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EMBRYOLOGICAL DERIVATIVES OF THE EYE

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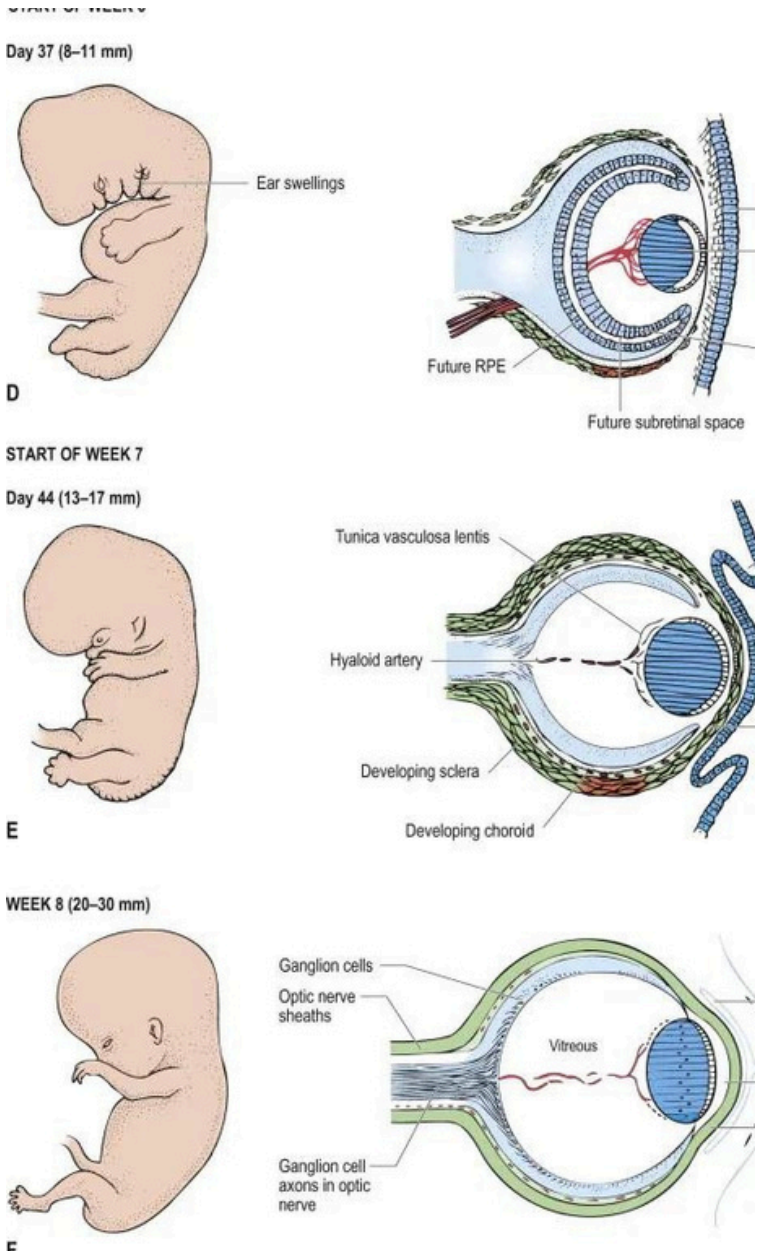
EMBRYOLOGICAL DERIVATIVES OF THE EYE

Eye development occurs in the human embryo from approximately the third week through the tenth week of gestation.Ocular tissues are of mesodermal and ectodermal origin.The retina, ciliary body, optic nerves, and iris are derived from neuroepithelium.

VISUAL REPRESENTATION



EMBRYOLOGICAL DERIVATIVES OF THE EYE

Important facts

- *The homeobox gene Pax6 is vital to the initiation of eye development.*
- *Sex-determining region Y-box 2 (Sox2) anophthalmia syndrome follows an autosomal dominant inheritance pattern.*
- *Retinol-binding protein 4 (RBP4) mutation also causes autosomal dominant anophthalmia, mediated through increased fetal susceptibility to vitamin A deficiency.*
- ***Coloboma** refers to a hole in an ocular structure, such as the iris, choroid, retina, or optic disc, that is present from birth.*

EMBRYOLOGICAL DERIVATIVES OF THE EYE

- *Identified causes of colobomas include a mutation in the paired box gene 2 (PAX2) gene and fetal alcohol syndrome.*
- *The complete absence of the iris is described as **ANIRIDIA**, which usually presents with bilateral involvement.*
- *It can severely impair vision and can present as a component of syndromes such as **WAGR syndrome** (Wilms tumor-aniridia syndrome), and Gillespie syndrome.*
- *Cases of autosomal recessive aniridia rarely occur, an example of which is Gillespie syndrome.*
- *WAGR syndrome can result from sporadic mutation of the Wilms Tumor 1 (WT1) gene.*

EMBRYOLOGICAL DERIVATIVES OF THE EYE

- *Optic nerve hypoplasia (ONH) presents as an abnormally small optic disc due to the improper development of optic nerve axons.*
- *Hypopituitarism due to hypothalamic dysfunction occurs in approximately 75% of ONH cases.*

MCQ

Question: ***Ciliaris muscle is derived from***

A. Neural crest cells
B. Neural plate ectoderm
C. Surface ectoderm
D. Mesoderm

Answer: ***A>D***