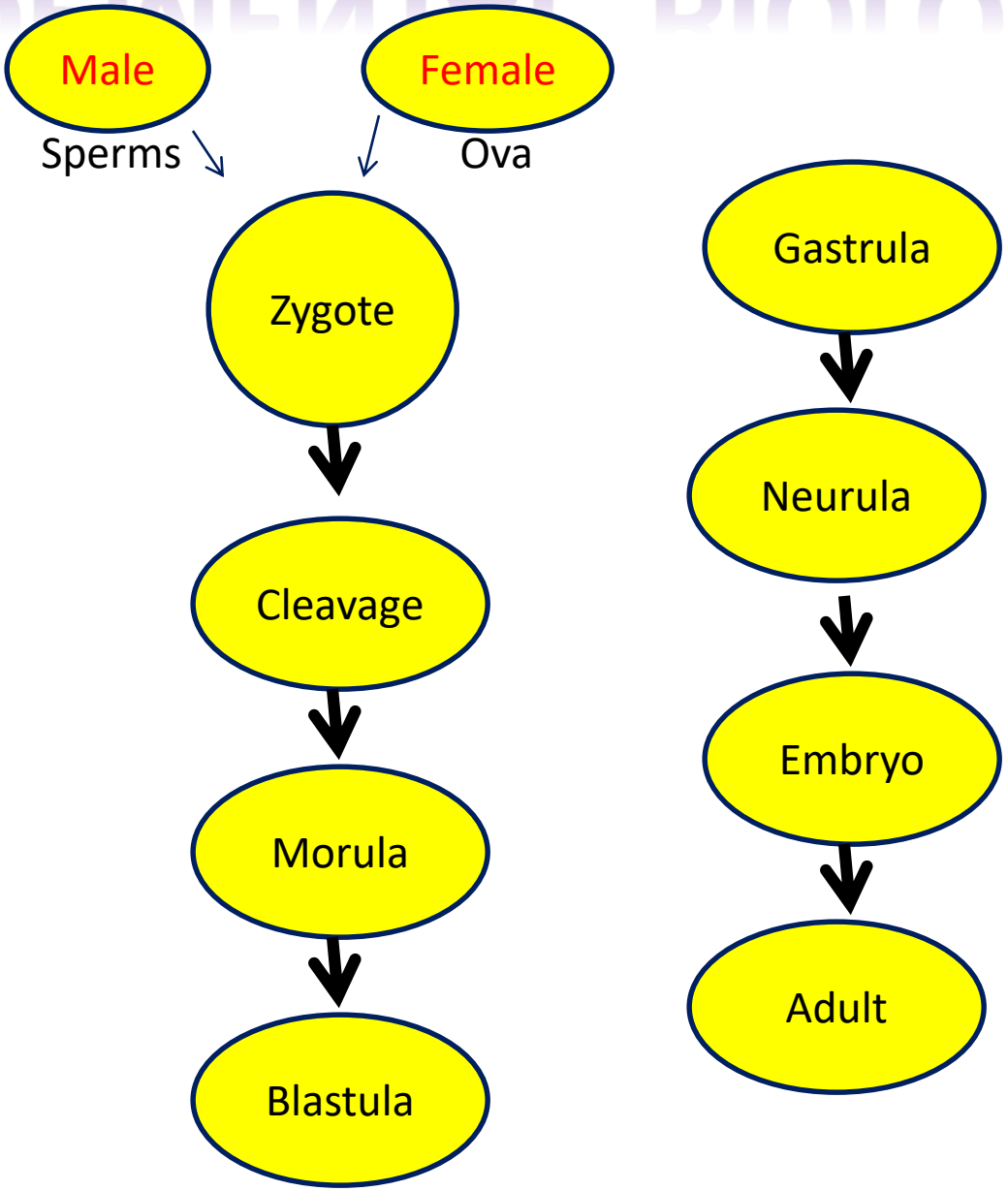
DEVELOPMENTAL BIOLOGY

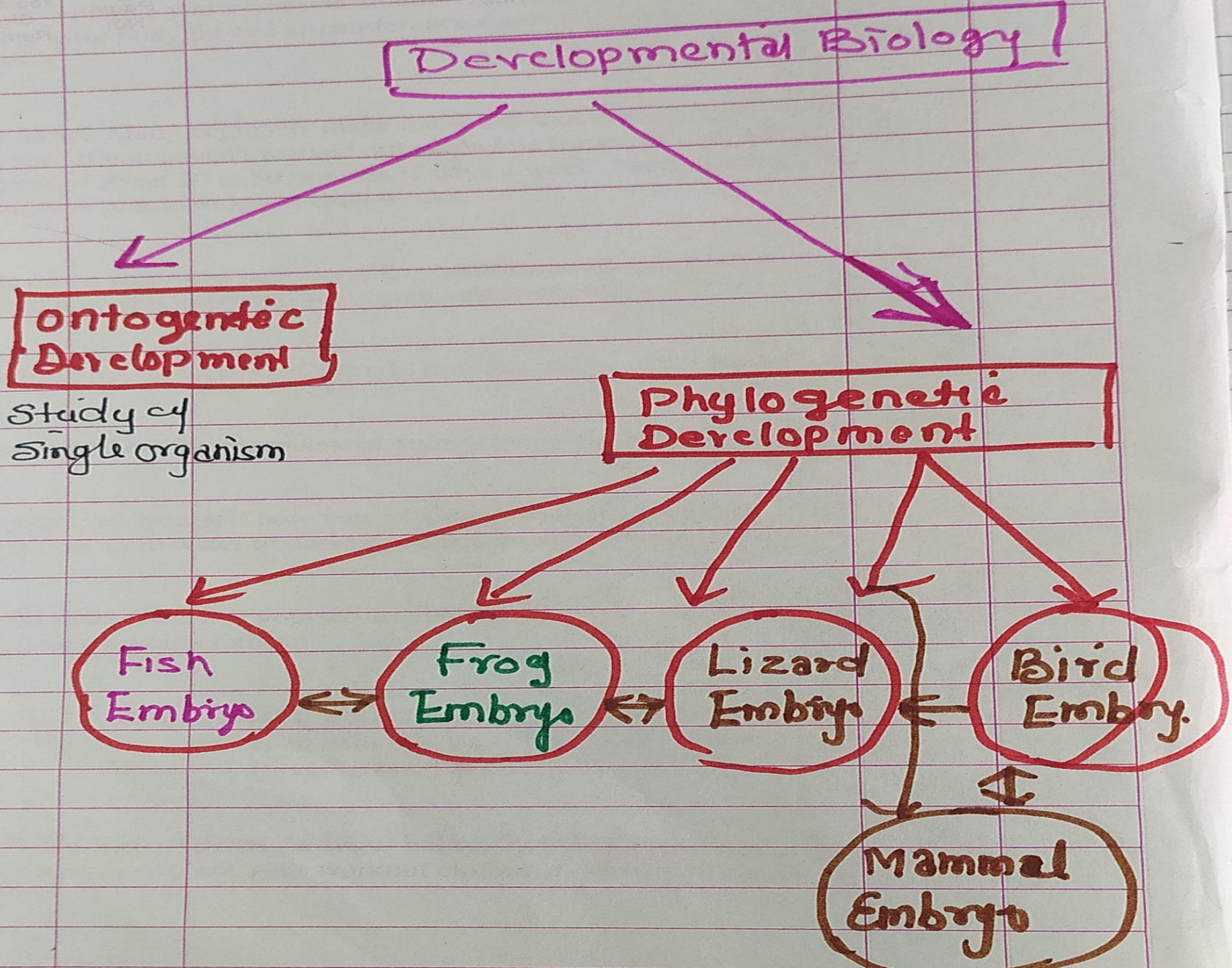


DEVELOPMENTAL BIOLOGY

Embryo= Unworn Greek word, Logy= Science

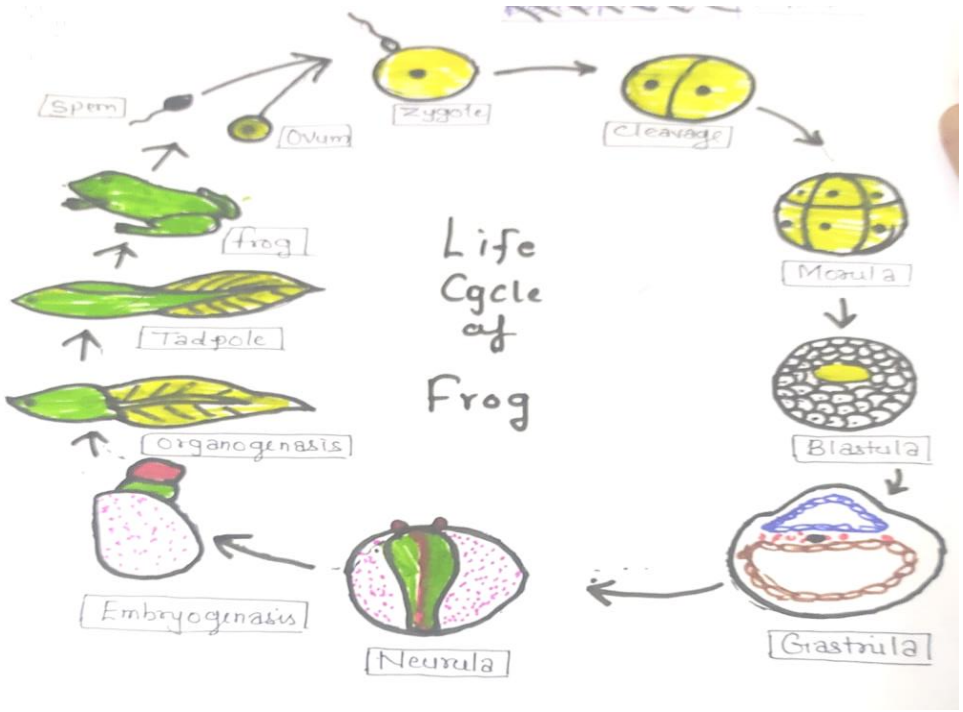
Embryology and genetics are studied together in developmental biology

1.Ontogentic Development
2.Phylogentic Development


Developmental Biology
Ontogentic Development
Study of Single organism
Phylogenetic Development
Fish Embryo
Frog Embryo
Lizard Embryo
Bird Embry.
Mammal Embryo

1.Ontogentic Development

The process of transformation of fertilized egg into a single individual is known as ontogenetic development



Phylogenetic Development

Compaprative study of development of organisms belonging to to the different help inassigning the phylogenetic relationship and systemic position of diffferent animals

HISTORY OF EMBRYOLOGY

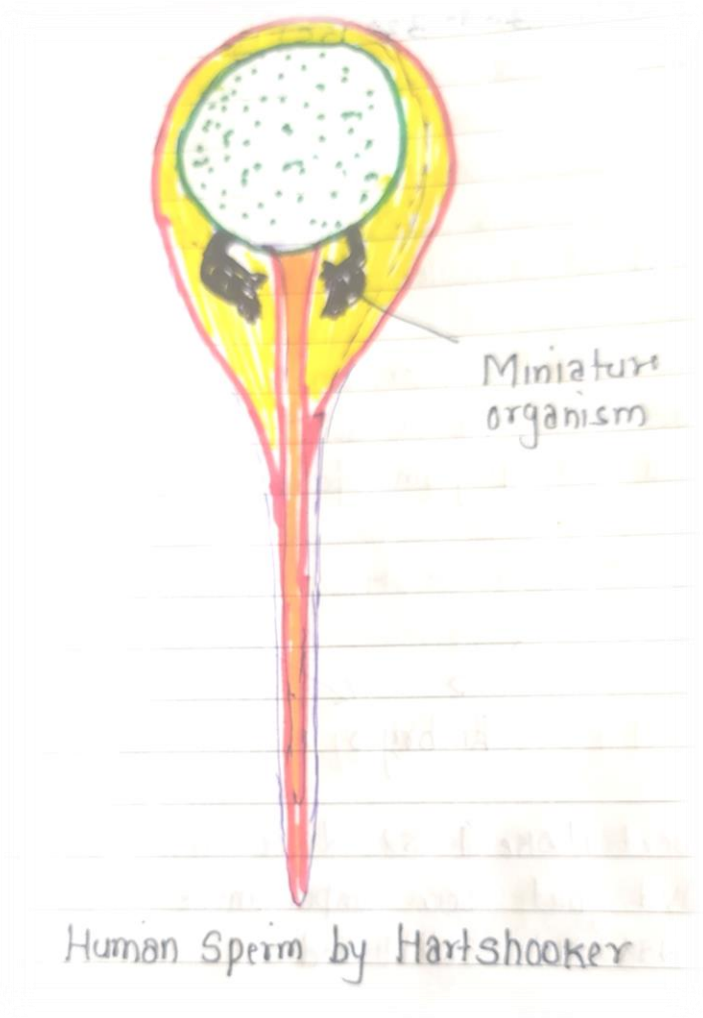
1. Aristotle (384-322 BC) Father of embryology, He was Greek philosopher studied about the embryology of animal. Many of his observations were accurate he believed that embryo was derived from mother and father supplies, the mttter in which the embryo grow
2. Another philosopher Empedocled was aware of facts that fetus arose partly from male and partly from female
3. 50 % from ,male and 50 from female
4. Robert hook (1665) discovered the sperms ova but importance in development was not eastablished
5. Ant-ivon leewenhock (1667) Ist reported the discovery of mammalian sperms and ova
6. VonBear (1827) identified mammalian egg

To explain different embryological riddles some important theories are as follows

Performation Theory

According to this theory human performed either in ovum or sperm. Bannet (1720) Believed that ovum contain a small miniature of the adult. The semen from male stimulate the growth of miniature

Hartsoeker (1724) draw a picture of sperm with miniature is located in head of sperm Theses two theories are known as theory of perforation



Epigenetic Theory

C.F. Wolf (1759)

Pengenesis Theory

Darwin

Pengens= Gemules

Bares Law

K.E. Von-Bear

Ist Day= Notochord, Dorsal Tube, Nerve Chord and Gills

IInd Day= Feathers

5th Day= Claws and Beak

Vertebrates follow the In vertebrates

Biogenetic Theory

Fritz Muller (1864)

Common ancestry

1. Gills
2. Claws
3. Feather and Weak

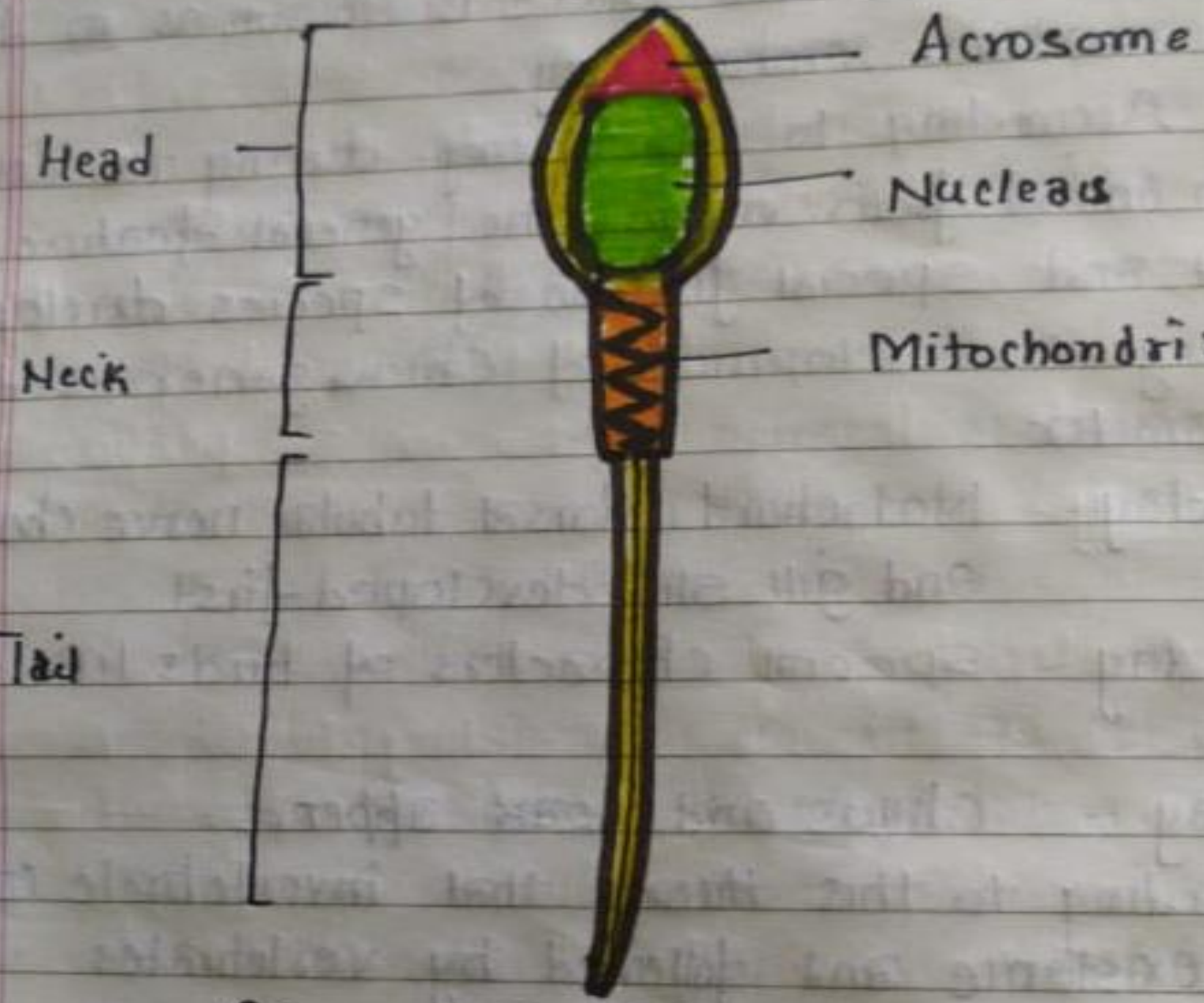
E. Haeckel Covered this theory as biogenetic theory

Phases of Ontogenetic Development

Gametogenasis

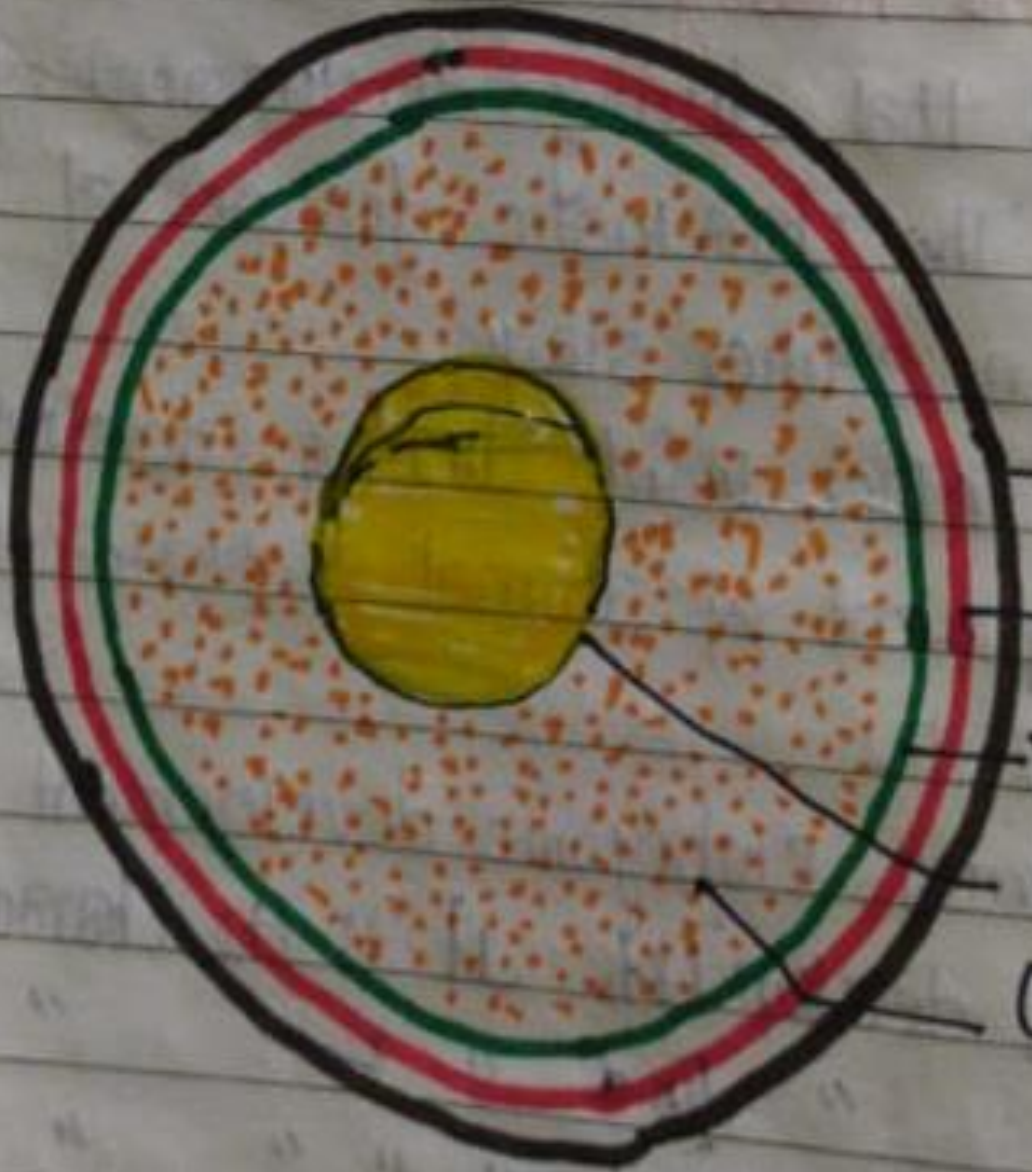
Male Gamet

1. **Haed**
2. **Neck**
3. **Tail**



Spermatozoa (Sperm)

Female Gamet
Ovum


Corona Radiata
Zona pellucida
Vitelline Membrane
Yolk
Cytoplasm

Ovum -

Fertilization

Fertilization is the process by which male and *gametes* are fused together, initiating the development of a new organism.

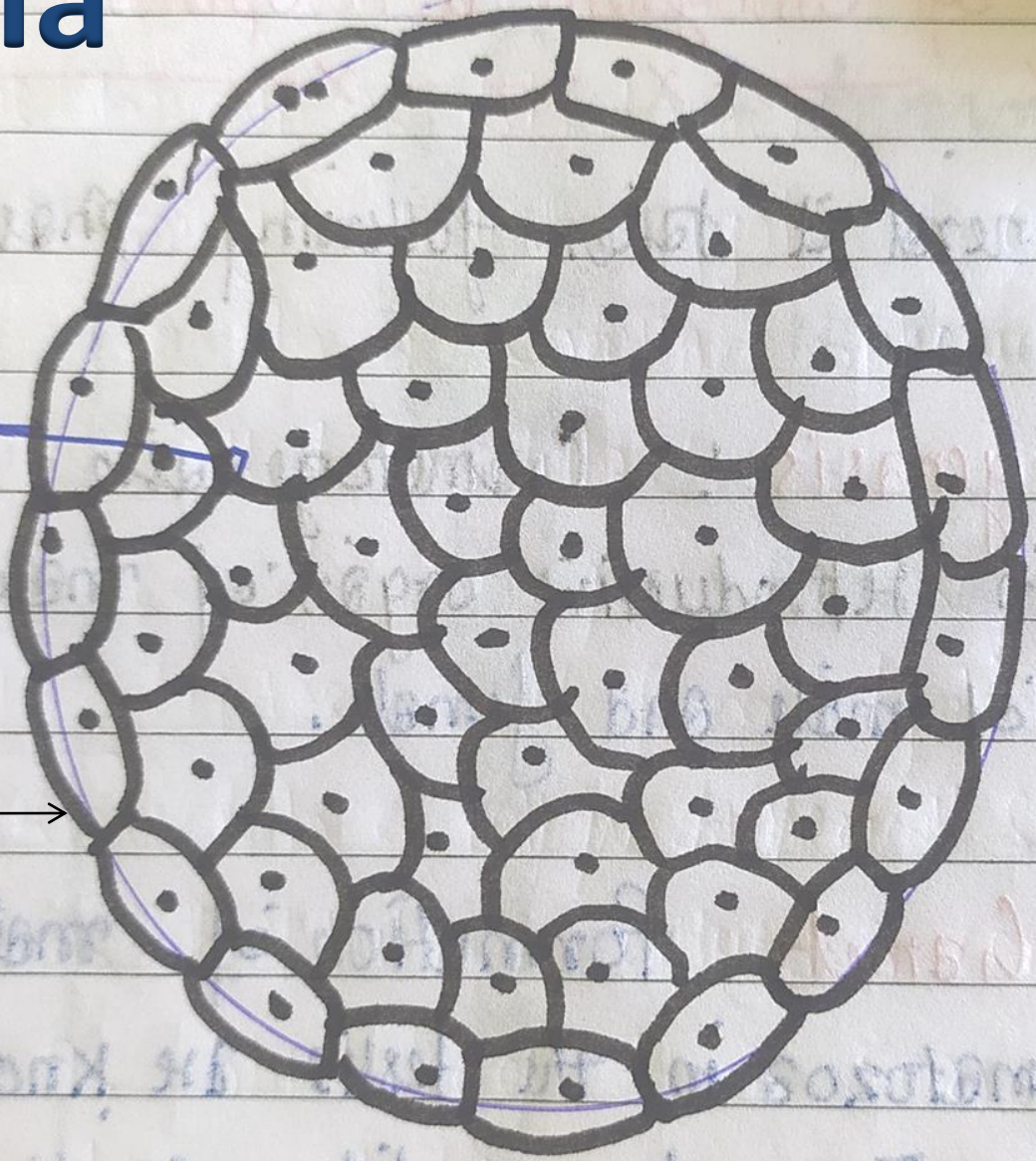
1. **Internal Fertilization- Mostly Mammals**
2. **External Fertilization- Fish and Frog**
3. **Self Fertilization – Taenia, C. elegan**

Process of Fertilization

1. Ejaculation of sperms
2. Fertilizine reaction
3. Antifertilizine reaction
4. Dilution of egg wall
5. Entry of nucleus
6. Fusion of nucleus

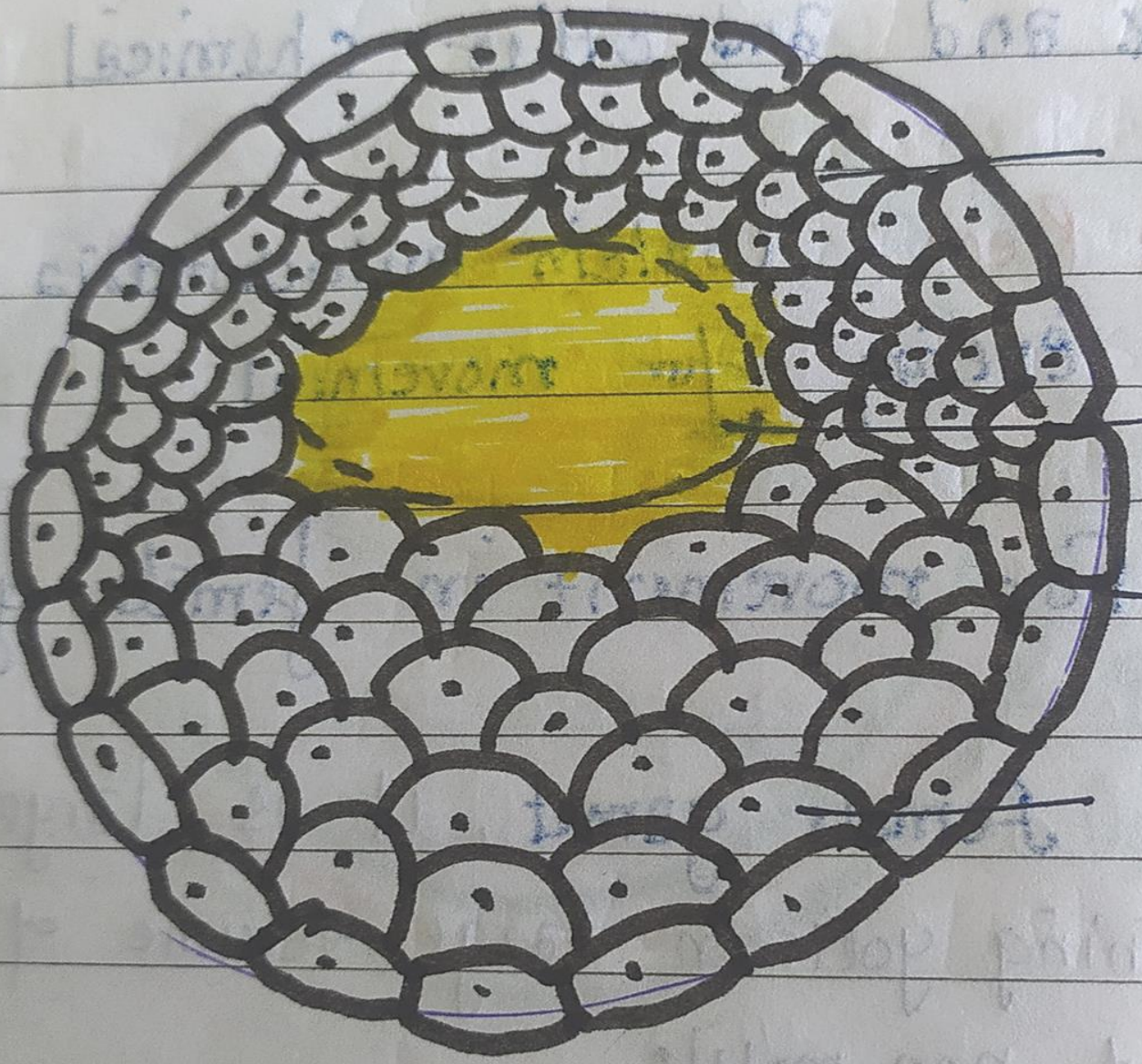
Cleavage

Morula



(Morula)

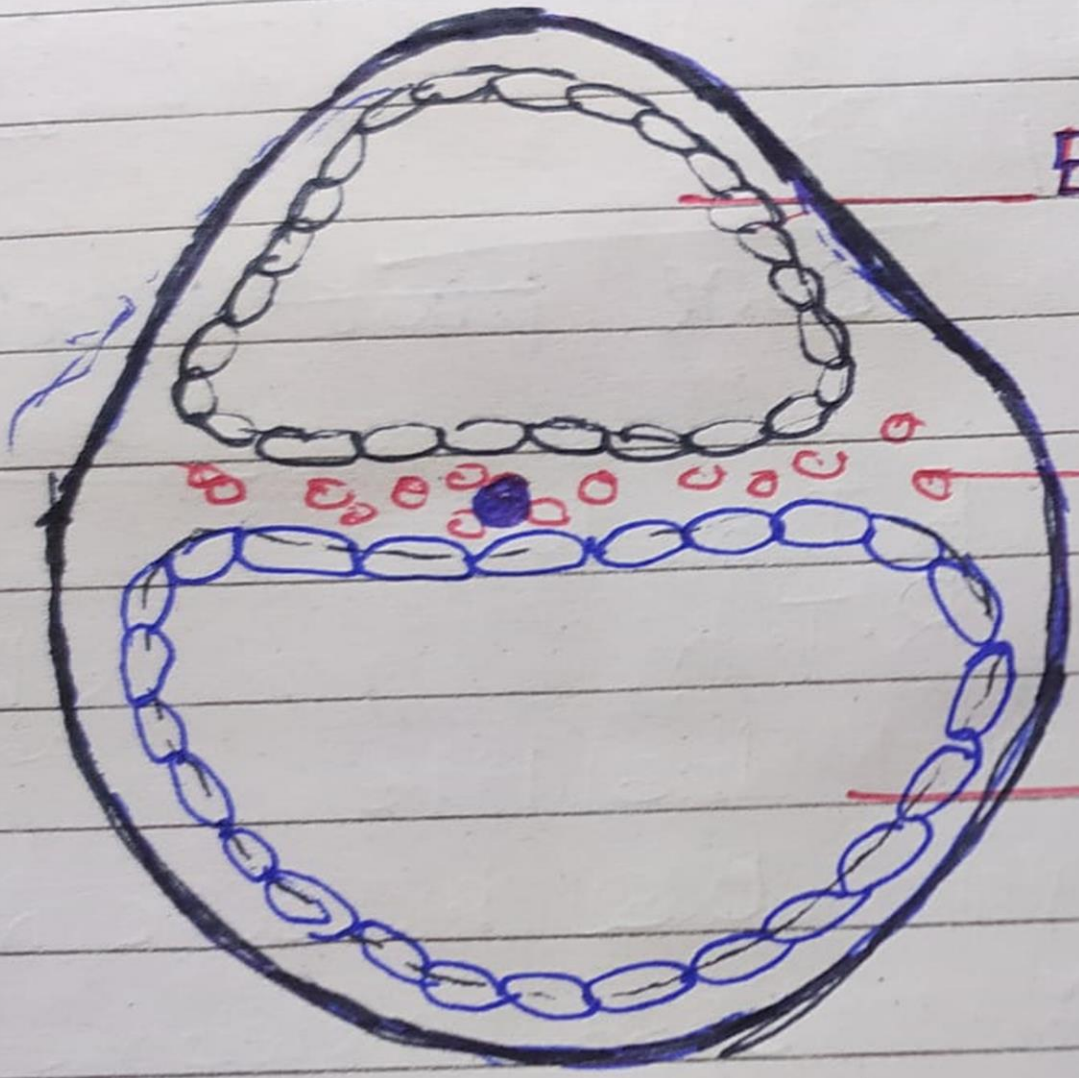
REDMI NOTE 8
AI QUAD CAMERA



(Blastula)

Gastrulation

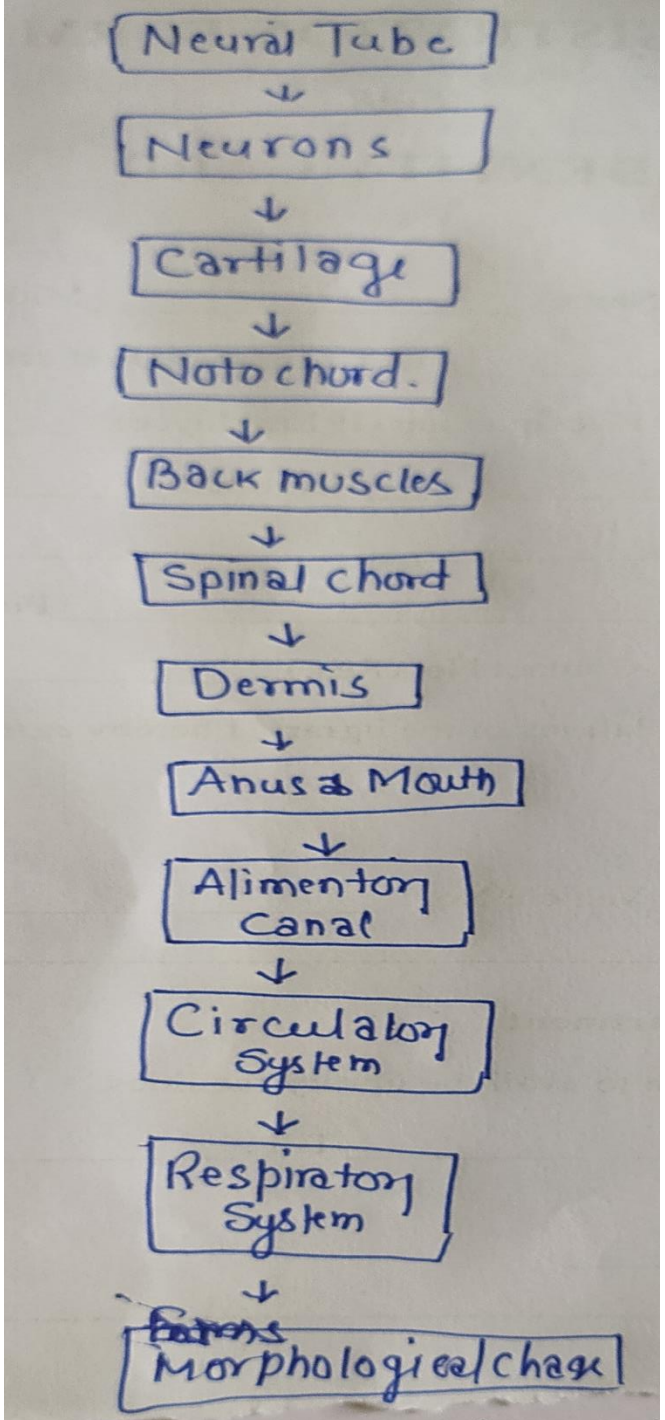
1. Ectoderm- Emboly
2. Mesoderm-
3. Endoderm- Involution

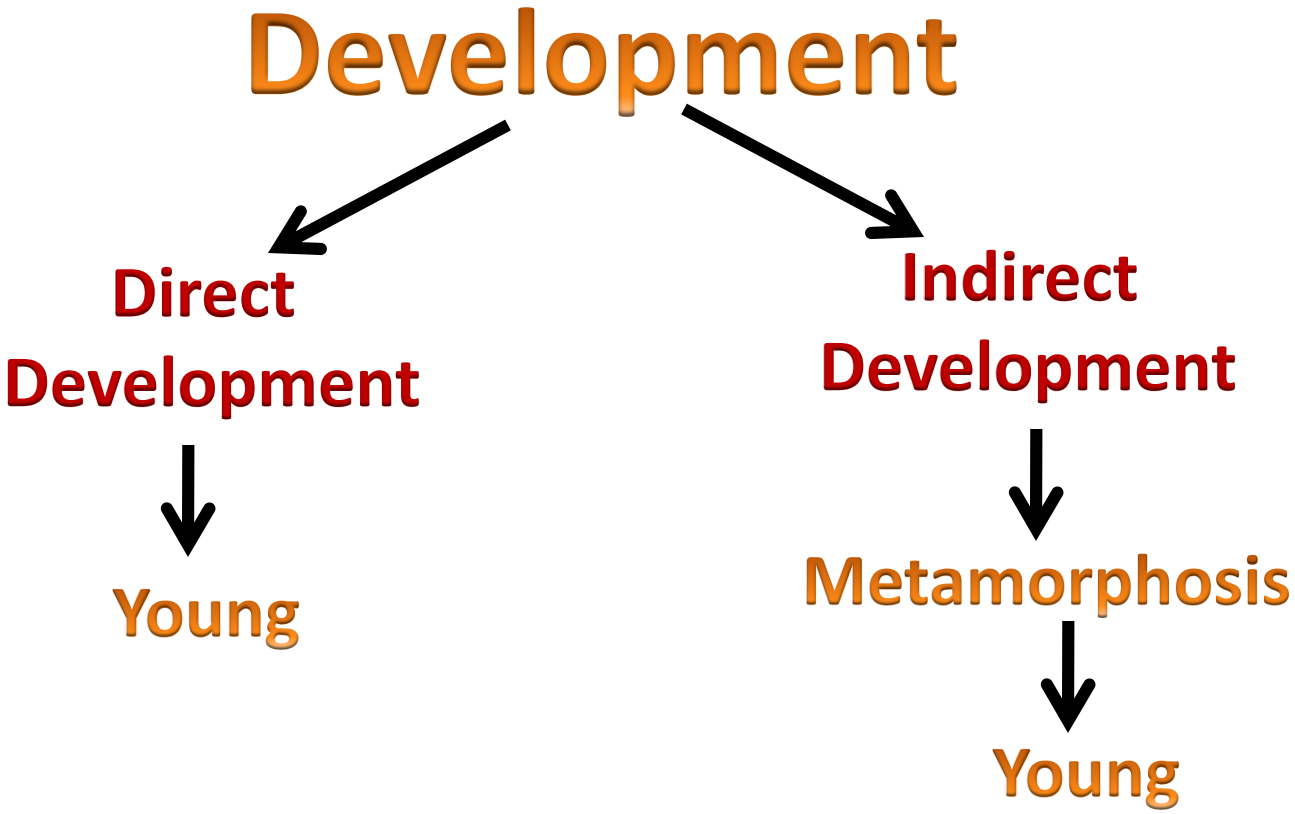


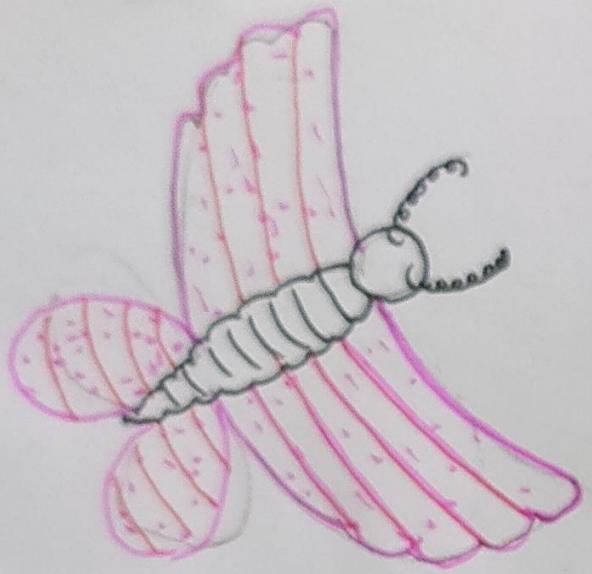
Gastrula

Organogenesis

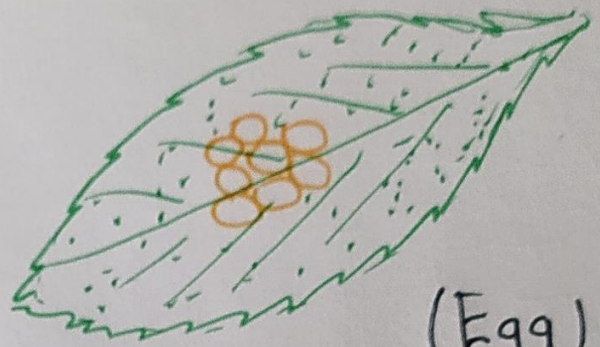
Organogenesis is the phase of embryonic development that starts at the end of gastrulation and continues until birth. During organogenesis, the three germ layers formed from gastrulation (the ectoderm, endoderm, and mesoderm) form the internal organs of the organism.


Neural Tube
Neurons
Cartilage
Notochord.
Back muscles
Spinal chord
Dermis
Anus & Mouth
Alimentory Canal
Circulatory System
Respiratory System
Morphological chars

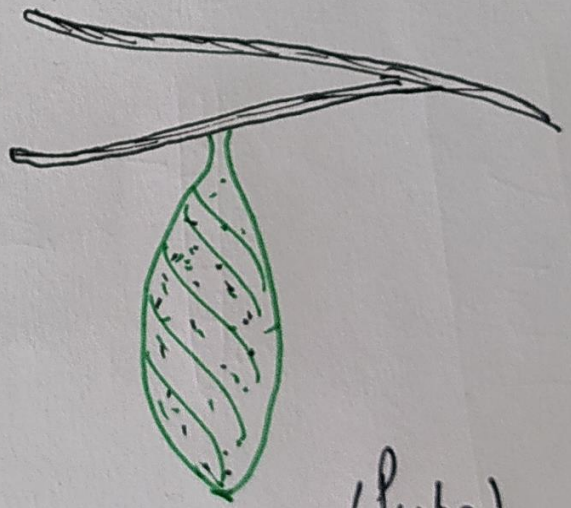

Development
Direct Development
Young
Indirect Development
Metamorphosis
Young



(Adult)

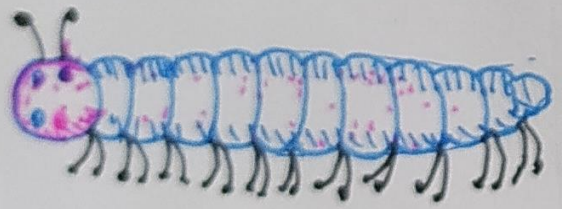


(Egg)



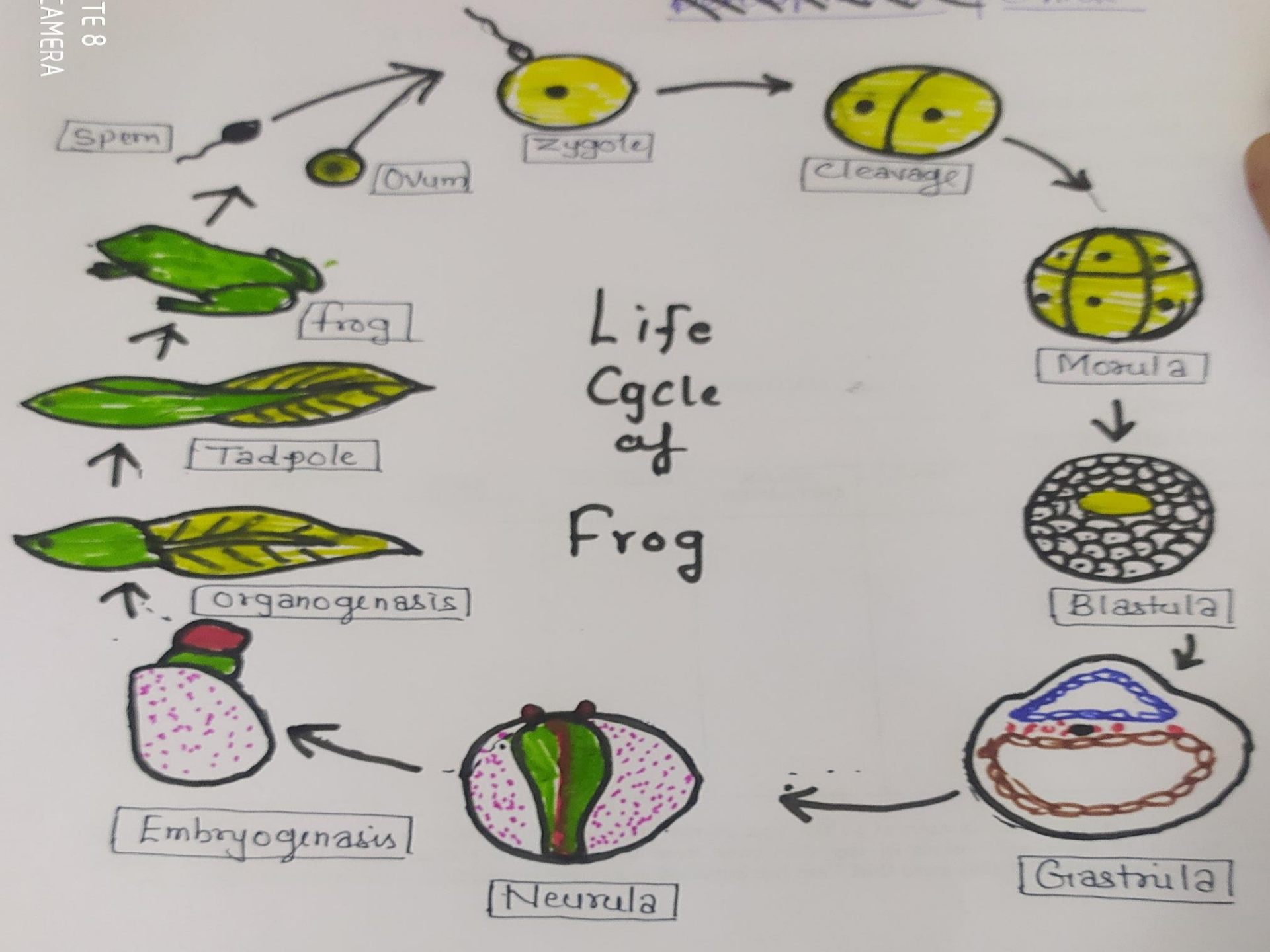
(Pupa)

Metamorphosis



Larva

(Life Cycle of Insect)


Life
Cycle
of
Frog
Sperm
Ovum
Zygote
Cleavage
Morula
Blastula
Gastrula
Neurula
Embryogenasis
organogenasis
Tadpole
frog