Date 1-6-2020

Dr. Rajesh Verma, Assistant Professor and Head, U.G. Department of Zoology, D.K. College, (Dumraon), (Buxar). Notes for B.Sc Part 2nd, paper I V (A)

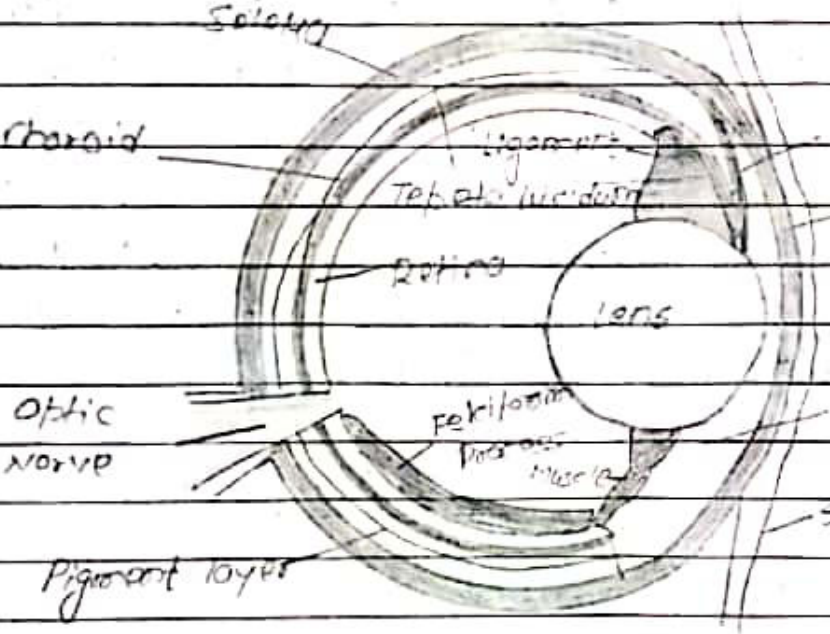
Question :- Write notes on ORGANOGENESIS OF EYE IN FISH ?

Answer :- In fish and frogs, ocular cells undergo extensive movements that are essential for organogenesis of the eye. Fish retinal progenitor cells first display a directed movement toward the midline, followed by an outward turn into the evaginating optic vesicles (Rembold et al., 2006).

Eye of the fish :-

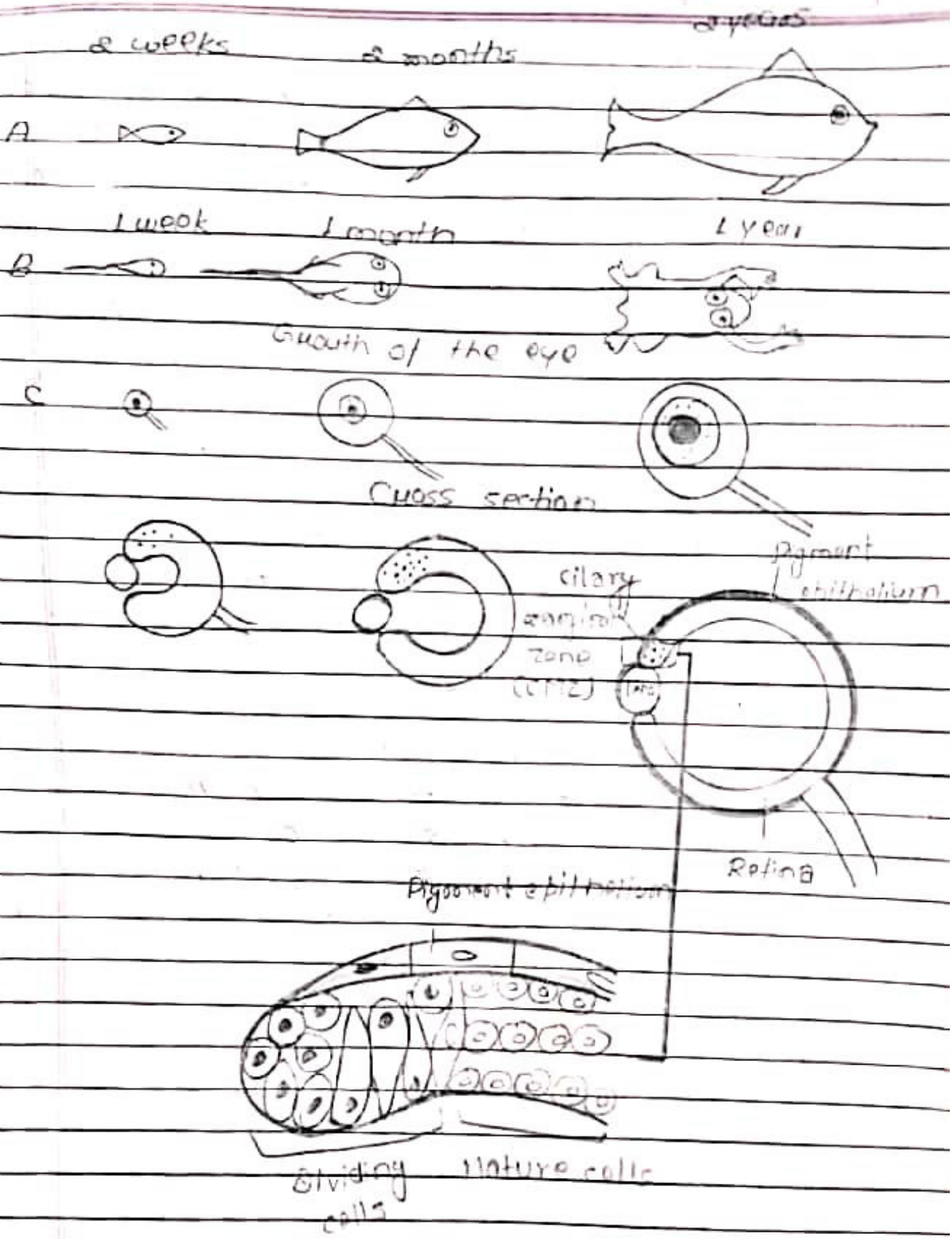
The light-sensitive cells in our eye - the photoreceptors - are known as rods and cones. Cone cells give us our colour-vision when the light is bright enough, and rods take over to give us a monochrome view of the world when the light levels are very dim. These two cell types have long been

thought to mediate all of the light responses of the vertebrate eye. But according to a report in the 2 July 1998 issue of Nature, there are light-sensitive pigments in other nerve cells in the fish retina, suggesting that photoreception is not just restricted to rods and cones.



But Bobby Soni of Imperial College in London, U.K. and his colleagues, have now found a functional photopigment in the salmon retina, in nerves known as horizontal cells and amacrine cells.

Date
9-6-2020



Growth of the eye through cell division at the

Genetic codes for new types of opsin families have been found, leading naturally to the question of whether they can function as photopigments. The research team looked at one of the proteins known as vertebrate ancient (VA) opsin gene from the salmon. They found that when it was regenerated with vitamin A, it absorbed light in just the same way as the rod pigment rhodopsin.

The researchers found none of the pigment in the fish's rod or cone cells, but found that it was made in amacrine and horizontal cells. These cells regulate and integrate the signals from rods and cones and were not thought to act as photoreceptors themselves. They also found the pigment in the pineal gland and in another brain region known as the habenular.

Date 3-6-2020

Essential For Organogenesis in fish :-

Bone modeling is the central system controlling the formation of bone including bone growth and shape in early development, in which bone is continuously resorbed by osteoclasts and formed by osteoblasts. However, this system has not been well documented, because it is difficult to trace osteoclasts and osteoblasts in vivo during development. Here we showed the important role of osteoclast-deficient line. Using in vivo imaging of osteoclasts in the transgenic medaka carrying an enhanced GFP (EGFP) or DsRed reporter gene driven by the medaka TRAP (Tartrate-Resistant Acid phosphatase) or Cathepsin K promoter, respectively, we examined the maturation and migration of osteoclasts.