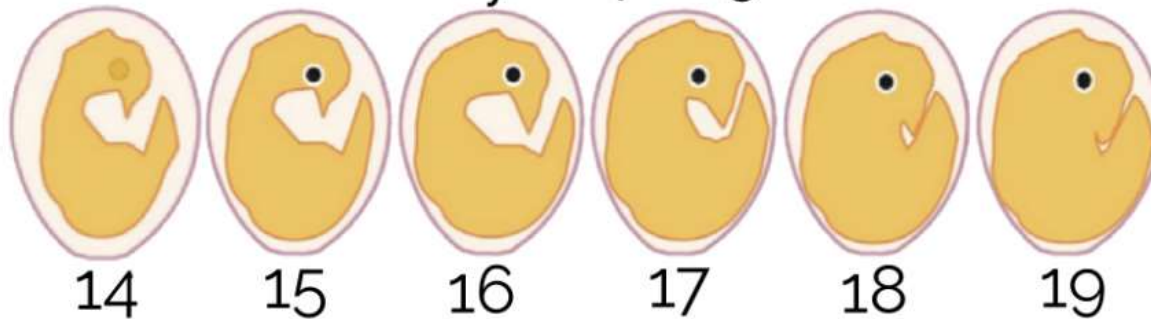


Eye development in chick embryo

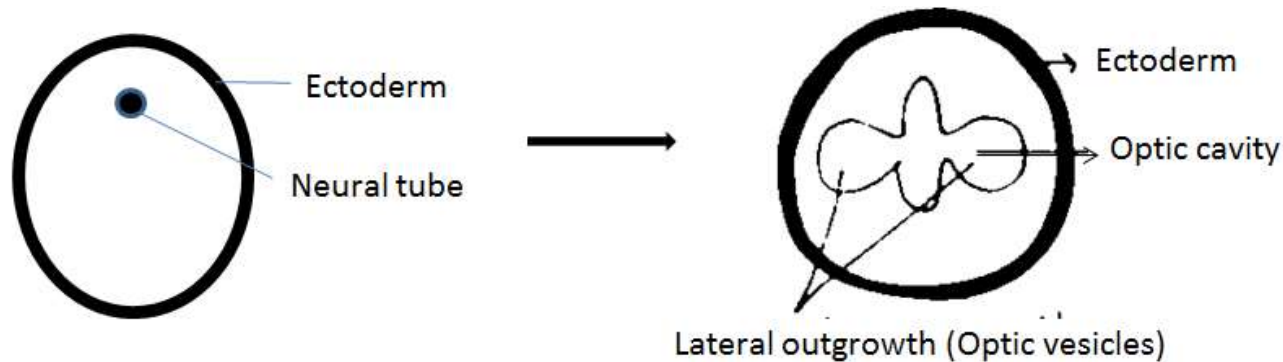
The Chicken Embryo
Days 14 - 19



By Chaitali Barman
Asstt. Professor Zoology
SNC, KOL-09

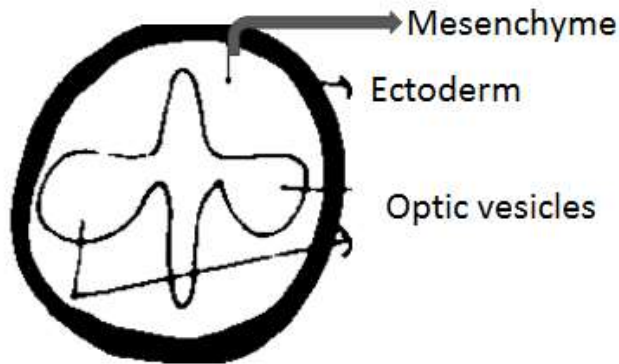
Development of eye in chick :

- The early development of eye in chick was studied in the embryonic stage.
- Eye development starts from neural tube. At day 1 of incubation ,optic vesicles are developed.
- Optic vesicles are basically lateral outgrowth from the neural tube. There are two optic vesicles formed in chick embryo.



- After 2 days of incubation, optic cavities are observed in the optic vesicle.
- These two optic vesicles extend toward the ectoderm.
- Between the optic vesicles and ectoderm ,a cellular layer is present called mesenchyme. It comprises of loose cells, embedded in a mesh of proteins and fluids called extracellular matrix.

- This mesenchyme is displaced as the eye development proceeds, and ectoderm and optic vesicles come into close physical contact.



- The inductive signals between ectoderm and optic vesicles result in differentiation of ectodermal cells into lens placode.

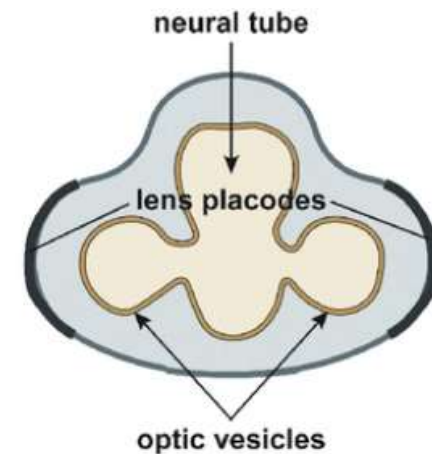
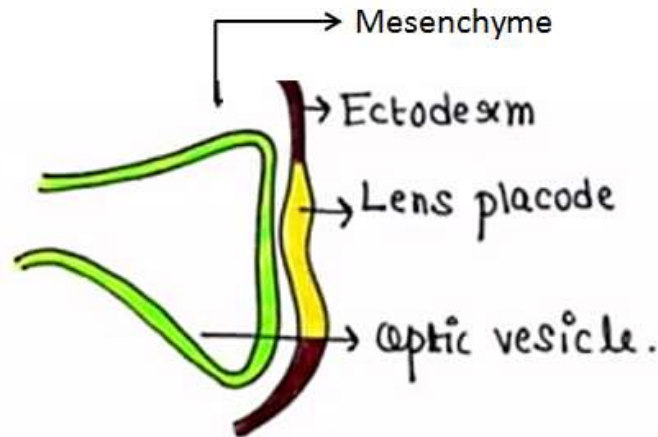
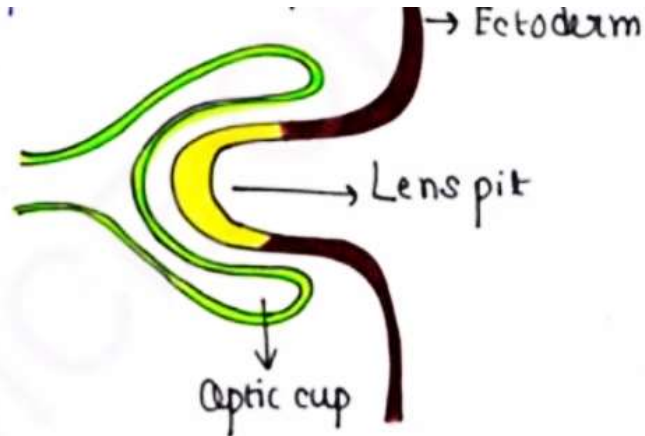
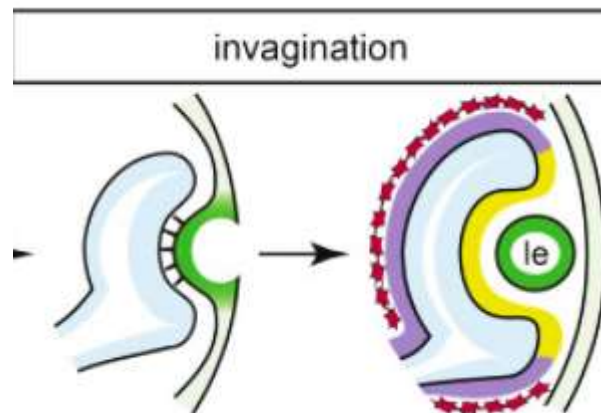


Fig: One sided view of a single optic vesicle.

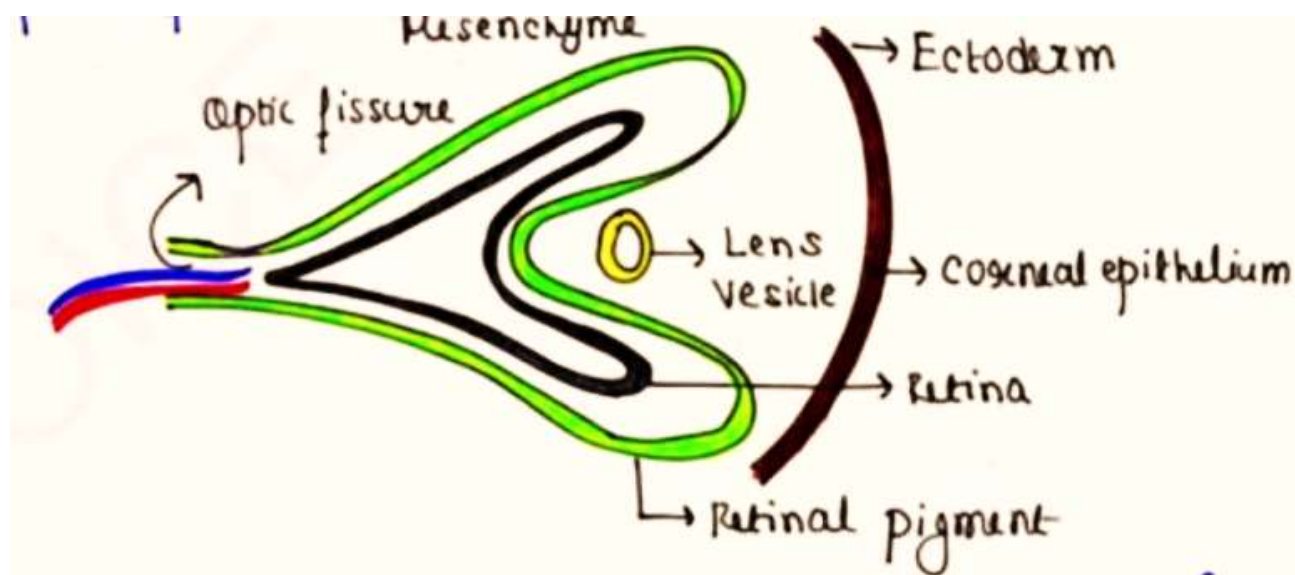
- Lens placode and optic vesicles undergo invagination. After the invagination process the optic vesicles form a double layer optic cup and the lens placode forms the lens pit.



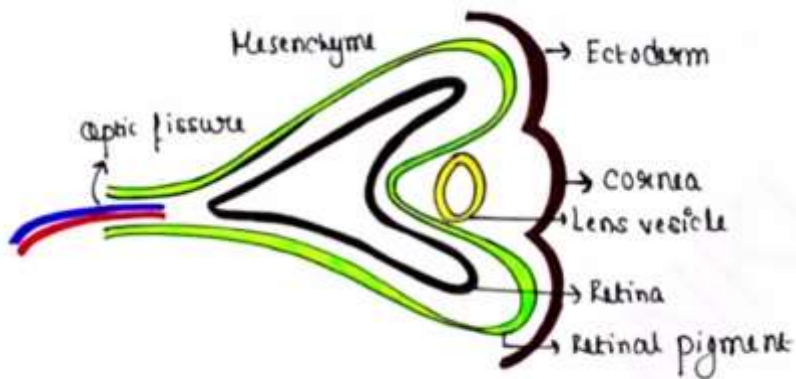
- Lens pit forms a complete circle that pinches off from the surface ectoderm to become the lens vesicle at 3rd day of incubation.



- Optic cup provides the shape of the eyes. It has two layers of cells. Inner layer of cells form **retina** and outer layer of cells form **retinal pigment** at day 5th day of incubation.
- The point within optic cup at which blood vessels and neurons enter within an eye is called **choroidal (or optic) fissure**.
- Above the lens ,ectodermal layer is present and is known as **corneal epithelium**. This corneal epithelium secretes collagen rich extracellular matrix.
- Mesenchymal cells start migrating toward this region and forms cornea at day 5.



- Ciliary body and iris develop from inner and outer layers of optic cup .
- Vitreous body is observed.
- Choroid and sclera (outer surface membrane of the eye) formed from surrounding mesenchyme. All these events completed at day 5.



5th day of incubation

