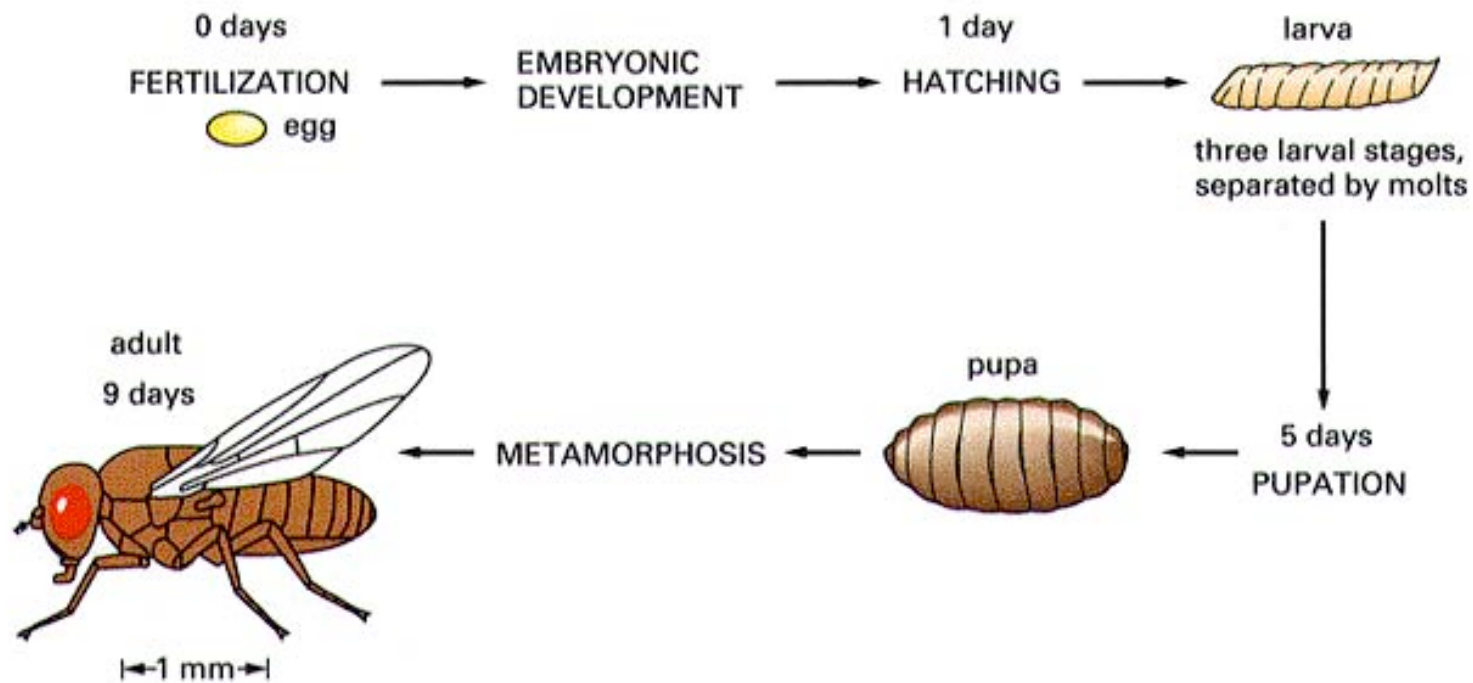


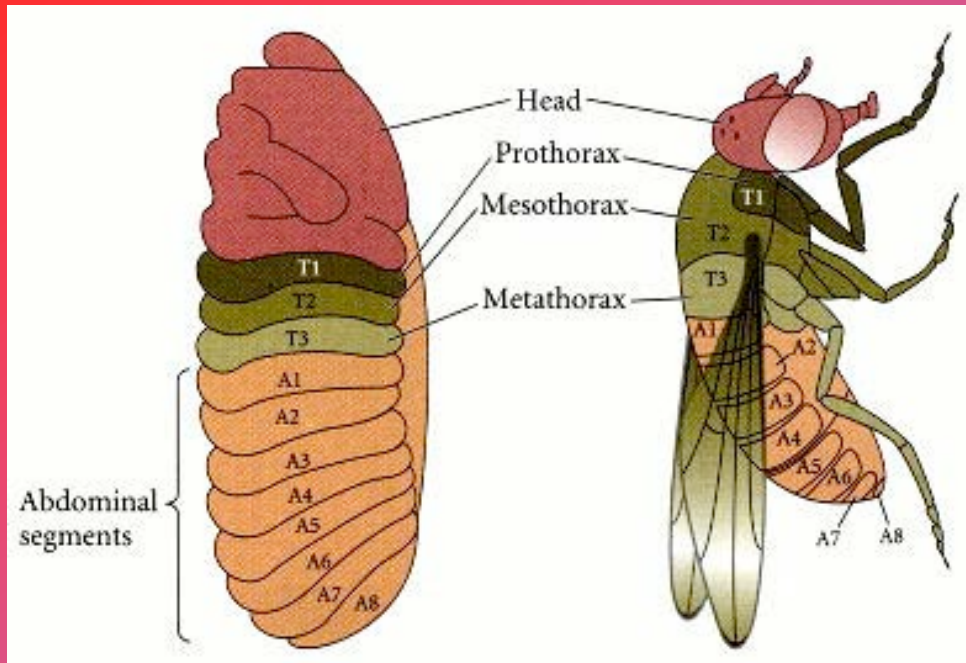
Lo sviluppo della *Drosophila*



Lo sviluppo della *Drosophila*



Comparison of larval and adult segmentation in *Drosophila*.

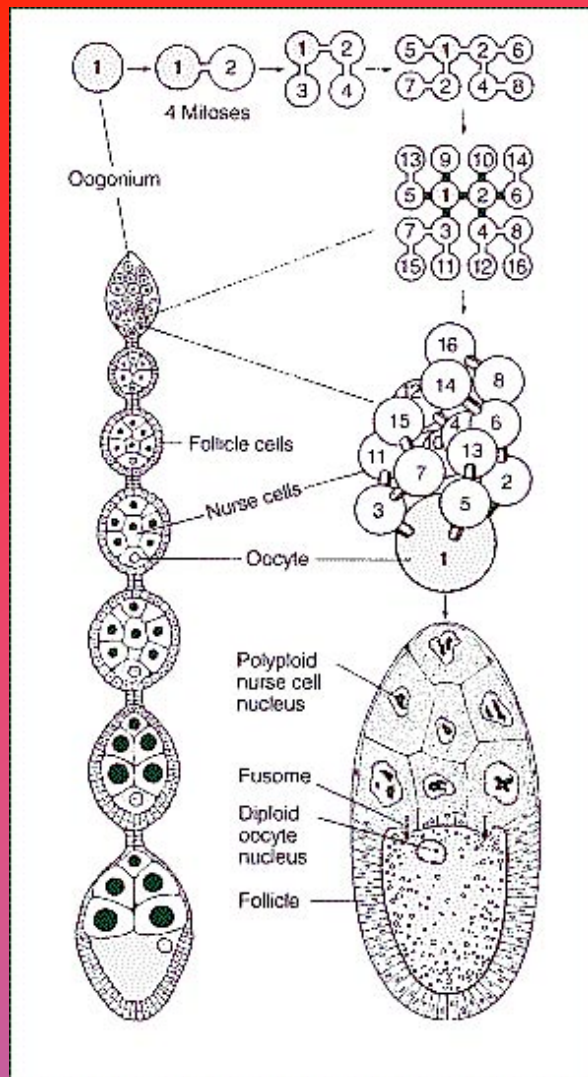


The three thoracic segments can be distinguished by their appendages:

T1 (prothorax) has legs only;

T2 (mesothorax) has wings and legs;

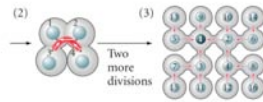
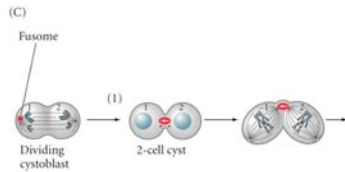
T3 (metathorax) has halteres and legs.



Oogenesi in *Drosophila*.

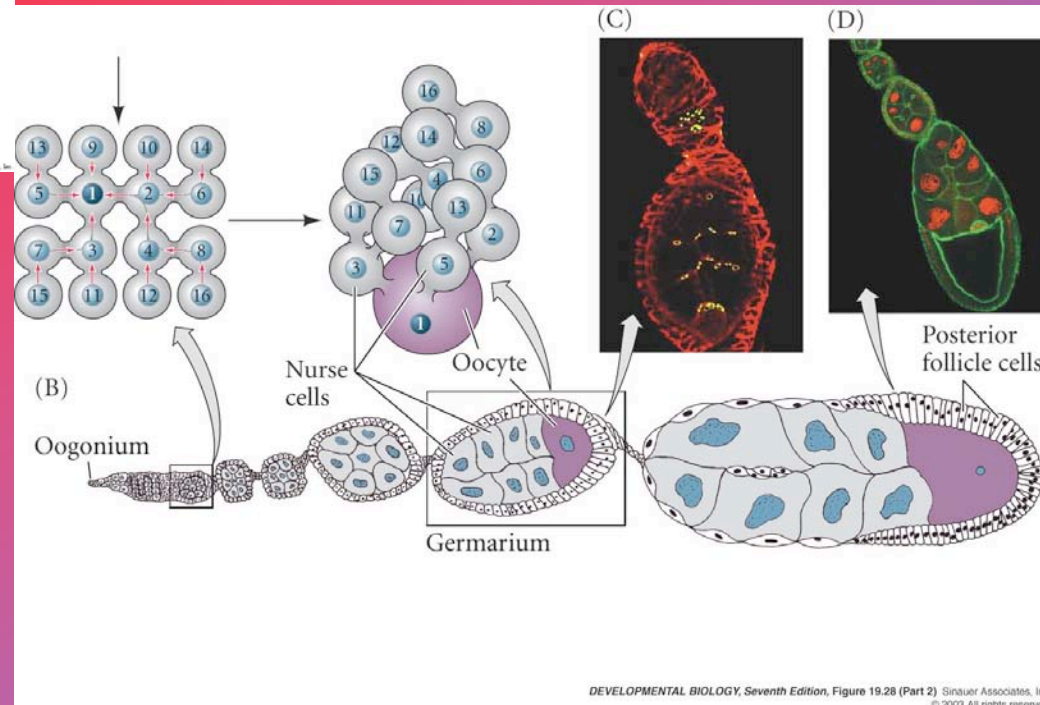
Ovariolo tubulare contenente
oogoni.

Lungo l'ovariolo sono visibili
oociti di progressive
dimensioni e grado di
maturazione.



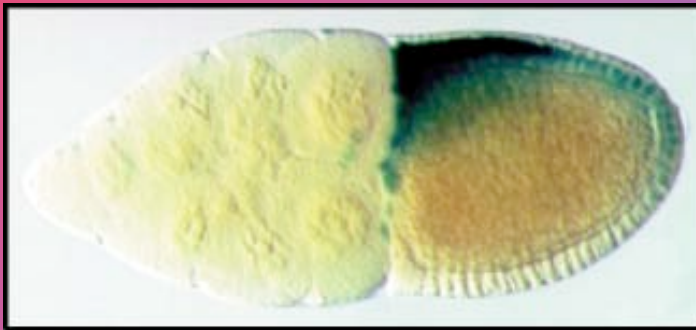
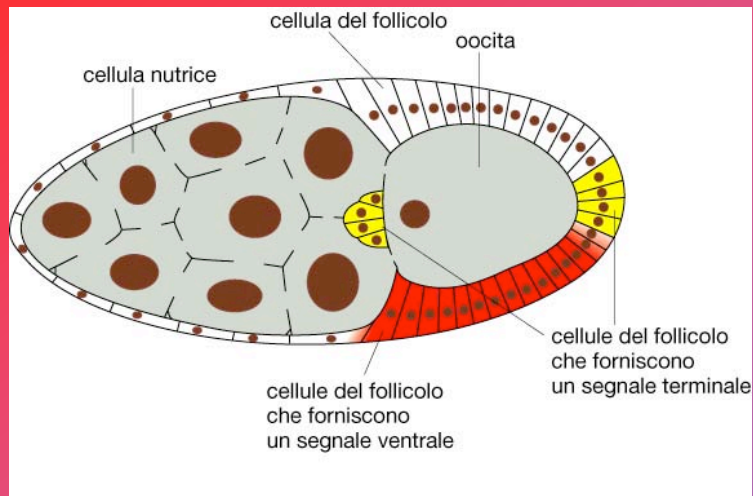
© 2003 Sinauer Associates, Inc.

Oogenesis



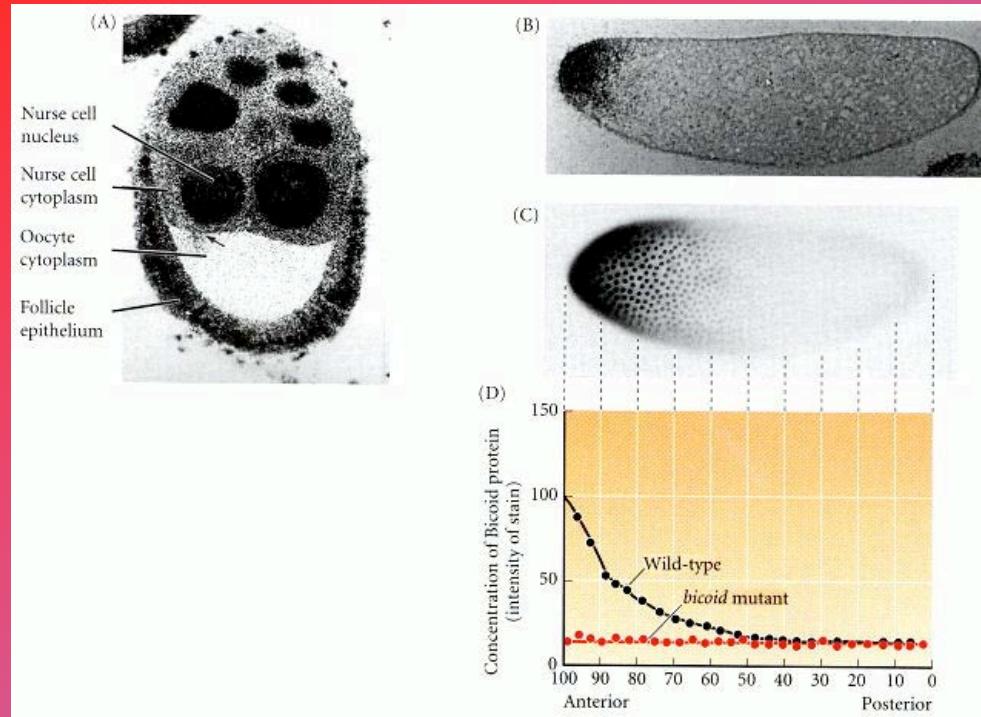
The oocyte is derived from a germ cell that divides four times to give a family of 16 cells that remain in communication with one another via cytoplasmic bridges. One member of the family group becomes the oocyte, while the others become nurse cells, which make many of the components required by the oocyte and pass them into it via the cytoplasmic bridges.

Un oocita di *Drosophila* nel suo follicolo.



Cellule Nutrici-
producono molte delle
molecole necessarie
all'oocita

Cellule Follicolari-
circondano
completamente l'oocita,
sono la sorgente di
segnali dorsali e ventrali
che polarizzano l'uovo

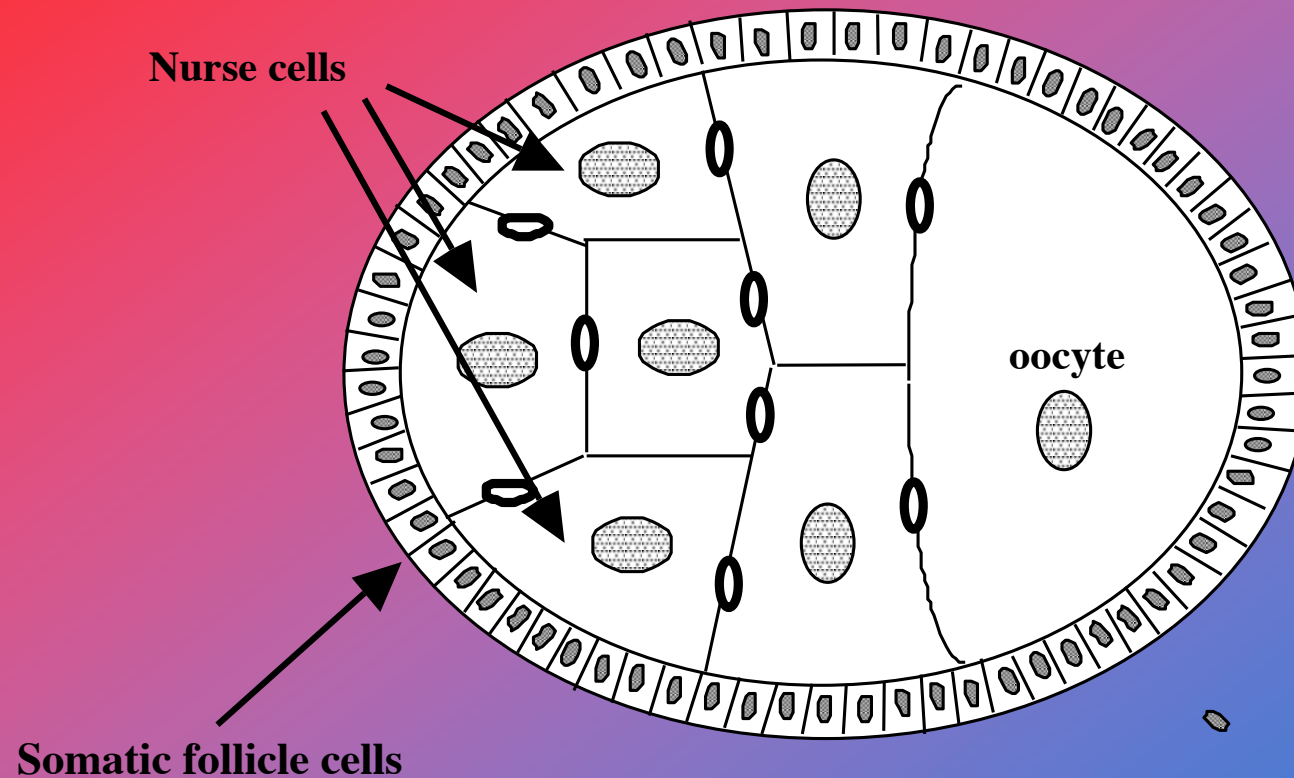


Gradient of Bicoid protein in the early *Drosophila* embryo.

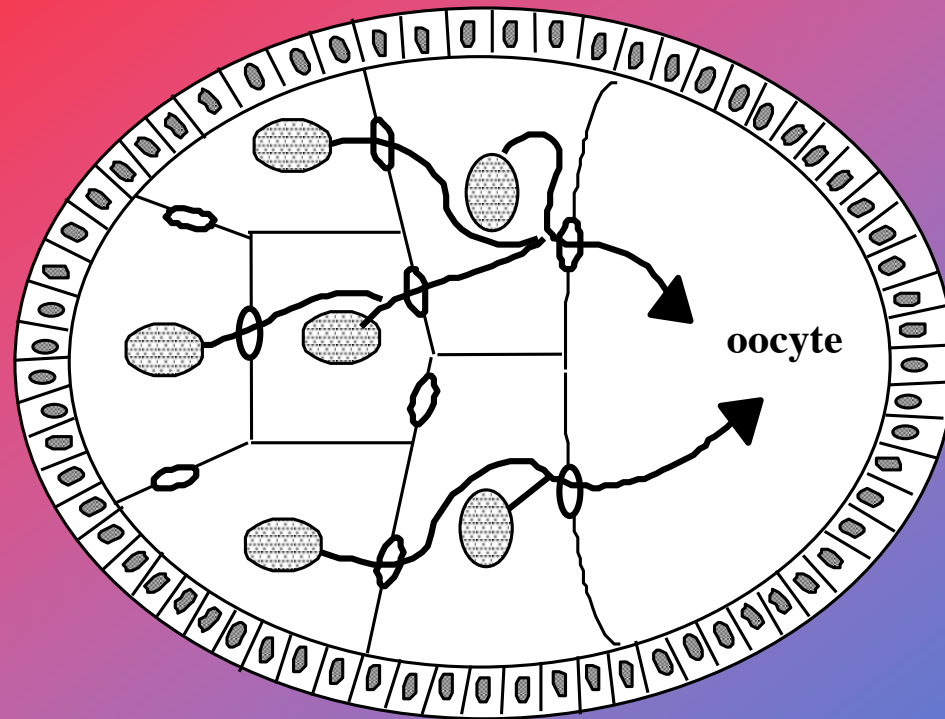
(A) *bicoid* mRNA passing into the oocyte from the nurse cells during oogenesis.

(B) Localization of *bicoid* mRNA to the anterior tip of the embryo.

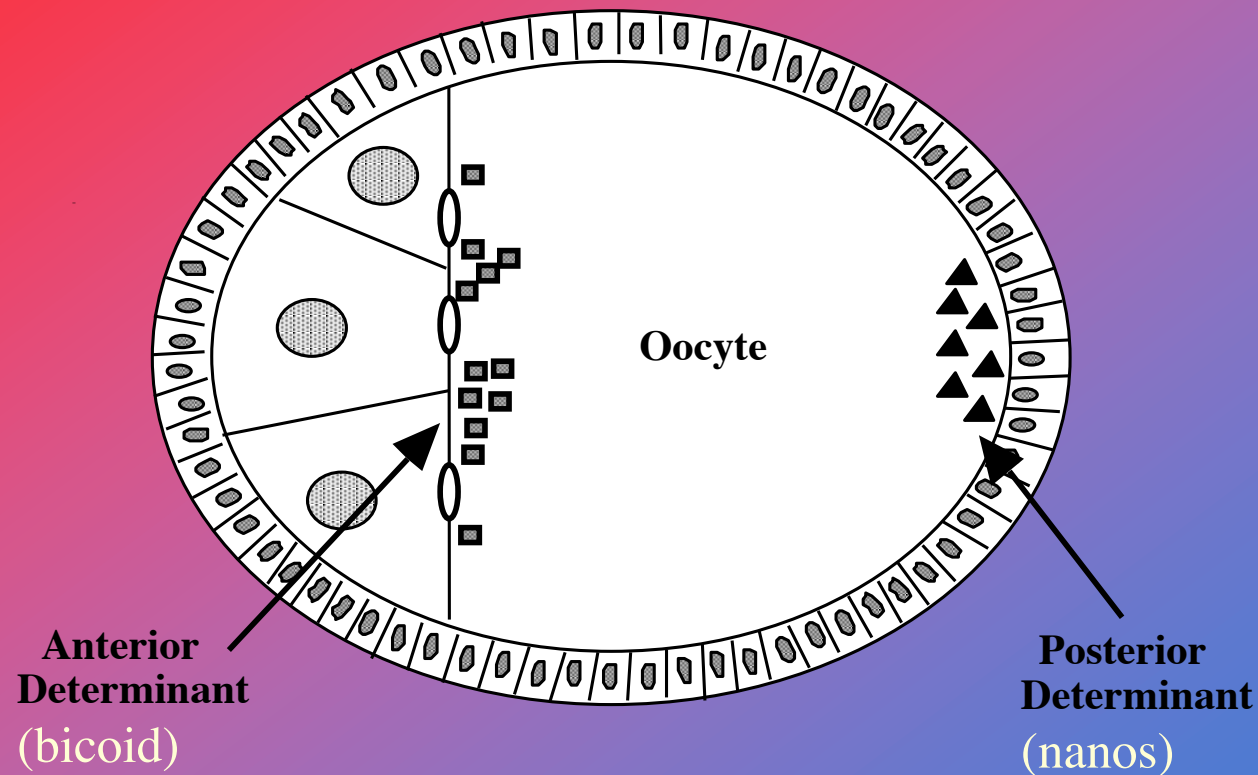
The *Drosophila* ovary is composed of both somatic follicle cells and germ line nurse cells and oocyte



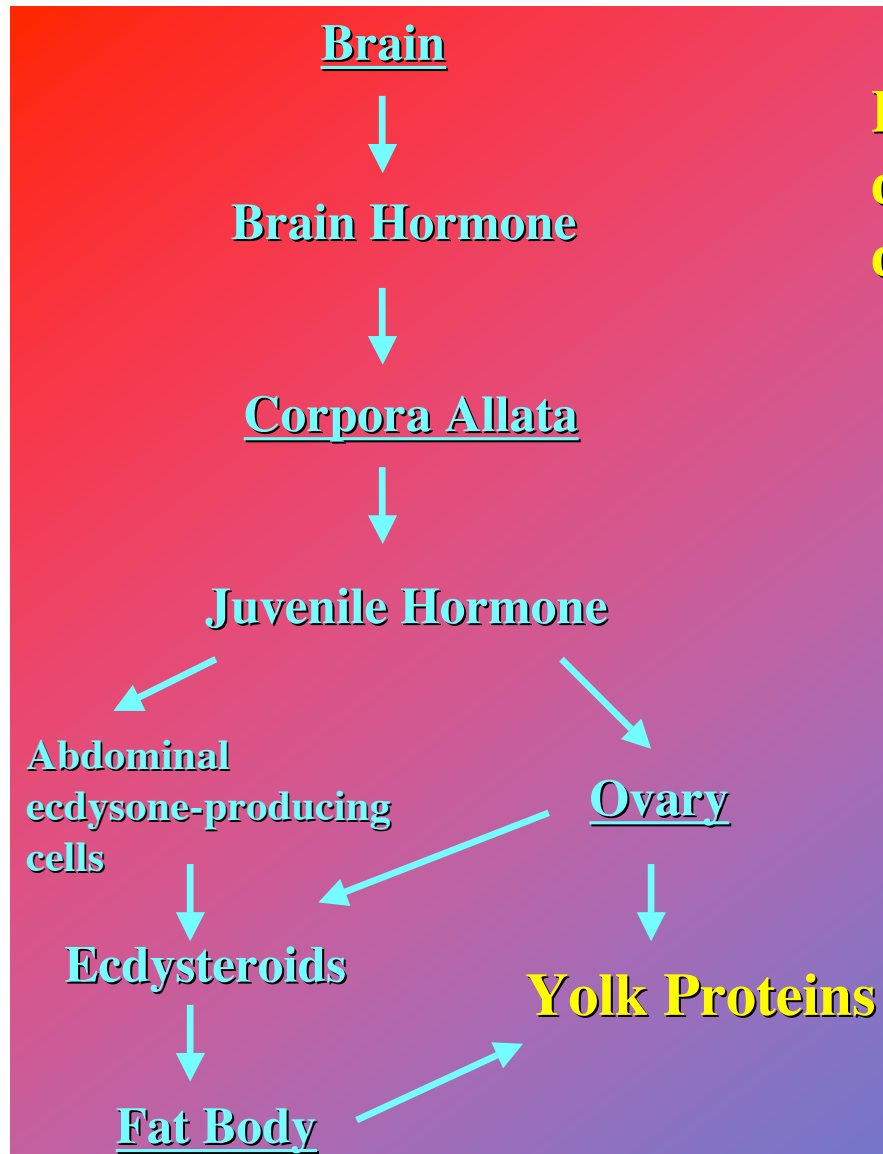
Nurse cells synthesize macromolecules
and pump them into the oocyte
through the cytoplasmic bridges



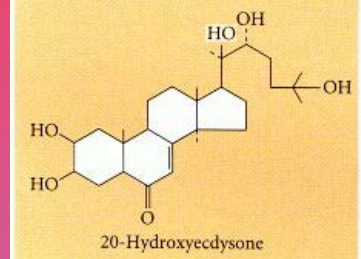
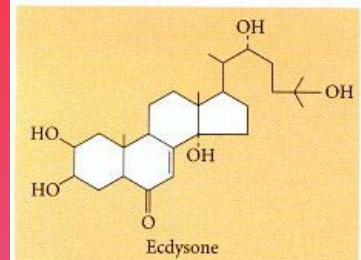
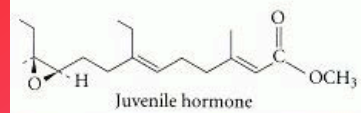
Molecules synthesized by the nurse cells and specifically localized in the oocyte determine the anterior/posterior axis of the embryo



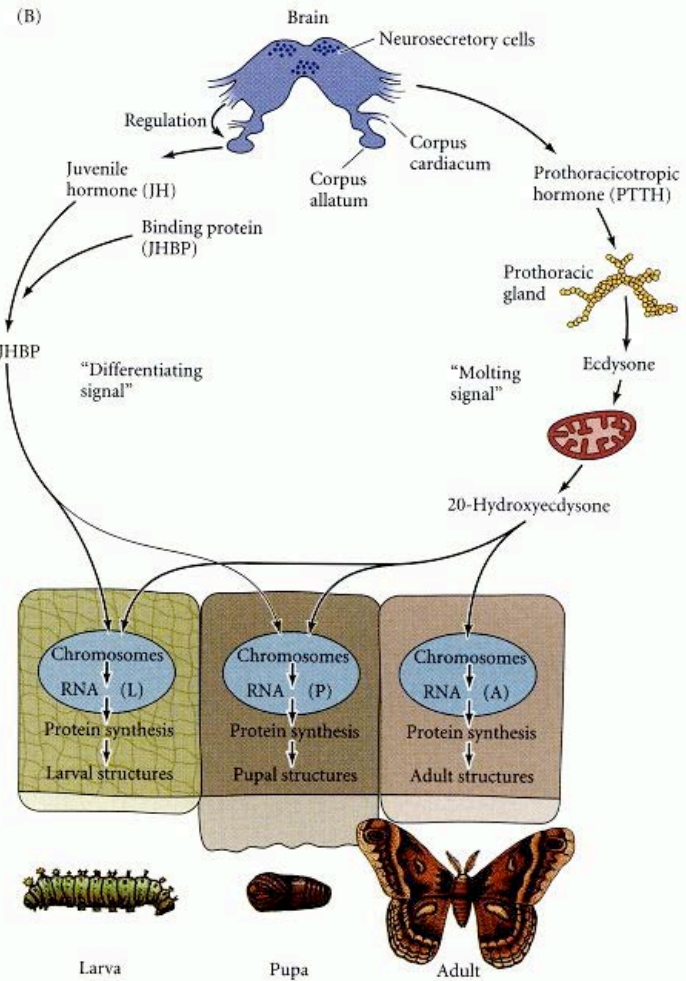
**Regolazione ormonale
della sintesi di proteine
del tuorlo in *Drosophila***



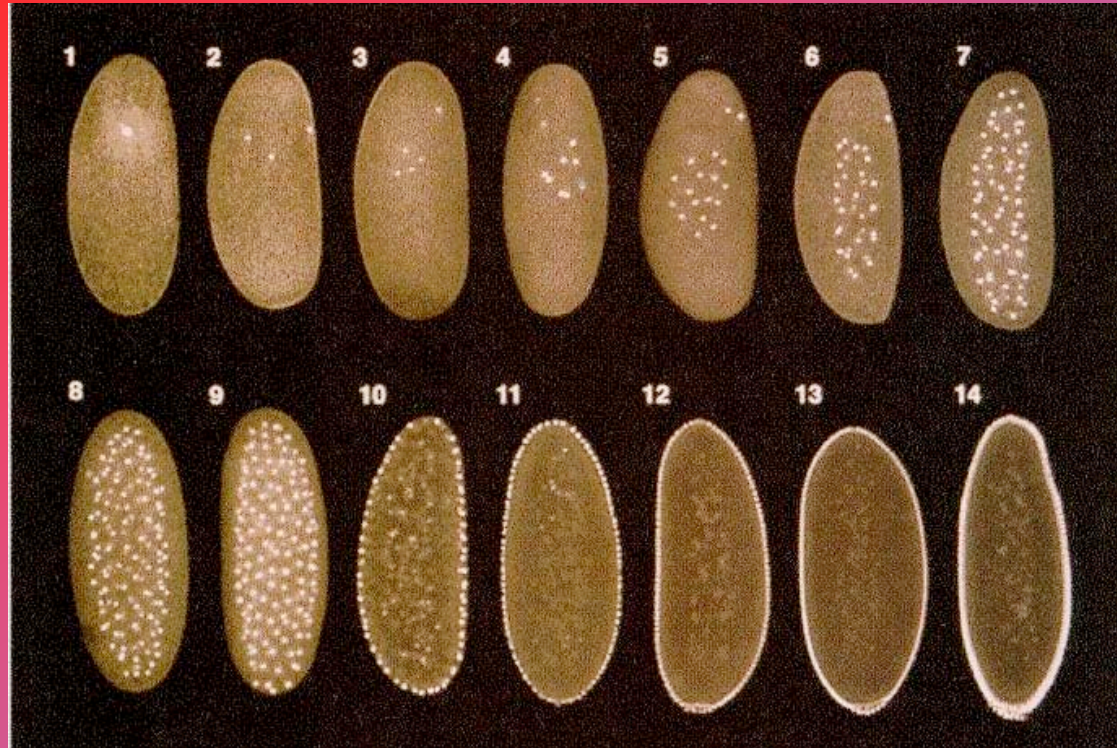
(A)



(B)

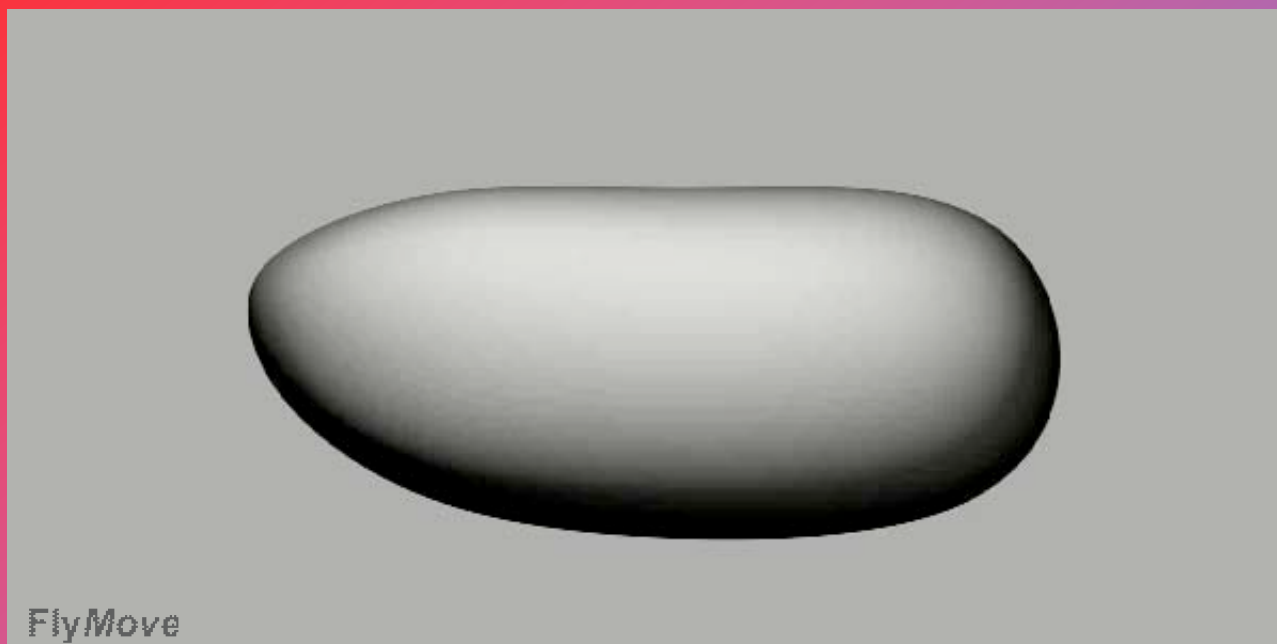


Segmentazione Superficiale in *Drosophila*

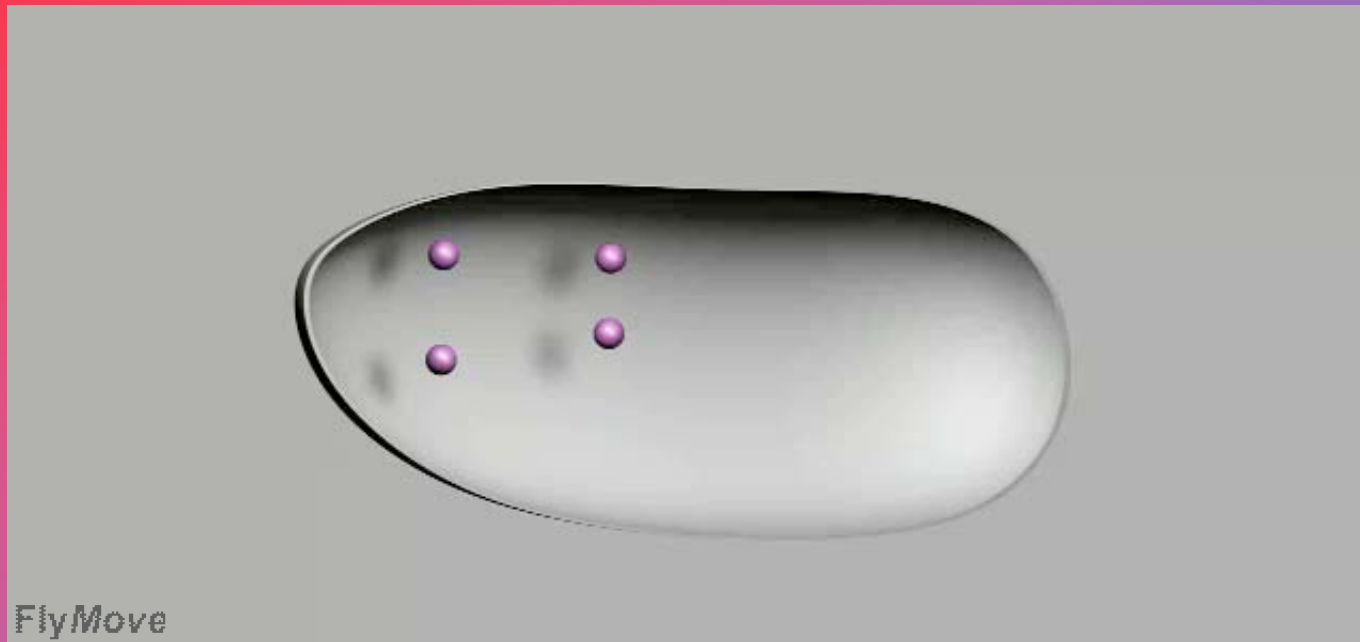


The early divisions occur centrally. The numbers refer to the cell cycle. At the tenth cell cycle (512-nucleus stage 2 hours after fertilization), the pole cells form in the posterior, and the nuclei and their cytoplasmic islands migrate to the periphery of the cell. This creates the syncytial blastoderm. After cycle 13, the oocyte membranes ingress between the nuclei to form the cellular blastoderm.

1

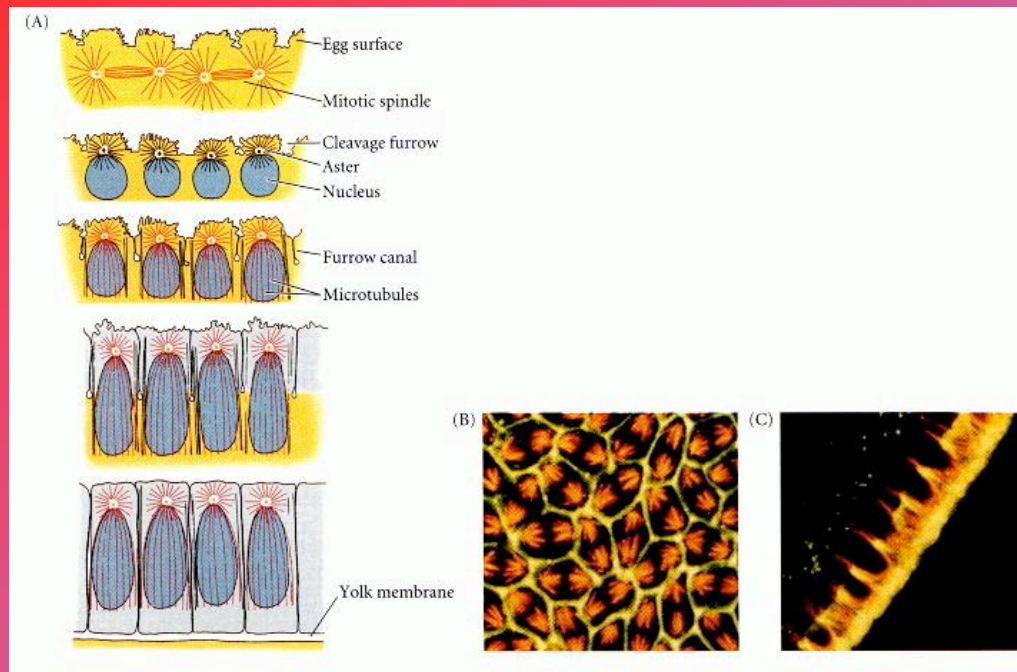


2



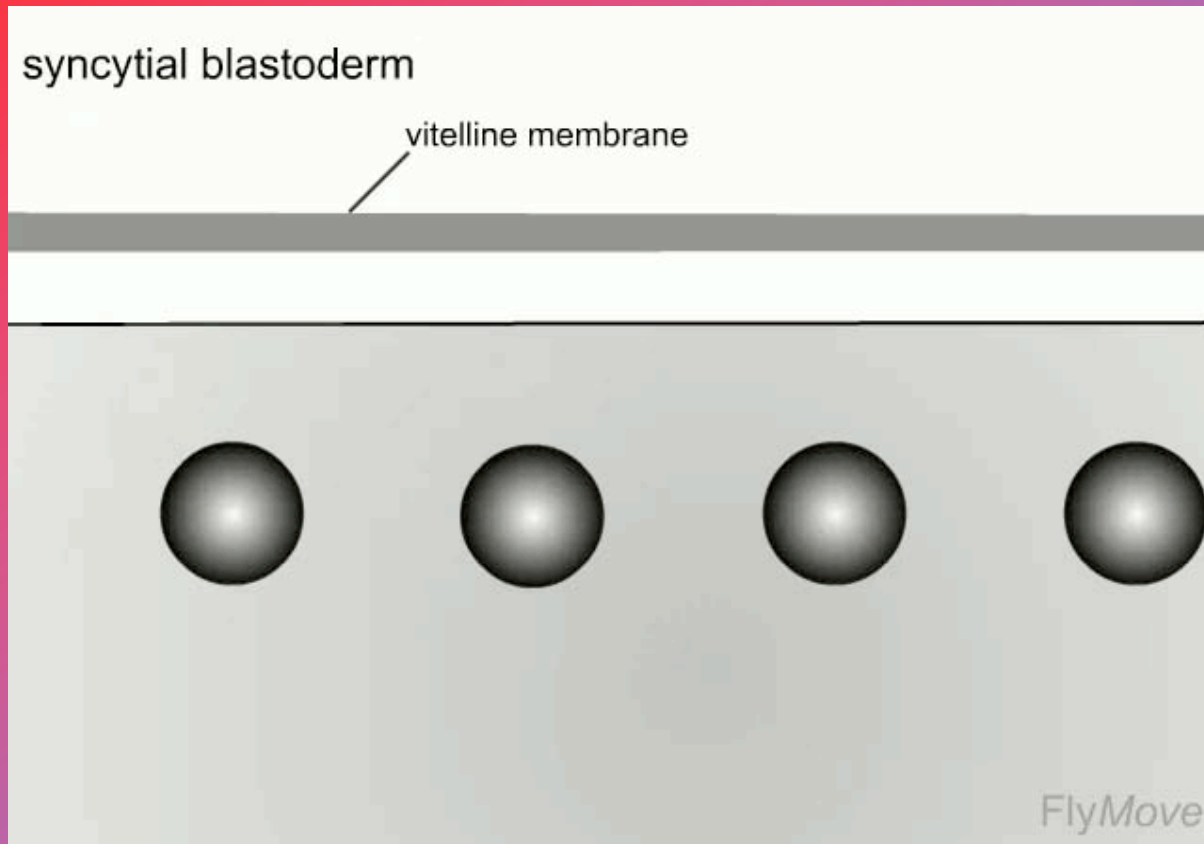
FlyMove

Formation of the cellular blastoderm in *Drosophila*.



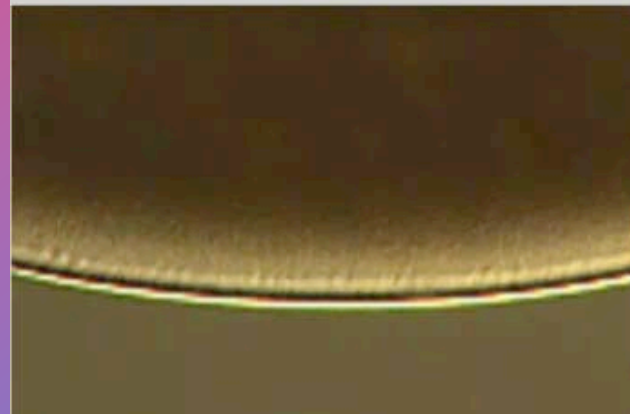
Developmental series showing the progressive cellularization.

3



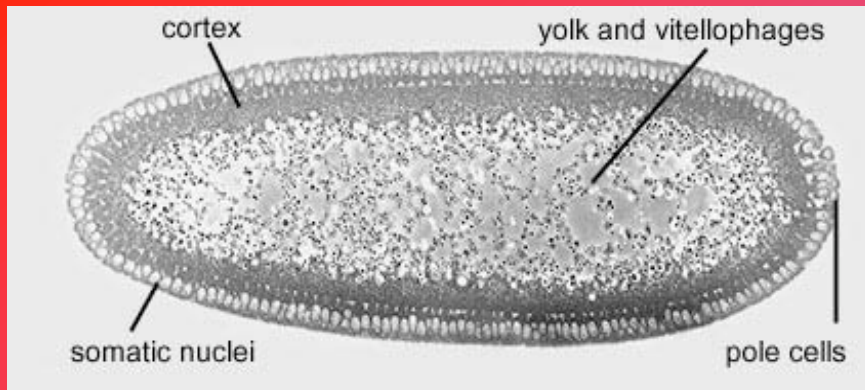
4

Formazione del blastoderma sinciziale

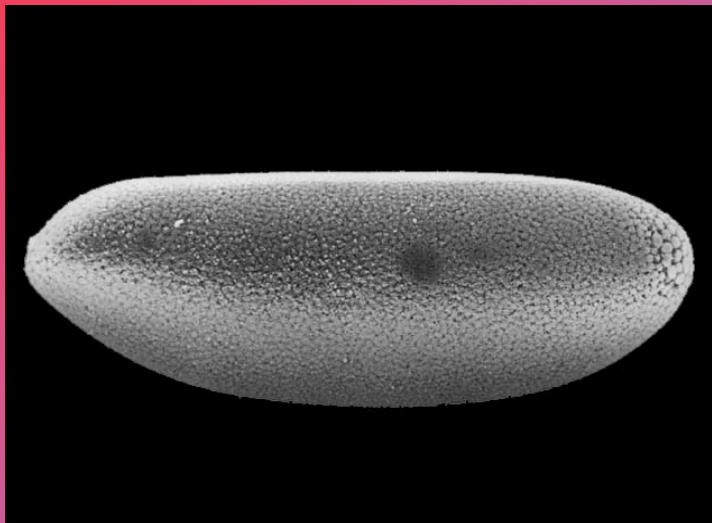


ingrowing
cell membrane

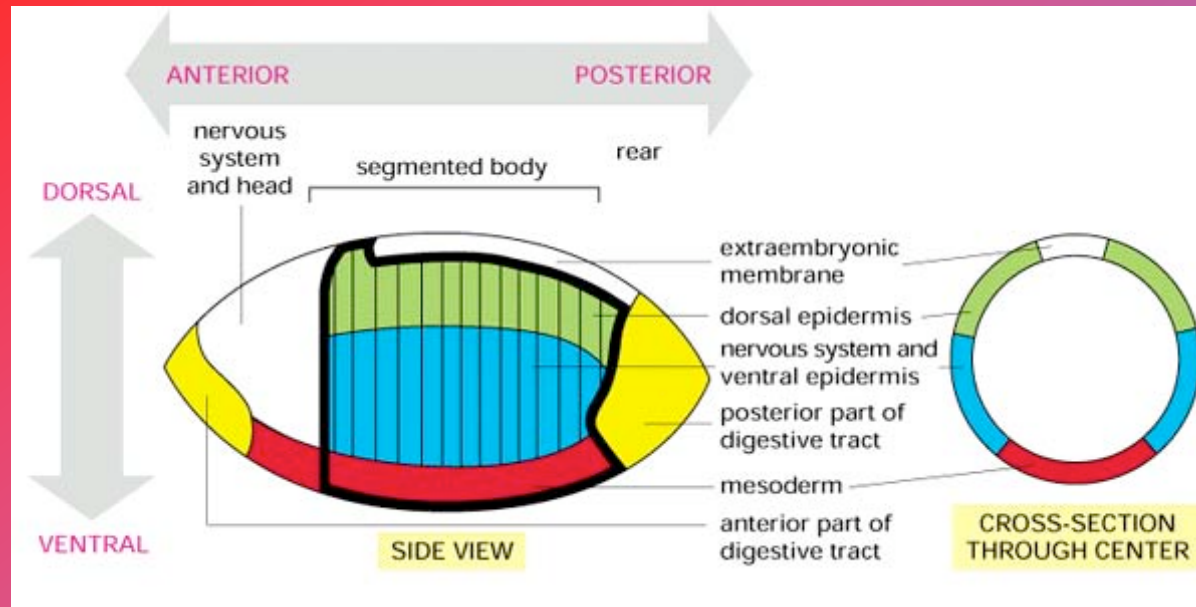
FlyMove



Cellule Polari

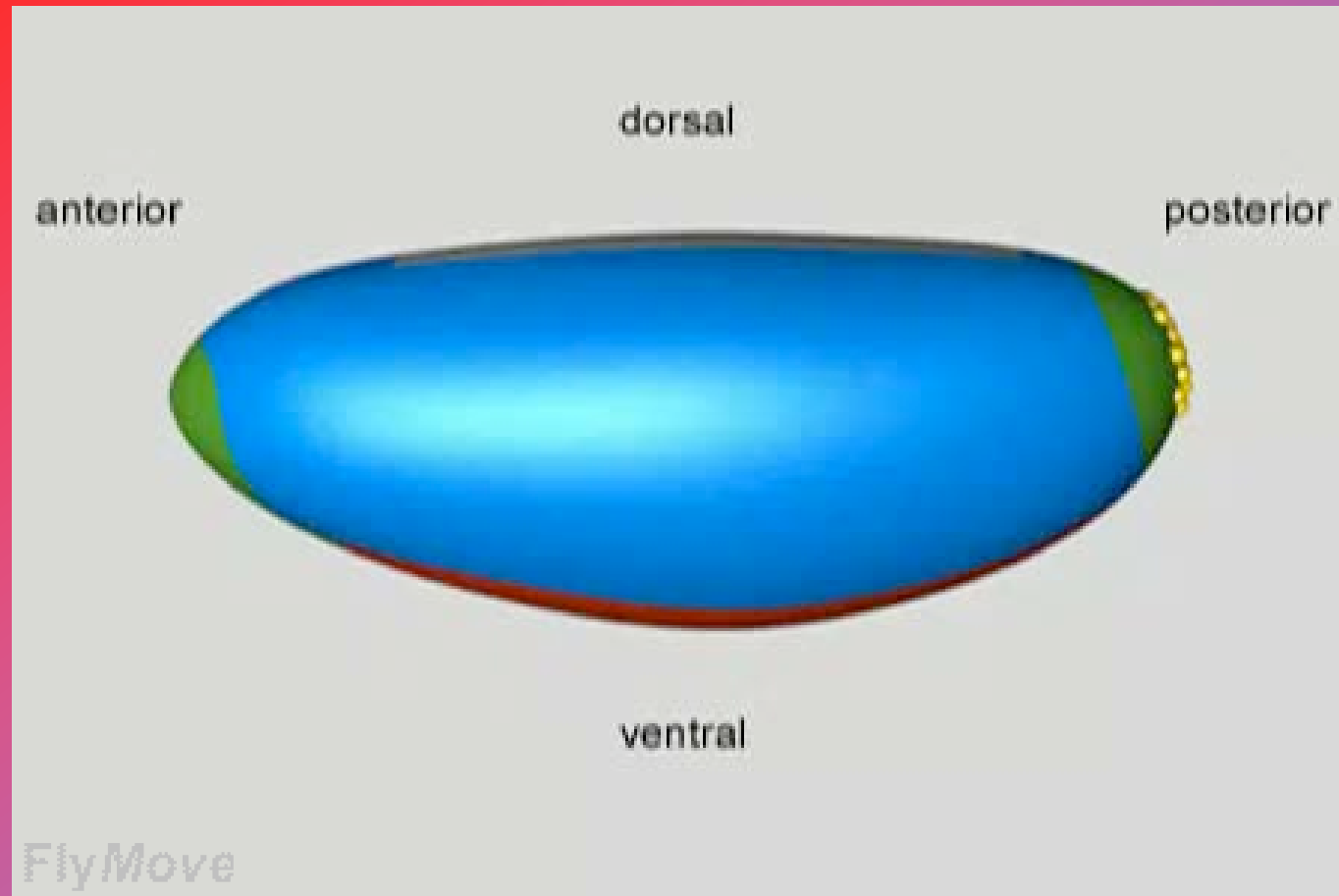


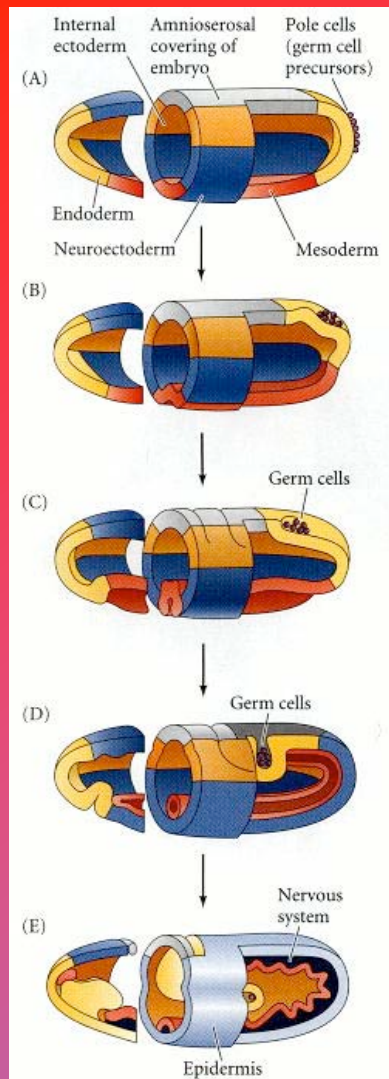
Fate map of a *Drosophila* embryo at the cellular blastoderm stage.



The embryo is shown in side view and in cross-section, displaying the relationship between the dorsoventral subdivision into future major tissue types and the anteroposterior pattern of future segments. A heavy line encloses the region that will form segmental structures. During gastrulation the cells along the ventral midline invaginate to form mesoderm, while the cells fated to form the gut invaginate near each end of the embryo. Thus, with respect to their role in gut formation, the opposite ends of the embryo, although far apart in space, are close in function and in final fate.

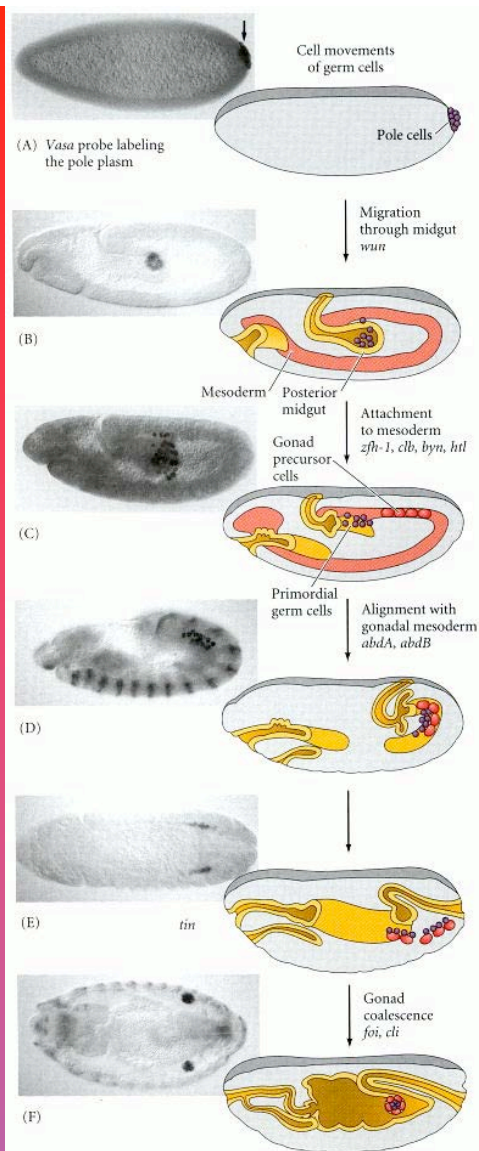
5 Fate map of a *Drosophila* embryo at the cellular blastoderm stage.



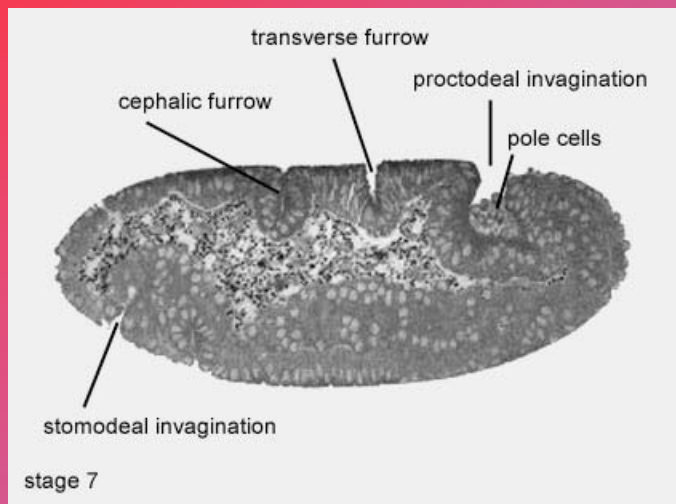
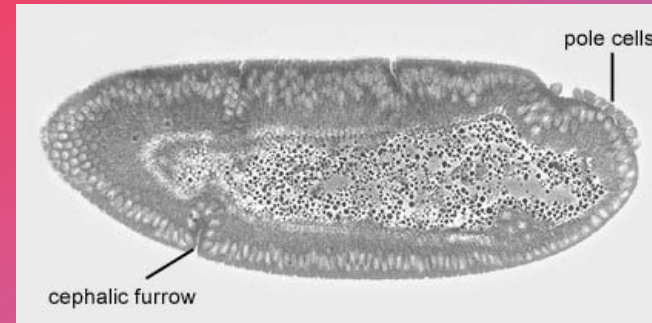
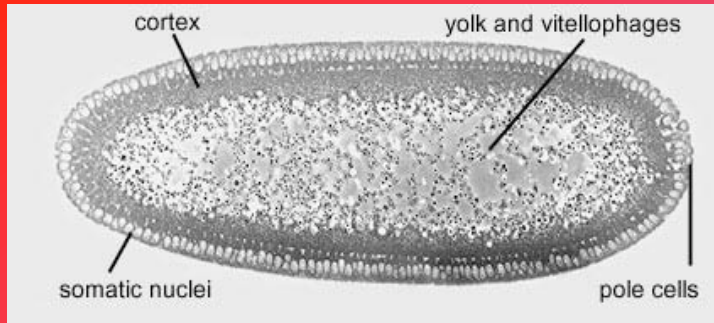


Schematic representation of gastrulation in *Drosophila*.

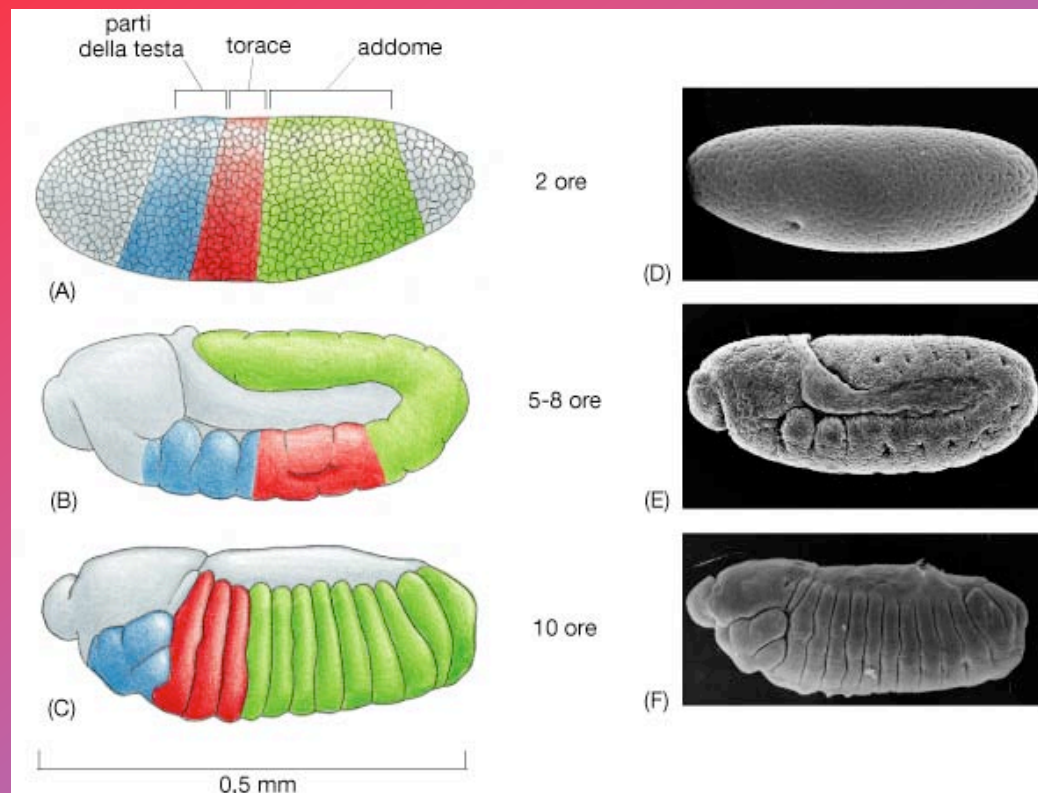
- (A) and (B) are surface and cut-away views showing the fates of the tissues immediately prior to gastrulation.
- (C) shows the beginning of gastrulation as the ventral mesoderm invaginates into the embryo.
- (D) and (E) shows gastrulation.
- In (E) the neuroectoderm is largely differentiated into the nervous system and the epidermis.

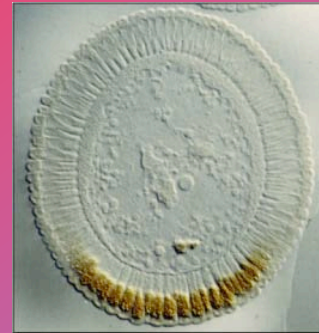
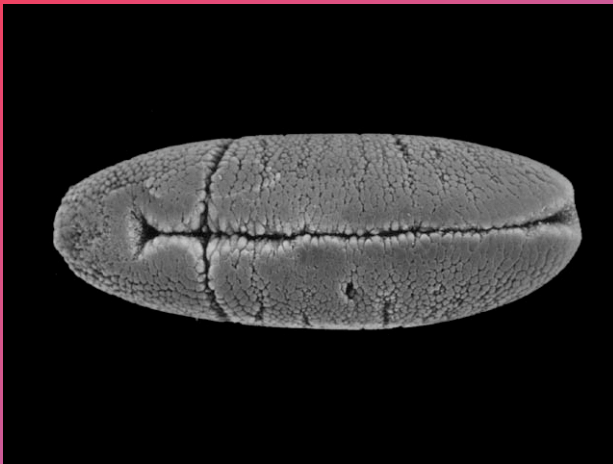


Migration of germ cells in *Drosophila* embryos. The left column shows the germ plasm as stained by antibodies against *Vasa*, a protein component of the germ plasm



Origine dei segmenti del corpo di *Drosophila* durante lo sviluppo embrionale





Origine del mesoderma

6

Invaginazione del Mesoderma



7

Invaginazione del Mesoderma

The invagination of the mesoderm



stage 7

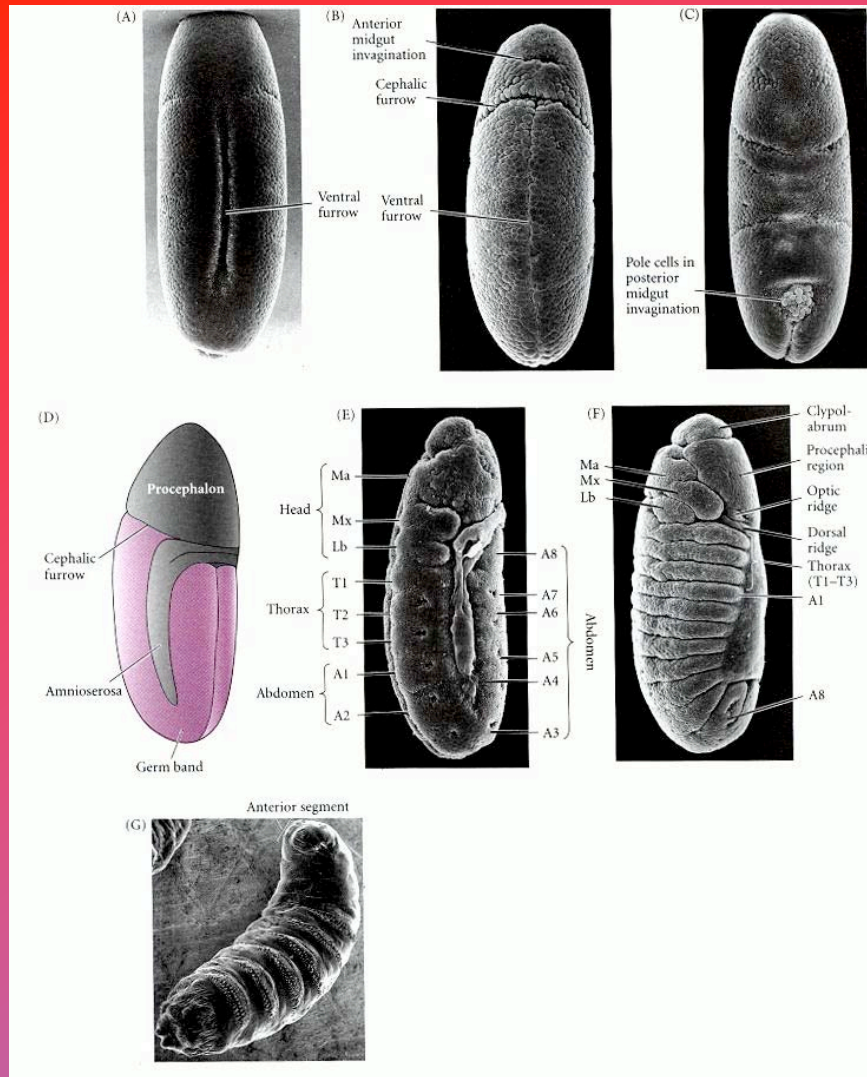
FlyMove

8

Invaginazione del Mesoderma

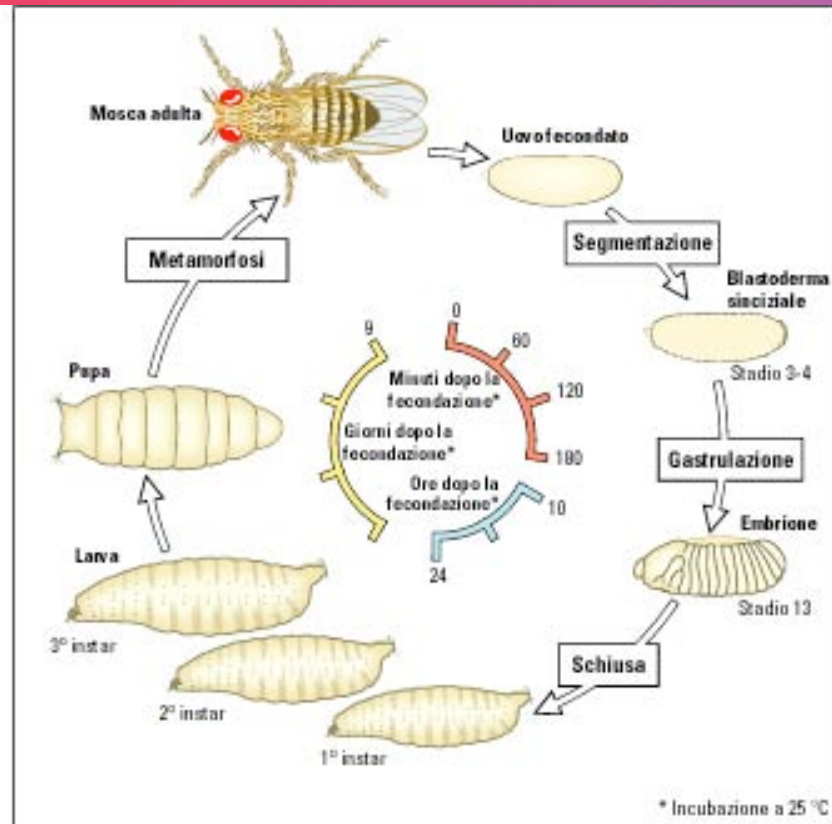
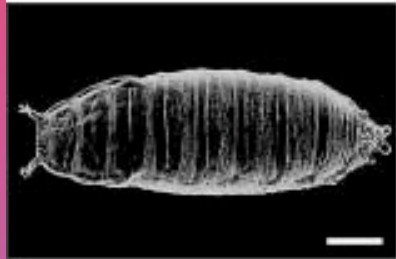
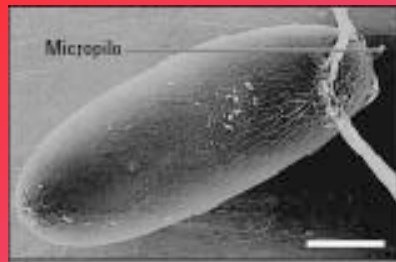


Gastrulazione



- (A) Ventral furrow beginning to form.
- (B) Closing of ventral furrow.
- (C) Dorsal view showing the pole cells and posterior endoderm sinking into the embryo.
- (D) Diagram of the dorsolateral view of *Drosophila* embryo at fullest germ band extension, just prior to segmentation. The cephalic furrow separates the future head region from the germ band that will form the thorax and abdomen.
- (E) Lateral view, showing fullest extension of germ band and the beginnings of segmentation.
- (F) Germ band reversing direction.
- (G) Newly hatched first-instar larva.

Lo sviluppo della *Drosophila*



Stage 3-17

Flymove.uni-muenster.de/Homepage.html