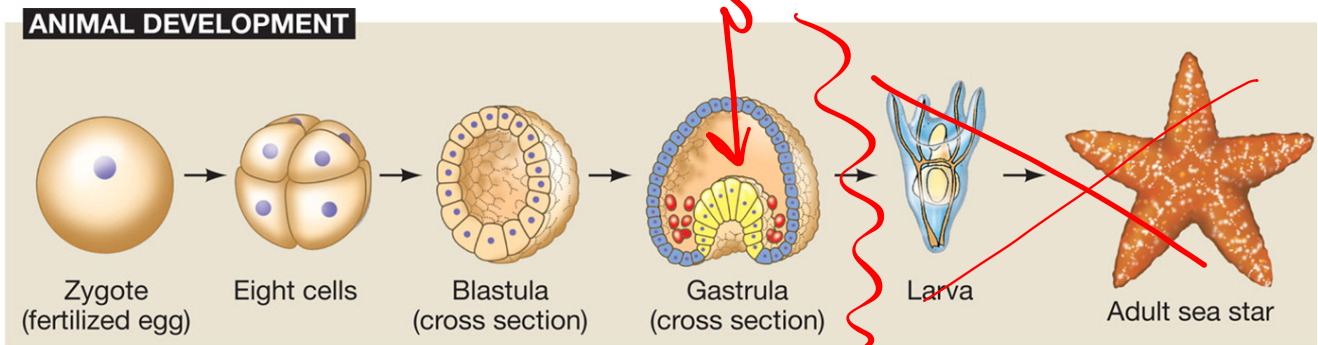


Development: process by which a multicellular organism, beginning with a single cell, goes through a series of changes, taking on successive forms that characterize its life cycle.

Zygote: single cell

Embryo: earliest stages of development



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hollow
ball of
cells

Four key processes to development

1. Determination: developmental cell fate
2. Differentiation: different types of cells arise from less specialized cells
3. Morphogenesis: organization and distribution of differentiated cells
4. Growth: increase in size of body and organs (cell division)

Video

Cell potency: cell's potential to differentiate into other cell types

- totipotent: (cells of early embryo) potential to differentiate into any cell type.
- pluripotent: (cells at later stages of the embryo) potential to develop into most other cell types
- multipotent: (later developmental stages and adulthood) differentiate into several different, related cell types.
- unipotent: can produce only one cell type

Video

Hox genes: determine the timing of development and position of major body appendages

(A)



(B)



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Homeotic mutations

Homeosis: placement of one organ by another