, knowledge is stored primarily as words, mathematical symbols, or in other symbol systems, such as music.

- Such symbols can be manipulated, sorted, classified etc., so the learner is not restricted to using only actions or images. Data storage is accomplished via words, mathematical signs and/or other symbol systems.

Bruner's Cognitive Learning Theory.

- These coding systems can be developed by allowing students to discover it rather than being told by the teacher. This is known as **discovery learning.**

- The concept of discovery learning implies that students construct their own knowledge for themselves.

- The teacher's role is just to facilitate the learning process. This means that a good teacher will design lessons that help students discover the relationship between bits of information.

Latent Learning

- **Edward Tolman** came up with this type of learning and it refers to learning that occurs without obvious reinforcement and that remains unexpressed until reinforcement is provided.

- Learning is not apparent in the learner's behavior at the time of learning, but it manifests later when a suitable motivation and circumstances appear.

- We use this type of learning everyday as we drive or walk the same route daily and learn the locations of various buildings and objects

Latent Learning

- Tolman coined the term **cognitive map**, which is an internal representation (or image) of external environmental feature or landmark.

- Individuals acquire large numbers of cues (i.e. signals) from the environment which are used to build a mental image of an environment (i.e. a cognitive map).

- He performed the famous **Tolman's Maze Experiment.**

Latent Learning

- In the experiment 3 groups of rats had to find their way around a complex maze. At the end of the maze there was a food box. Some groups of rats got to eat the food, some did not, and for some rats the food was only available after 10 days.

- **Group 1: Rewarded**

- Day 1 – 17: Every time they got to end, given food (i.e. reinforced).

Latent Learning

- **Group 2: Delayed Reward**

- Day 1 - 10: Every time they got to end, taken out.
- Day 11 -17: Every time they got to end, given food (i.e. reinforced).

- **Group 3: No reward**

- Day 1 – 17: Every time they got to end, taken out.

Latent Learning

- The delayed reward group learned the route on days 1 to 10 and formed a cognitive map of the maze. They took longer to reach the end of the maze because there was no motivation for them to perform.

- From day 11 onwards they had a motivation to perform (i.e. food) and reached the end before the reward group.

Latent Learning

- This shows that between stimulus (the maze) and response (reaching the end of the maze) a mediational process was occurring the rats were actively processing information in their brains by mentally using their cognitive map (which they had latently learned).

Other Forms of Cognitive Learning.

- **Rote learning**: Learning that takes place mechanically, through repetition and memorization, or by learning rules.

- It enhances students' ability to quickly recall basic facts and helps develop foundational knowledge of a topic.

- Examples of rote learning include memorizing multiplication tables or the periodic table of elements.

Other Forms of Cognitive Learning.

- Rote memorization is not considered higher-level thinking or critical thinking since students don’t learn how to think, analyze or solve problems with this type of learning.

- It doesn't allow for a deeper understanding of a subject.
- It doesn't encourage the use of social skills.
- There is no connection between new and previous knowledge.

Social Learning Theory

- This theory was proposed by **Albert Bandura**.
- He emphasized the importance of observation, modelling, and imitation, attitudes, and emotional reactions of others in learning.

- The theory states that learning occurs from the environment through the process of **observational learning**.
- Observational learning posits that children observe the people around them behaving in various ways. This is illustrated during the famous **Bobo doll experiment** (Bandura, 1961).

Bobo Doll Experiment

- Twenty four 24 children (12 boys and 12 girls) watched a male or female model behaving aggressively towards a toy called a 'Bobo doll'. The adults attacked the Bobo doll in a distinctive manner - they used a hammer in some cases, and in others threw the doll in the air and shouted "Pow, Boom”

- Another 24 children (12 boys and 12 girls) were exposed to a non-aggressive model who played in a quiet and subdued manner for 10 minutes (playing with a tinker toy set and ignoring the bobo-doll).

Bobo Doll Experiment

- Children who observed the aggressive model made far more imitative aggressive responses than those who were in the non-aggressive or control groups.

- Bobo doll experiment demonstrated that children are able to learn social behavior such as aggression through the process of observation learning, through watching the behavior of another person.

Social Learning Theory

- Individuals that are observed are called **models**.

- In society, children are surrounded by many influential models, such as parents within the family, characters on children's TV, friends within their peer group and teachers at school.

- These models provide examples of behavior to observe and imitate, e.g., masculine and feminine, pro and anti-social, etc.

Principles Social Learning

- From his research Bandura formulated four principles of social learning.

- **Attention**: We cannot learn if we are not focused on the task. If we see something as being novel or different in some way, we are more likely to make it the focus of their attention. Social contexts help to reinforce these perceptions.

- **Retention:** We learn by internalizing information in our memories. We recall that information later when we are required to respond to a situation that is similar the situation within which we first learned the information.

Principles of Social Learning

- **Reproduction**: We reproduce previously learned information (behavior, skills, knowledge) when required. However, practice through mental and physical rehearsal often improves our responses.

- **Motivation**: We need to be motivated to do anything. Often that motivation originates from our observation of someone else being rewarded or punished for something they have done or said. This usually motivates us later to do, or avoid doing, the same thing.

Educational Implications & Applications

- Teachers are able to apply classical conditioning in the class by creating a positive classroom environment to help students overcome anxiety or fear.

- Pairing an anxiety-provoking situation, such as performing in front of a group, with pleasant surroundings helps the student learn new associations

Educational Implications & Applications

- Using operant conditioning can give students immediate feedback about their behavior.

- When the teacher rewards positive behavior, other students are more likely to copy that behavior to earn the reward. The rewarded student is also more likely to repeat that behavior because of the positive feedback

Educational Implications & Applications

- Teachers can use the principles of social learning and modelling to demonstrate to learners classroom appropriate behaviours.

- Students should be involved in using their prior experiences and structures to learn new knowledge.

- Teachers should assist learners in building their knowledge. This assistance should fade away as it becomes unnecessary

Week 9 – Play-Based Learning

- Exploring the essence of Play
- Types of Play
- Theories of Play
- Play-based learning
- Play-based vrs. Academic-based learning
- Types of Play-based learning
- Factors Affecting Play-based learning
- Educational Implications and applications


PLAY

Exploring the Essence of Play

- Play is universal among children in all cultures and remains essential in child development (Berger, 2016).

- It is the most productive as well as the most enjoyable activity that children undertake (Elkind, 2007; Bateson & Martin, 2013; Smith, 2010).

- Play enhances learning in children and aids in social and cognitive development (Encyclopedia of Early Childhood Development, 2018).

Types of Play

- According to Berger (2016), there are two types of play
- **Pretend play:** It often occurs when a child is alone
- **Social play:** This occurs with playmates (other children that the child plays with.
- Young children play best with peers or playmates, that is, people of about the same age and social status.

- Mildred Parten, an American sociologist described the five stages of social play, each more advanced than the previous one: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Types of Play Cont'd

1. **Solitary play:** A child plays alone, unaware of any other children playing nearby.
2. **Onlooker play**: A child watches other children play.
3. **Parallel play:** Children play with similar objects in similar ways but not together.
4. **Associative play:** Children interact, sharing material, but their play is not reciprocal.
5. **Cooperative play:** Children play together, creating dramas or taking turns.

Active Play

- It is a form of social play in which children use physical activity to develop muscle strength and control.

- Peers provide an audience, role models, and sometimes competition. For instance, running skills develop best when children chase or race each other, not when a child runs alone.

- Active social play correlates with peer acceptance and a healthy self-concept and may help regulate emotions (Becker et al., 2014; Sutton-Smith, 2011). Adults need to remember this when they want children to sit still and be quiet.

Types of Active Play

- **Rough-and-tumble Play:** Play that seems to be rough, as in play wrestling or chasing, but in which there is no intent to harm.

- **Sociodramatic Play:** Pretend play in which children act out various roles and themes in plots or roles that they create.

Sociodramatic Play

- Sociodramatic play allow children to

a. Explore and rehearse social roles

b. Learn to explain their ideas and persuade playmates

c. Practice emotional regulation by pretending to be afraid, angry, brave, and so on

d. Develop self-concept in a non-threatening context

Theories of Play

- **Surplus Energy Theory Schiller (1873) & Spencer (1875)**

- They assert that play is the outcome of surplus energy that exists because the young are freed from the business of self-preservation through the activities of their parents.

- Spencer for instance saw play as the way in which animals and humans discharged excess energy through physical activity
- Energy finds its release in the aimless exuberant activities of play.

Theories of Play

- **Relaxation Theory Lazarus (1883) & Patrick (1916)**

- Play is seen as a mode of releasing the inhibitions built up from fatigue due to tasks that are relatively new to the individual.

- Relaxation theorists believe that play is a mode of relaxation or a de-stressor which restores all the energy that has been lost in the day to day work related activities.

- Play is simply a means of relaxation.

Theories of Play

- **Recreation Theory - Moritz Lazarus (1883)**

- Similar to the relaxation theory, proponents believe that play is means of recovering from fatigue experienced from hard work.

- The theory describes play as an activity originating from an energy deficit, and states that the purpose of play is to restore energy expended in work.

- Play restores energy and provides more benefit to the body than idleness.

Theories of Play

- **Recapitulation Theory - G'Stanley Hall (1906)**

- Play serves to rid of an individual's primitive and unnecessary instinctual skills carried over by hereditary.

- Hall believed that play is a cathartic or therapeutic or healing activity that removes inappropriate primitive instincts that were passed down through heredity.

Theories of Play

- **Pre-Exercise Theory - Groos (1898)**

- Play is the necessary rehearsal for behaviors that are needed for later survival.

- The rough and tumble play of children are basically the practice of skills that will later aid their survival.

- Play is very important to practice behaviours that will help children to survive when they grow into adults

Theories of Play

- **Growth Theories - Appleton (1919)**

- Play is a response to a universal drive for growth in individuals. It facilitates the mastery of skills necessary to function in later life or engage in adult behavior.

- Play does not only promote normal child development, but also helps them deal with experiences within the environment.

Theories of Play

- **Ego-Expanding Theories Lange (1902), Claparde (1911)**

- Play is nature's way of completing the ego or the self or a way expressing oneself and the rest of the personality.

- This exercise helps develops cognitive skills and aids in the emergence of additional skills.

Play-Based Learning

- Play-based learning is a pedagogical approach that emphasizes the use of play in promoting multiple areas of children's development and learning. It impacts the development of children's social and cognitive abilities, and academic skills (Encyclopedia of Early Childhood Development, 2018).

- There are two main types of play-based learning namely
- Free Play
- Guided Play

Free Play

- This types of play is child-directed and internally motivated.

- Free play is unstructured, informal, child-initiated practice that enables children to cultivate their imaginations while discovering and observing the world around them.

- It is spontaneous play that comes spontaneously from children's innate curiosity, enjoyment of adventure, and excitement.

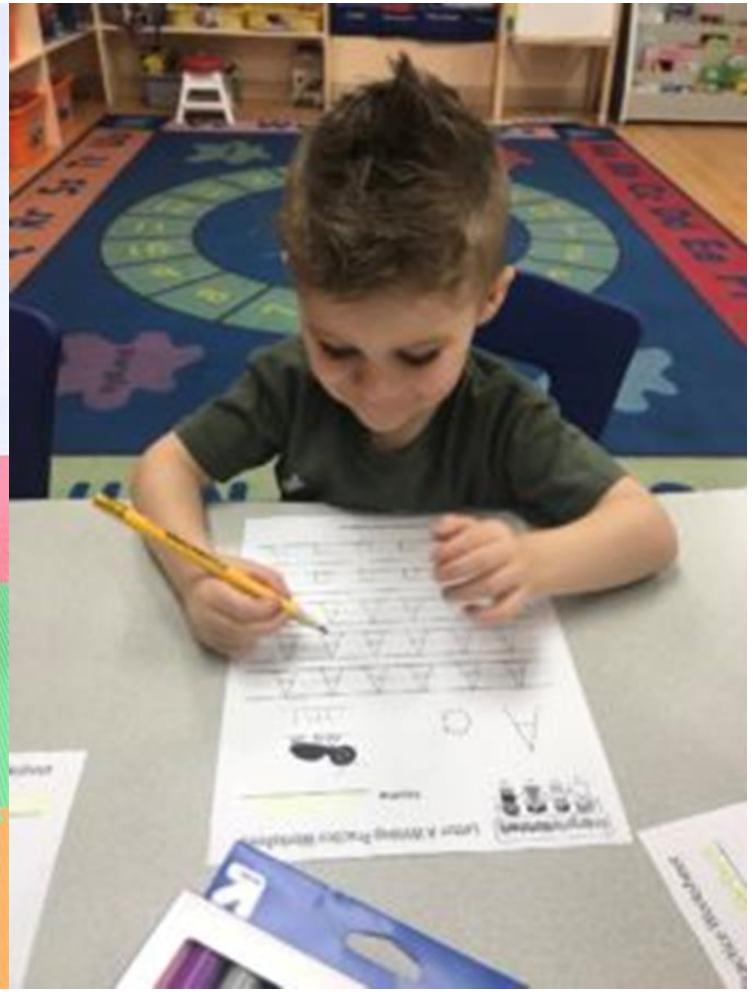
Guided Play

- This type of play is supported by adults and geared at a specific learning goal or objective.

- Directed play is a type of play in which children experience the worl d that has been planned by adults and/or with guidance from adult s.

- On the floor, supervised play always seems like free play, but it can be impossible to tell them apart just by seeing what kids are doing.

Play-based vrs. Academic-based Learning



Play-based vrs. Academic-based Learning

- Play-based learning helps a child develop holistically (social-emotional learning, developing confidence, motivation and practicing cognitive skills).

- Academic learning to early childhood education is more focused on teaching young children cognitive skills and knowledge (structured and routine).

Play-based vrs. Academic-based Learning

• Children get to choose own activities and topics. • Contribute to kindergarten readiness. • Play helps develops social skills. • Children on PBL programs score better	• Early attention skills are predictive of academic success later on • Children are more familiar with academic subjects by the time they enter kindergarten.
• Children may not be exposed directly to learning letters, numbers or scientific concepts • Children may not score as highly on standardized testing (until after first grade)	• Children can to lose interest because they are told what to do. • Children on academic programs often have behaviour problems than PLB.

Play-based Learning Activities

- Stories
- Games
- Poems
- Songs
- Role Play
- Lesson starters and energizers.

Factors Influencing Play-based Learning.

1. The Physical Environment Factor

- This refers to the playing environment e.g. classroom arrangement or outdoor space management.
- The way the physical environment is designed and configured influences how children feel, act, and behave.
- The physical environment allows growth and development through activities and materials in defined play areas.

Factors Influencing Play-based Learning.

- The play area of learners needs to be configured so that they can grasp and reach age-appropriate toys or pull themselves up when practicing standing or walking.

- To maximize infant supervision, it is best to have all the activities in one room.

- The play areas are subdivided into dramatic, block, art, library, manipulative, and science learning centers.

Factors Influencing Play-based Learning.

- Young learners need spaces that allow them to experiment, explore, and discover things around their environment.

- In structuring the physical environment for play, consider these questions: How is the space arranged, both indoors and outdoors?

- Are there clearly marked areas in which children may find the play materials? Is there enough space between the areas to walk around?

Factors Influencing Play-based Learning.

- All of these features of a classroom will foster children's freedom to choose their own activities, which in turn develops the complexity of their play as well as encourages ongoing play.

- Research has indicated that the way the classroom is arranged and the way it looks are significant influence children's behaviour.

- Therefore, when setting up the classroom, teachers should consider the following suggestions:

Factors Influencing Play-based Learning.

- Have as much natural light in the classroom as possible. Natural light reduces energy use but, most important, enhances task performance and improves the appearance of an area.

- Keep noisy and quiet areas separate. Noisy areas such as dramatic play and music should be located at one end of the room, opposite to the quiet area. This will allow each area to have its activities in a comfortable location.

Factors Influencing Play-based Learning.

2. The Facilitator/Teacher Factor

- The teacher is the one the plan and coordinates play based activities. When planning play-based learning, teachers should consider the following:

- Determine developmental goals and objectives.
- Know principles of learning and children's learning styles.
- Design and set up learning centers.
- Evaluate the learning environment.

Factors Influencing Play-based Learning.

- **Teacher's Attitudes:** The attitude of the teacher towards play can either inhibit or promote efforts to effectively use play activities as a tool for instruction in the learning settings.

- The teacher must be passionate and realize that learning improves through self exploration.

- Teacher's experience

- Teacher's Training

Educational Implications

- **Physical development:** Children learn how to control small muscles and how to coordinate eyes and hands to stack and balance when working with objects

- **Cognitive development:** Children learn and develop mathematical concepts by sorting the according to size and shape and figuring out what number of blocks are needed to fill a space.

Educational Implications

- Development of imagination, creativity, and problem solving skills

- Social and Emotional Development: Children's self-directed activity will help children enjoy learning and experience success—all of which build confidence, satisfaction, and the motivation to learn.

Educational Implications

- It helps children achieve mastery in certain skills, and they learn to have control over their environment.

- Play opportunities promotes learning of various physical skills, development of self-confidence, independence, social competence, language development and emotional development.


Thank
you!!!


SEE YOU
Next Week!