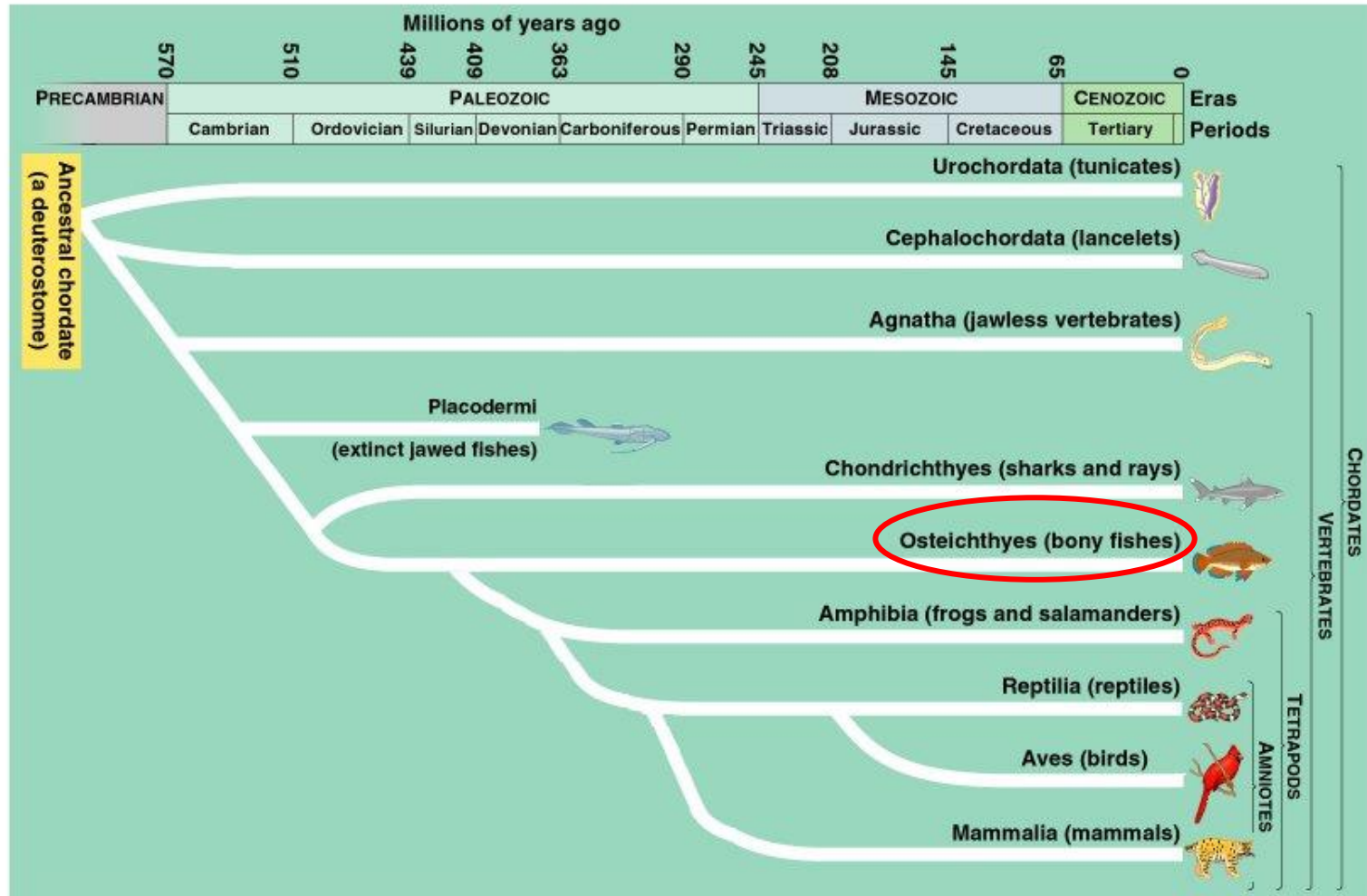
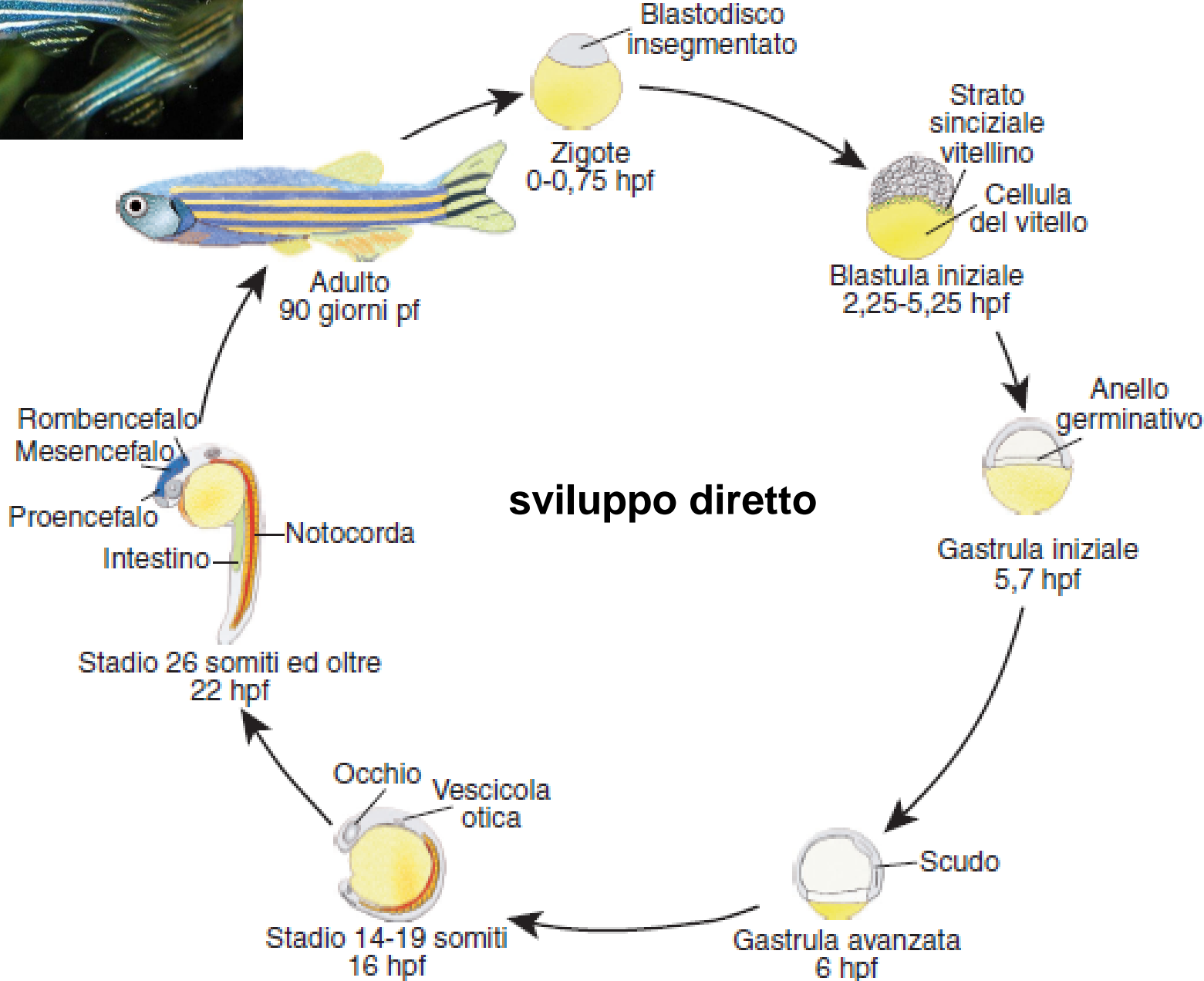
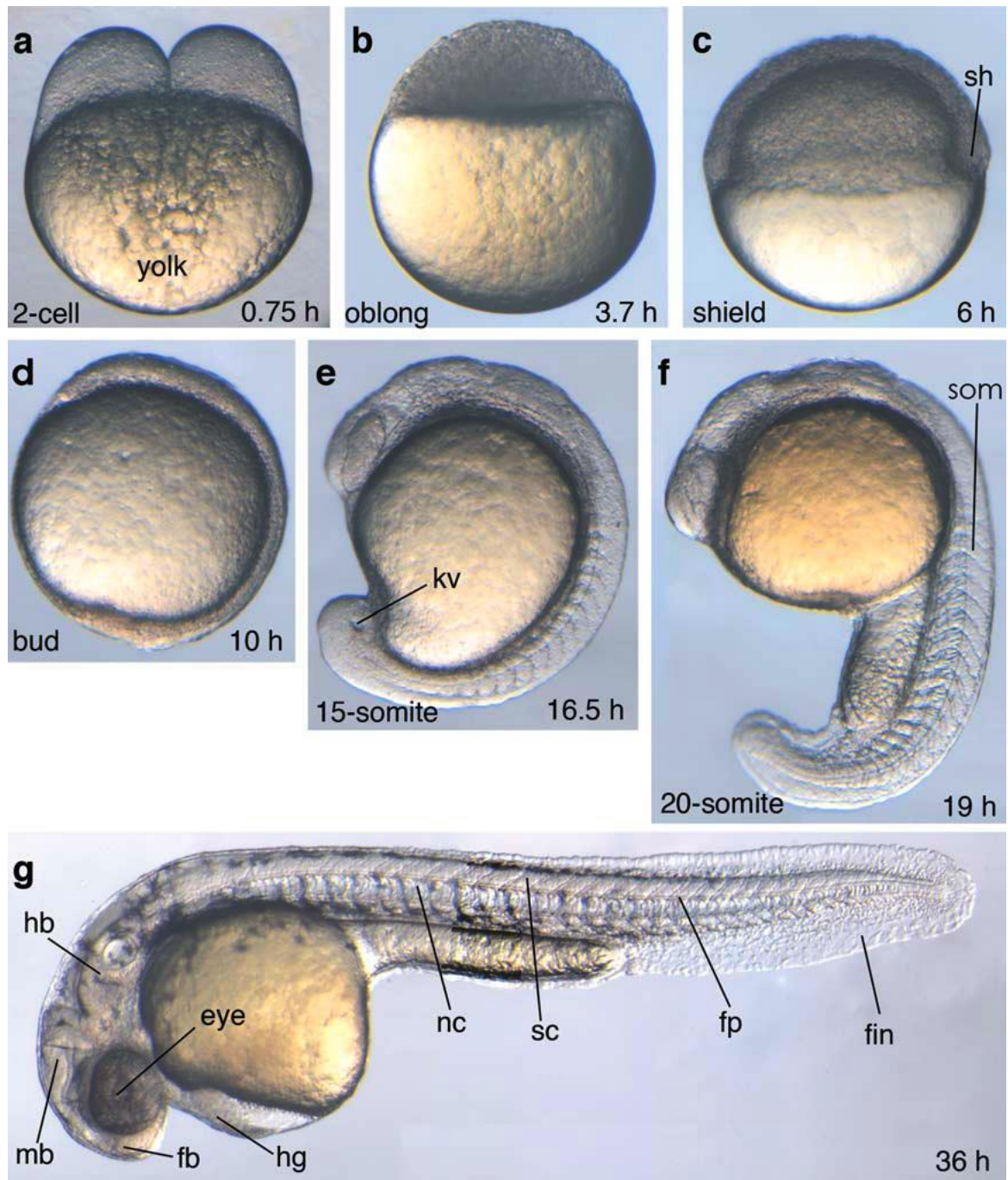


# FILOGENESI DEI CORDATI



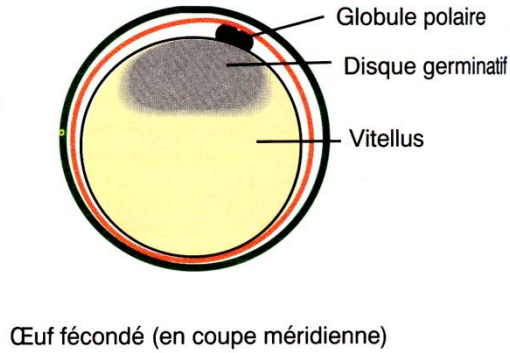
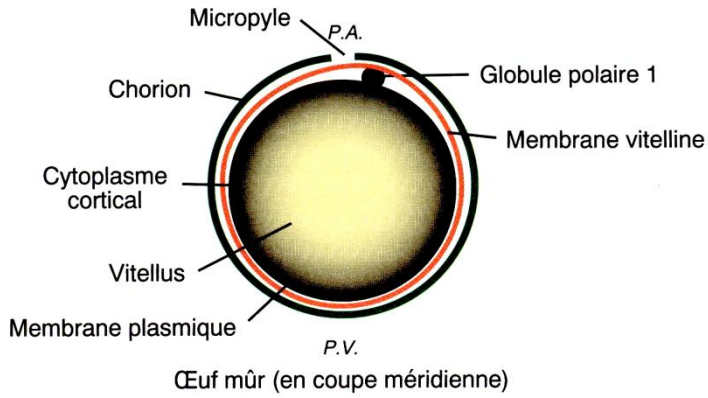
# ZEBRAFISH (*Danio rerio*)



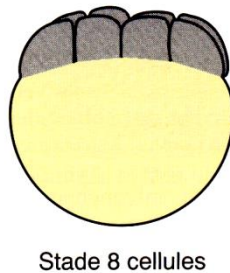
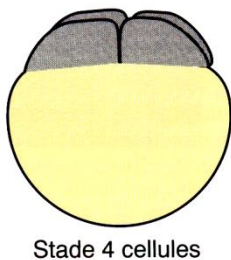
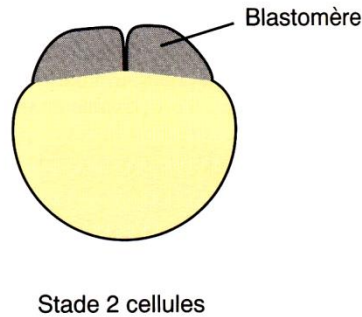
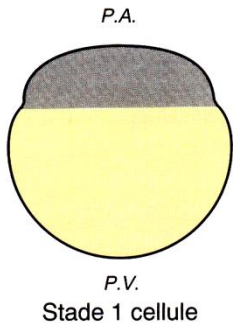


**Premières étapes de la segmentation**

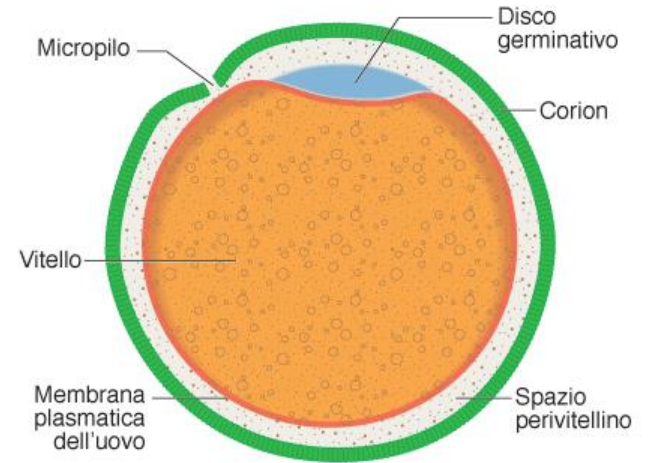
a) L'œuf insegmenté



b) La segmentation : premiers stades (vues latérales externes)

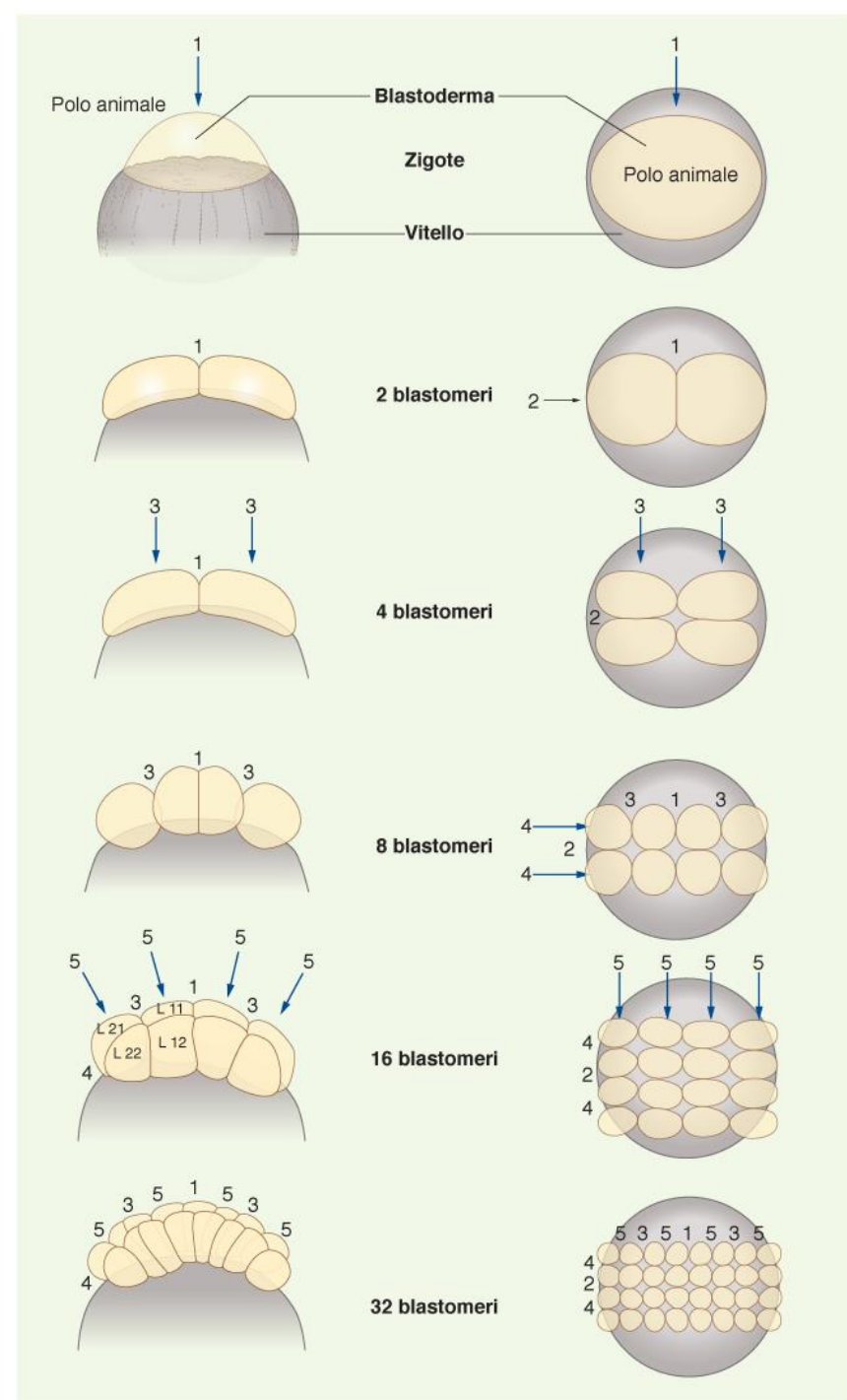


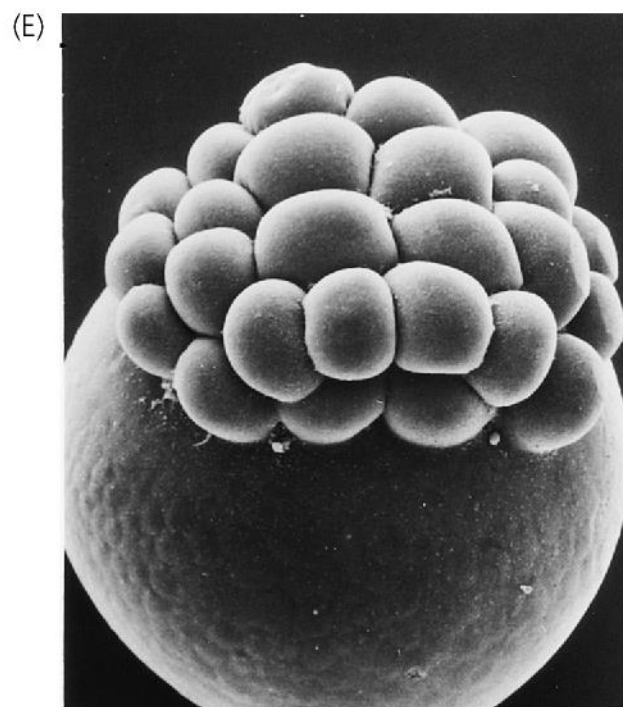
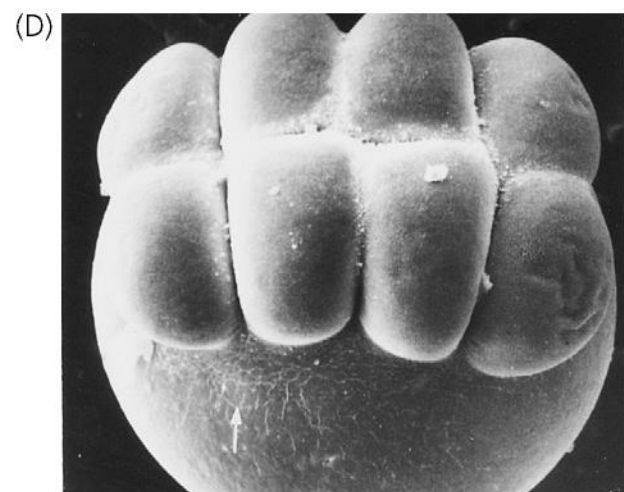
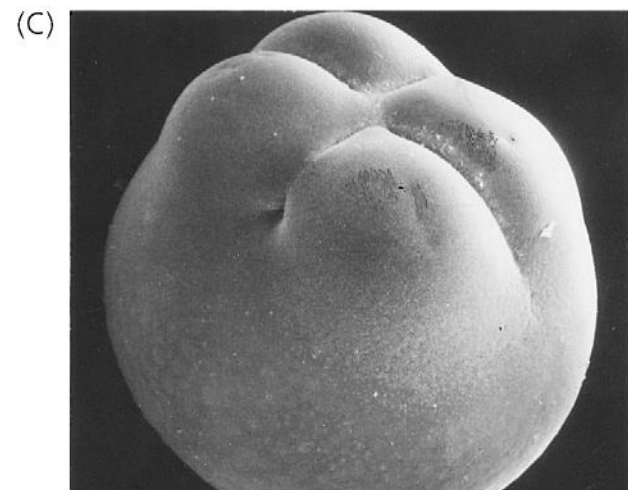
# Uovo telolecitico



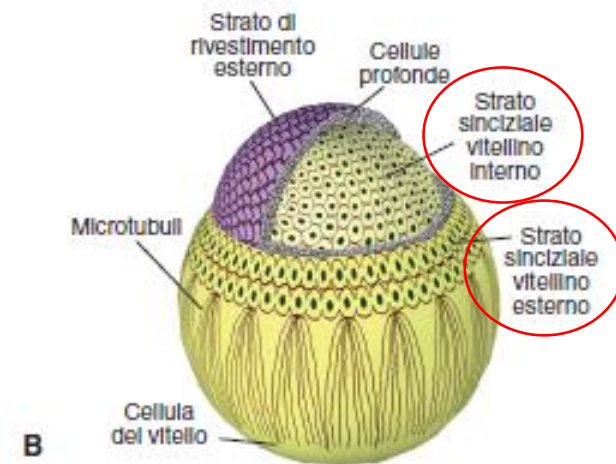
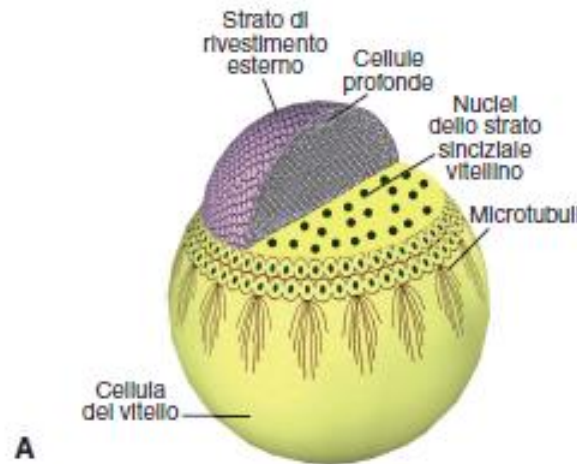
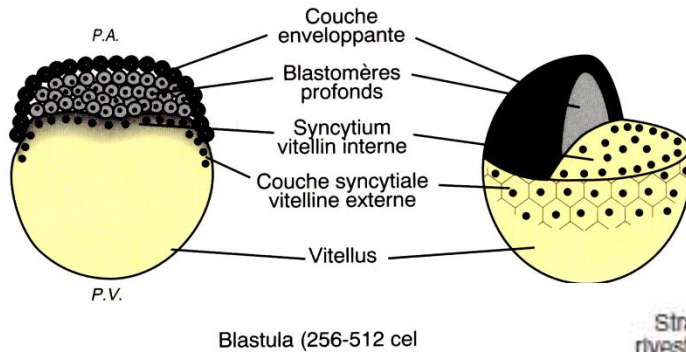
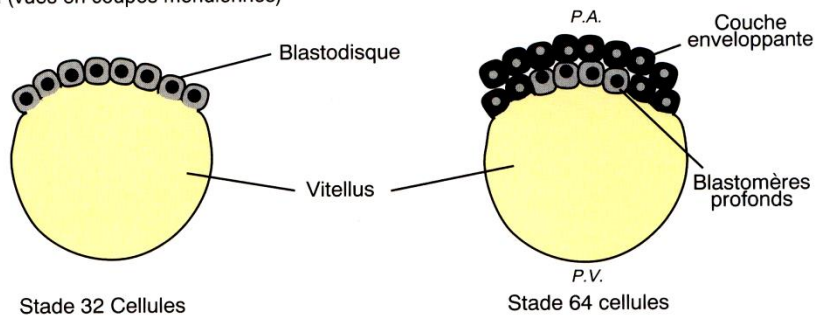
# Segmentazione meroblastica discoidale

# SEGMENTAZIONE MEROBLASTICA DISCOIDALE



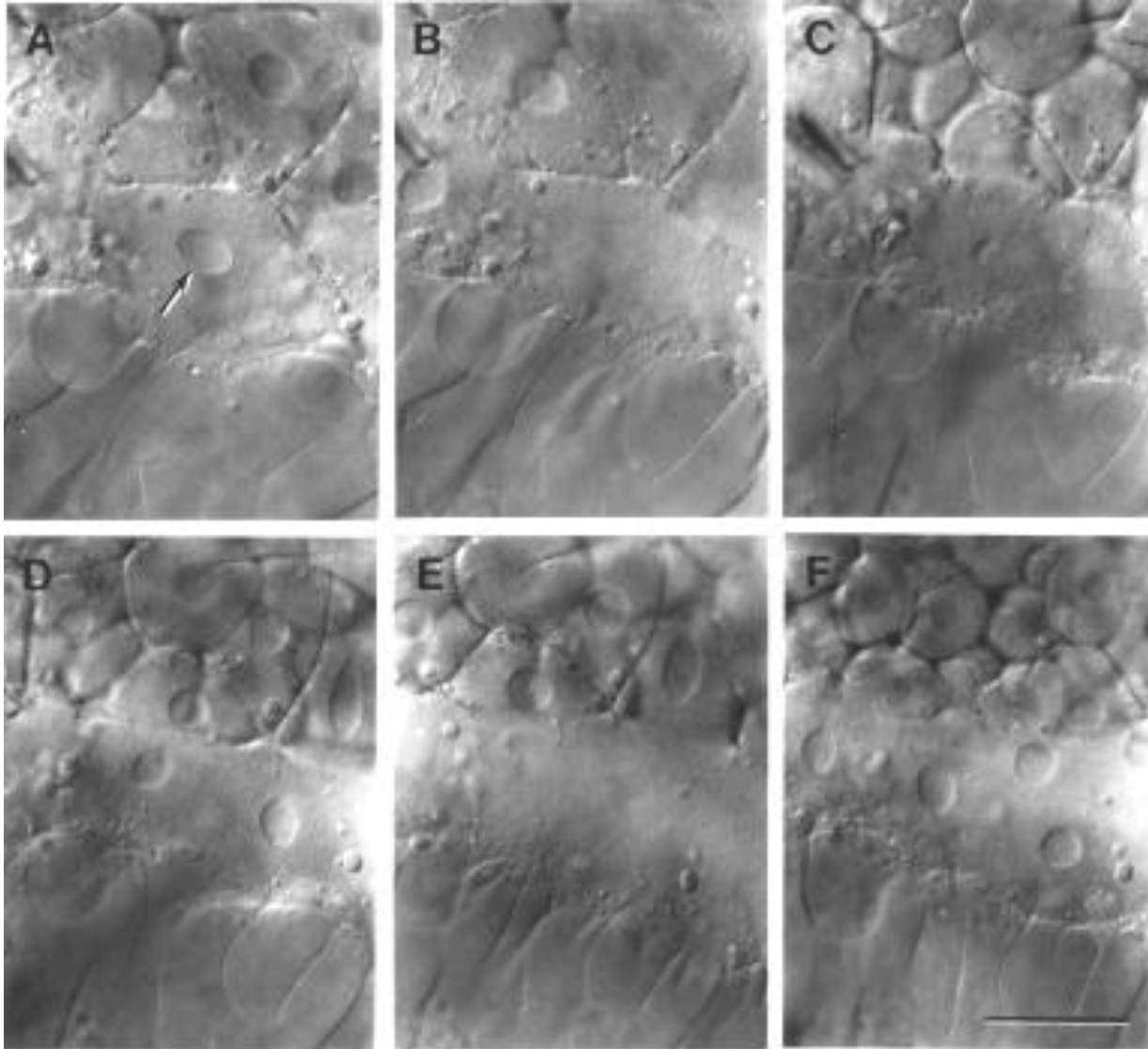


La segmentation (vues en coupes méridiennes)



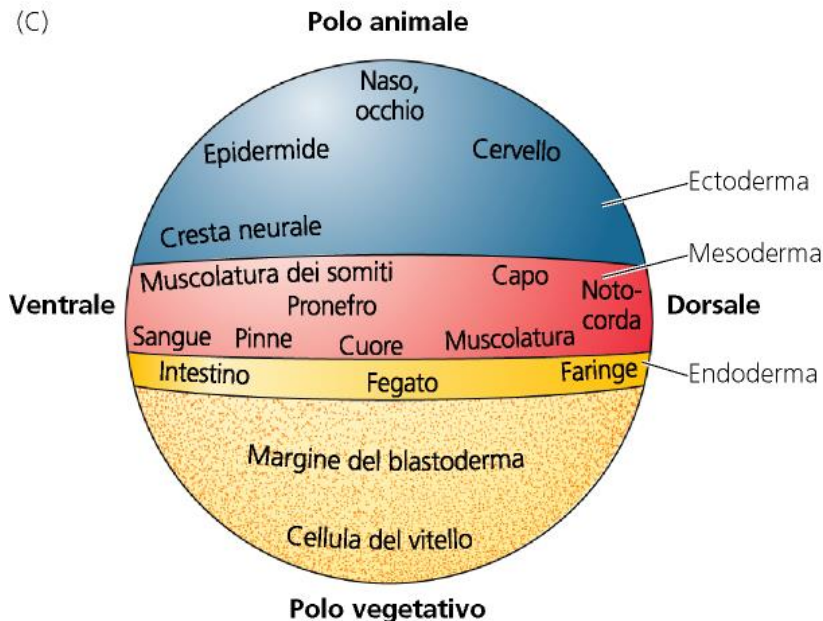
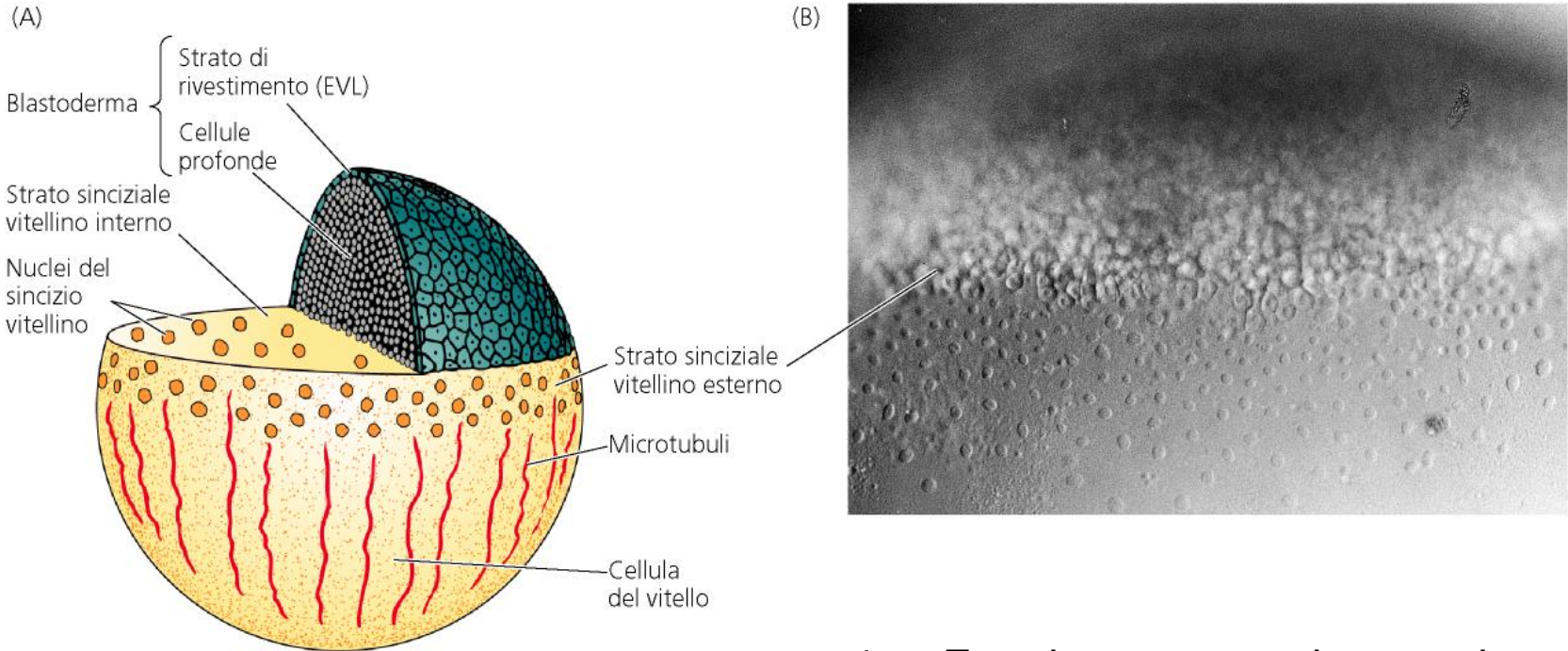
1. Rivestimento esterno: periderma
2. Blastomeri profondi: formano l'embrione
3. Sincizio vitellino

# FORMAZIONE DELLO STRATO SINCIZIALE VITELLINO



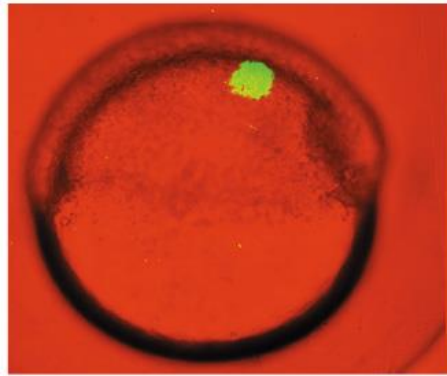


# MAPPA DEI TERRITORI PRESUNTIVI NELLA BLASTULA DI ZEBRAFISH

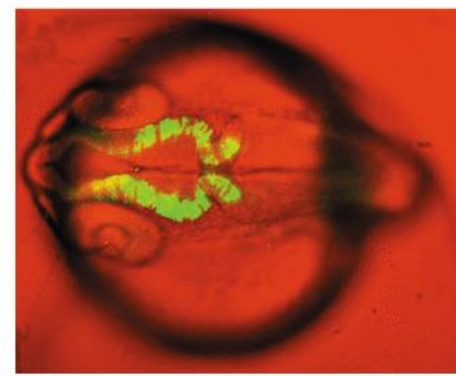


1. Ectoderma, mesoderma ed endoderma presuntivi allineati lungo l'asse animale vegetativo (ma la mappa è «compressa» nell'emisfero animale per via della segmentazione meroblastica).
2. Vicinanza dei territori presuntivi del cordomesoderma e del neuroectoderma sul futuro lato dorsale.

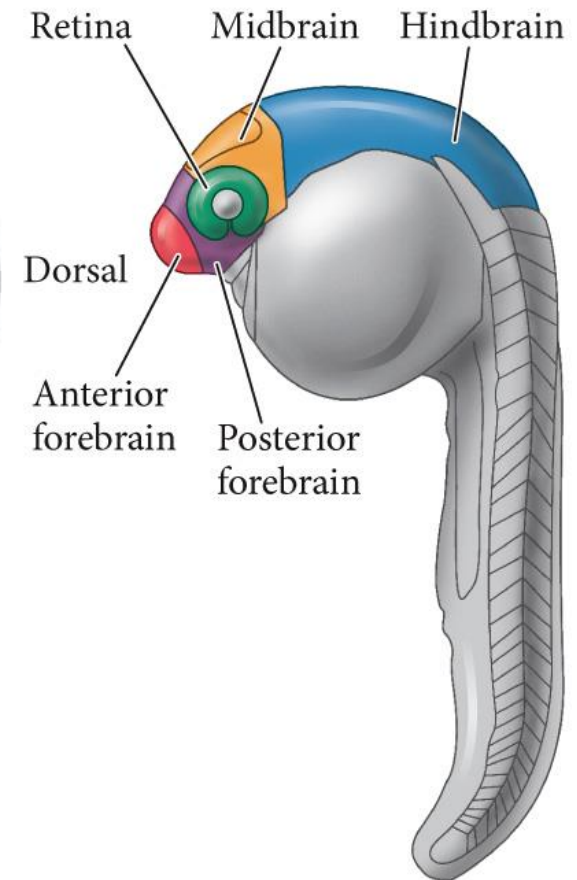
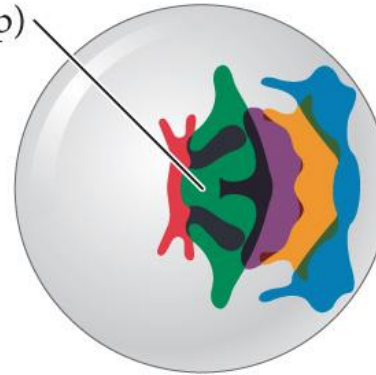
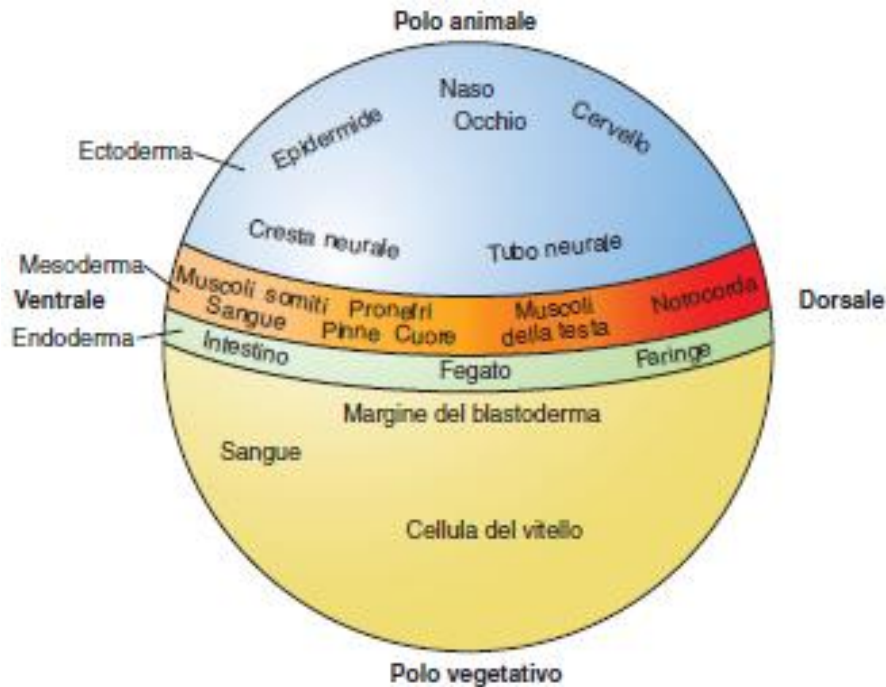
(A)



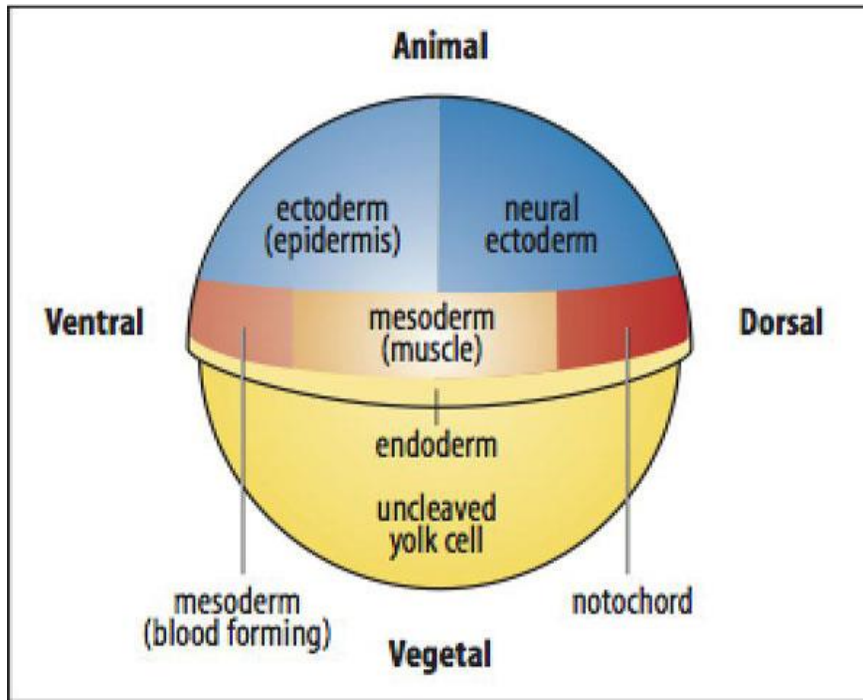
(B)



(C) Animal pole (egg viewed from top)



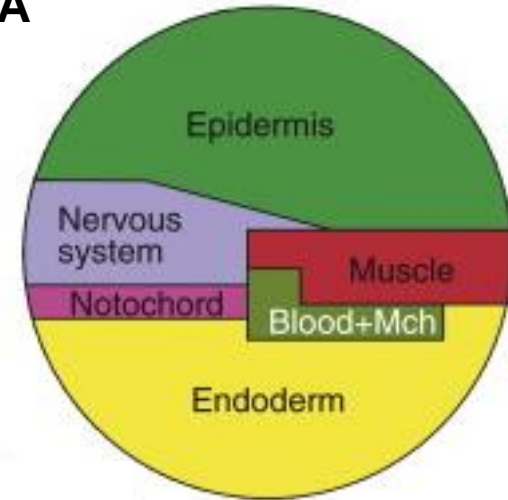
# LE MAPPE DEI TERRITORI PRESUNTIVI NELLE BLASTULE DI ZEBRAFISH, XENOPUS E TUNICATI RIVELANO UN PIANO DI ORGANIZZAZIONE CONSERVATO



**ZEBRAFISH**

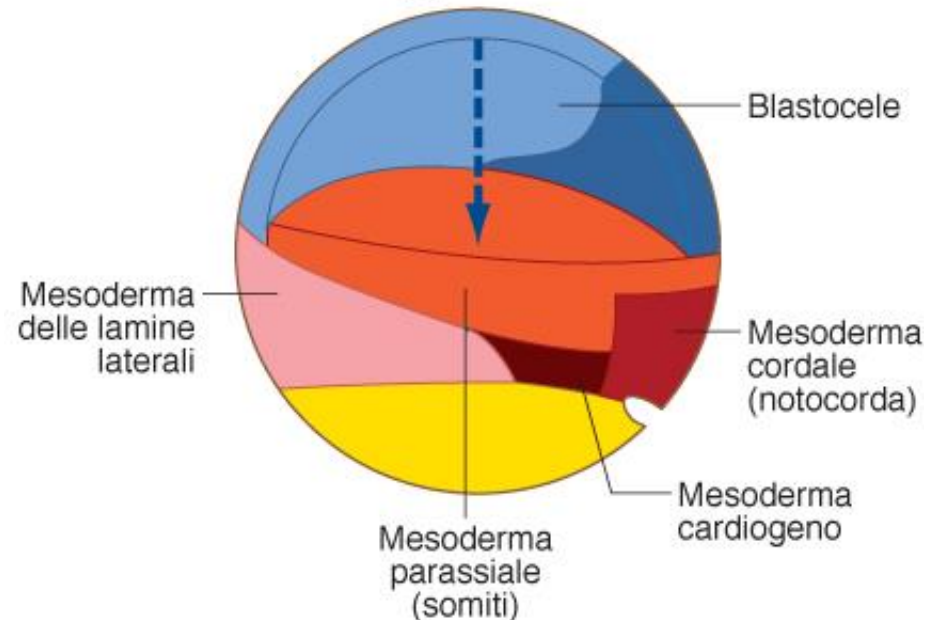
## ASCIDIA

Ascidian fate map

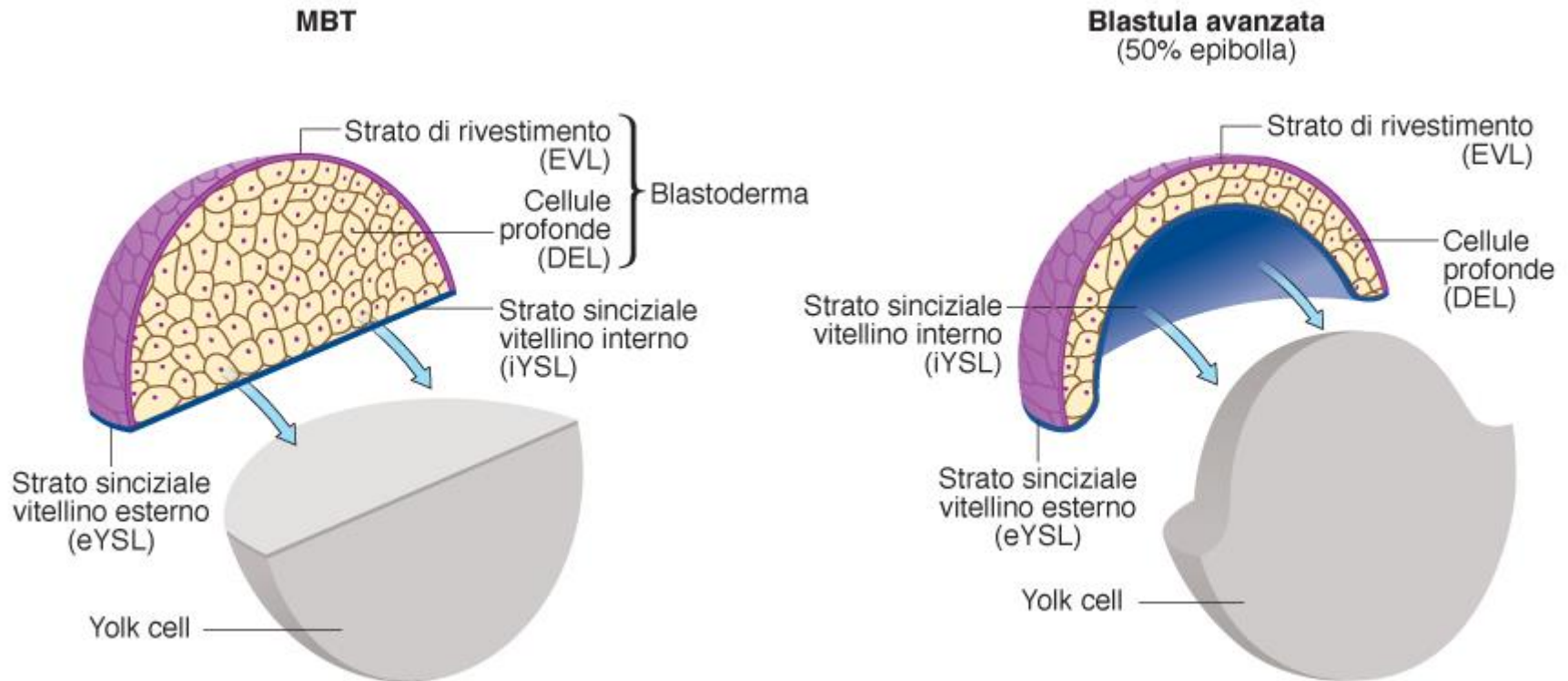


## XENOPUS

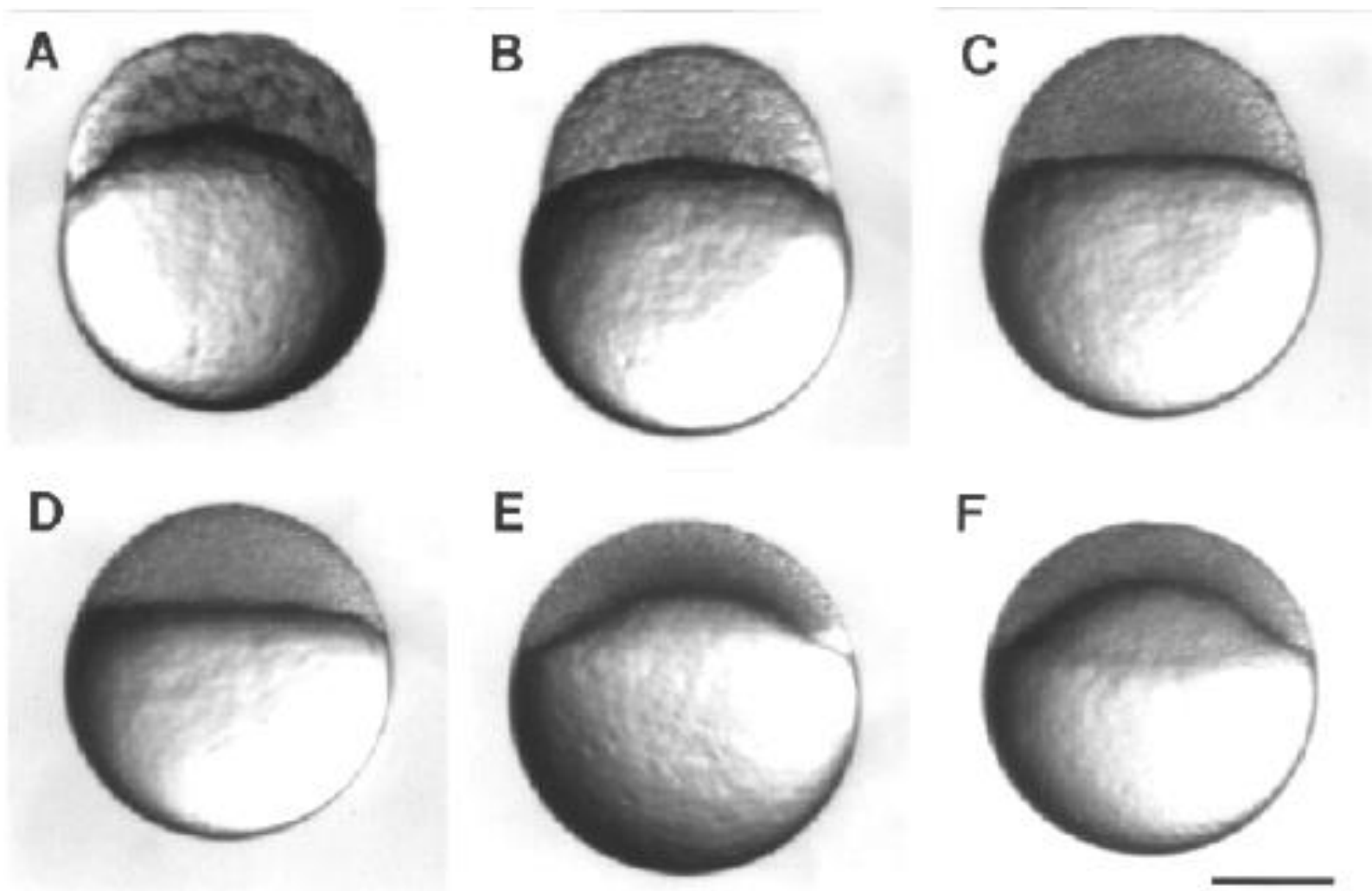
Mappa interna



# FASI INIZIALI DELL'EPIBOLIA NELLA BLASTULA DI ZEBRAFISH

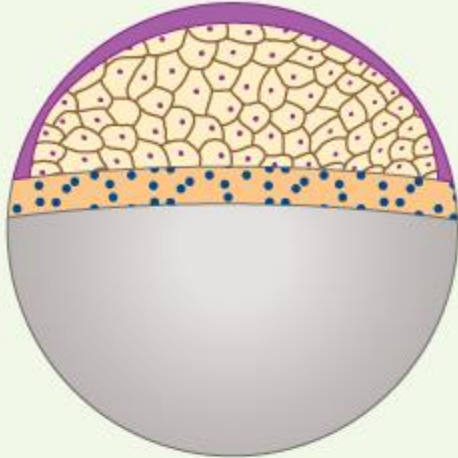


**IL BLASTODISCO SI ASSOTTIGLIA PER EFFETTO DI MOVIMENTI DI INTERCALAZIONE RADIALE DELLE CELLULE DEGLI STRATI PIU' INTERNI**  
Si riduce il numero di strati ed aumenta la superficie

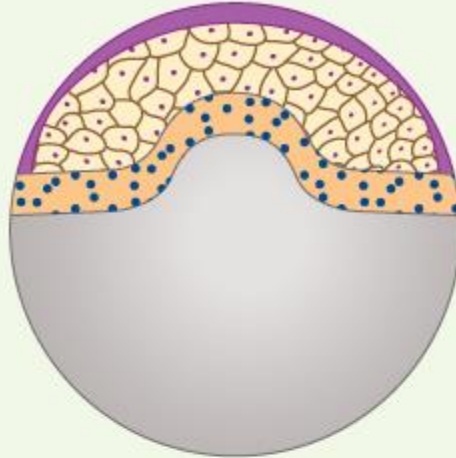


**A**

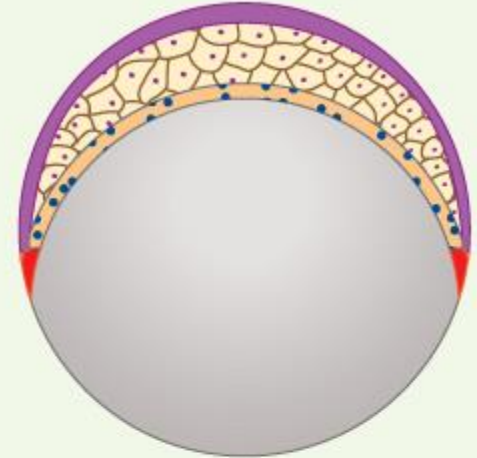
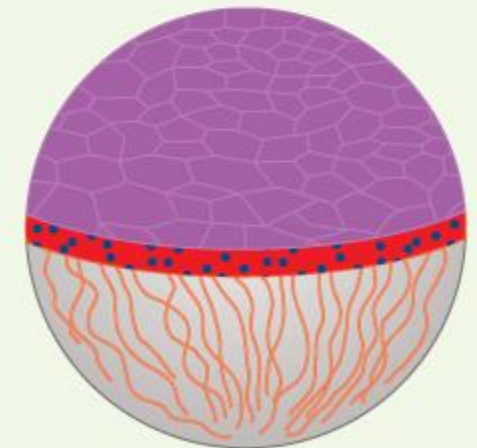
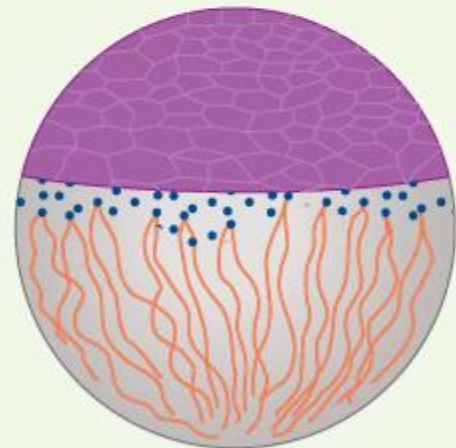
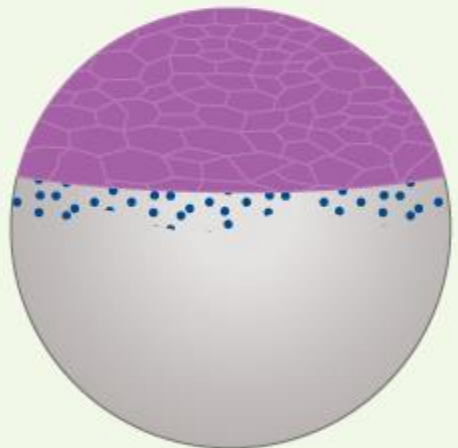
MBT



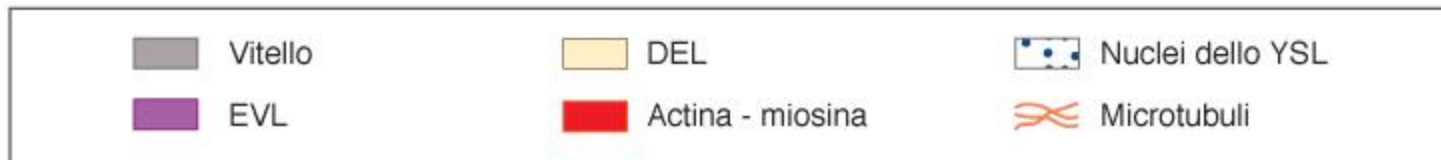
30%



50%

**B**

All'epibolia contribuisce la trazione esercitata dai nuclei del sincizio vitellino



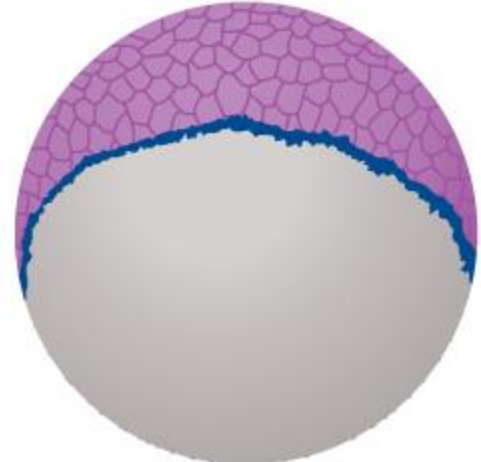
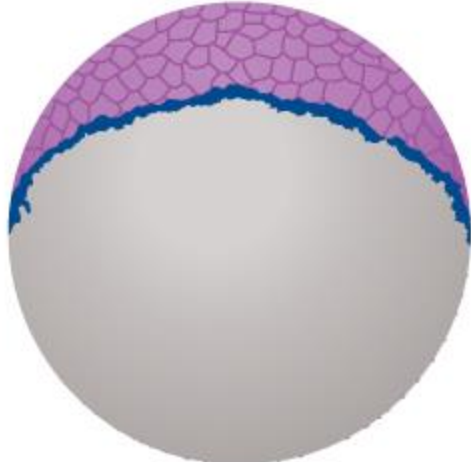
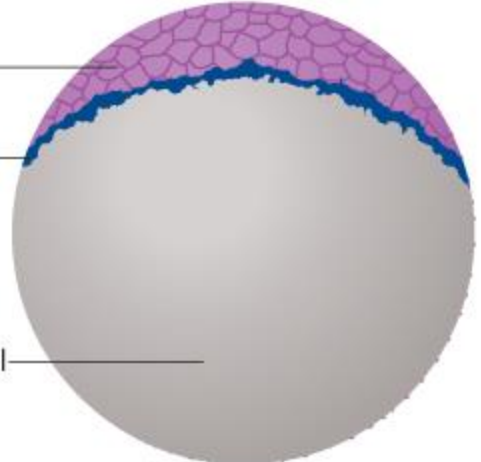


Polo animale

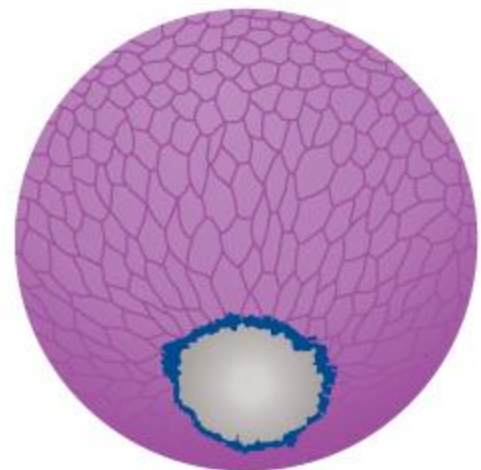
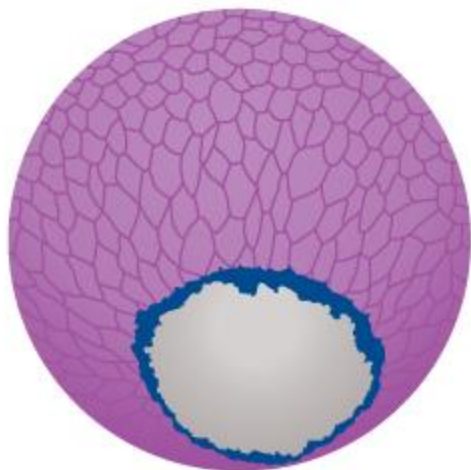
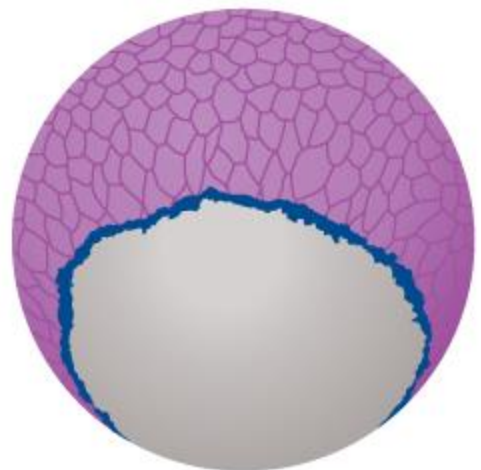
EVL

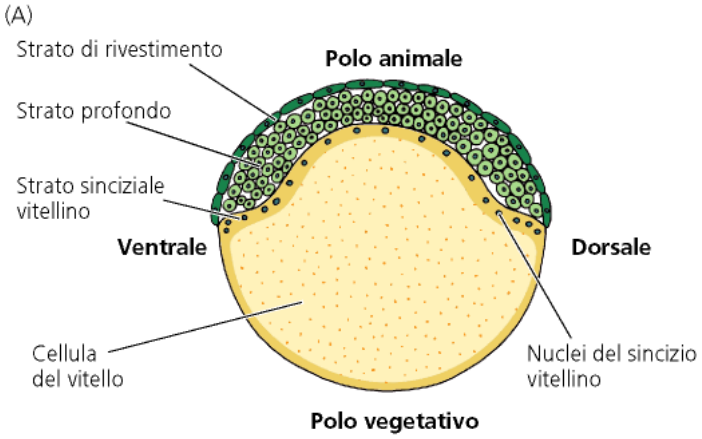
eYSL

Yolk cell



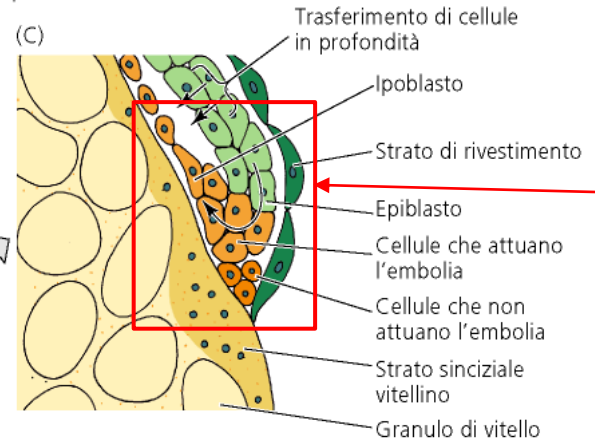
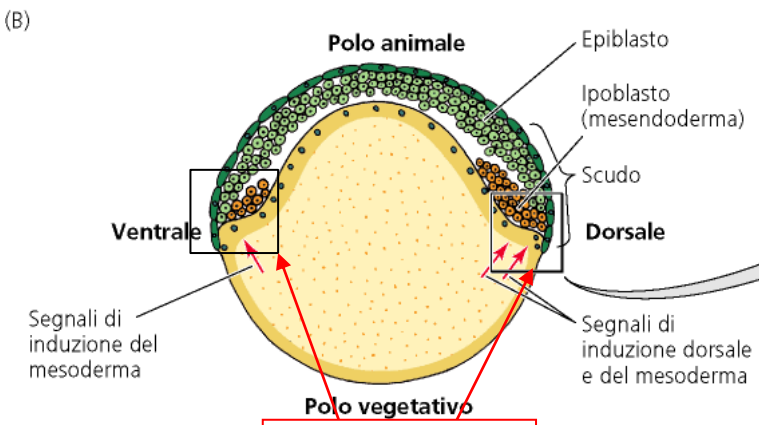
Polo vegetivo



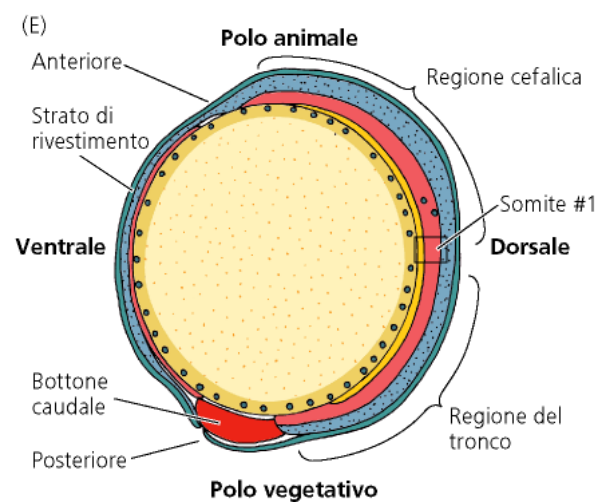
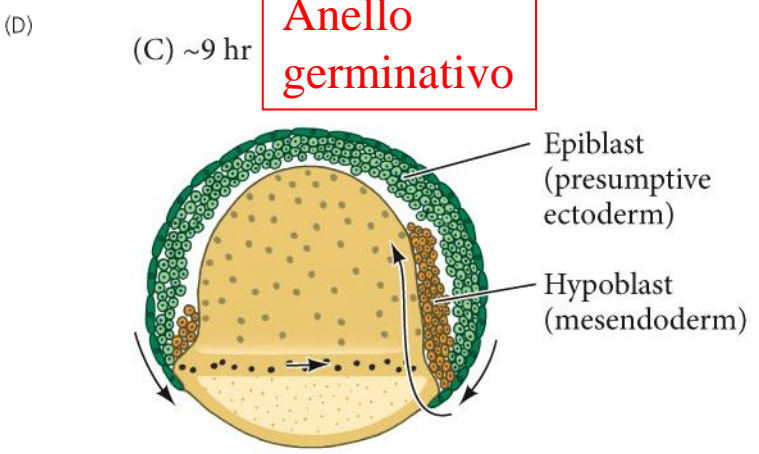


Strato esterno= periderma (verde scuro)  
Epiblasto= ectoderma (verde)  
Ipoblasto= mesoderma (arancio, poi rosso)  
endoderma (arancio, poi giallo)

- Mesoderma
- Ectoderma, neuroectoderma
- Epiblasto pluripotente
- Mesendoderma: precursori sia del mesoderma sia dell'endoderma
- Endoderma
- Strato di rivestimento (EVL)

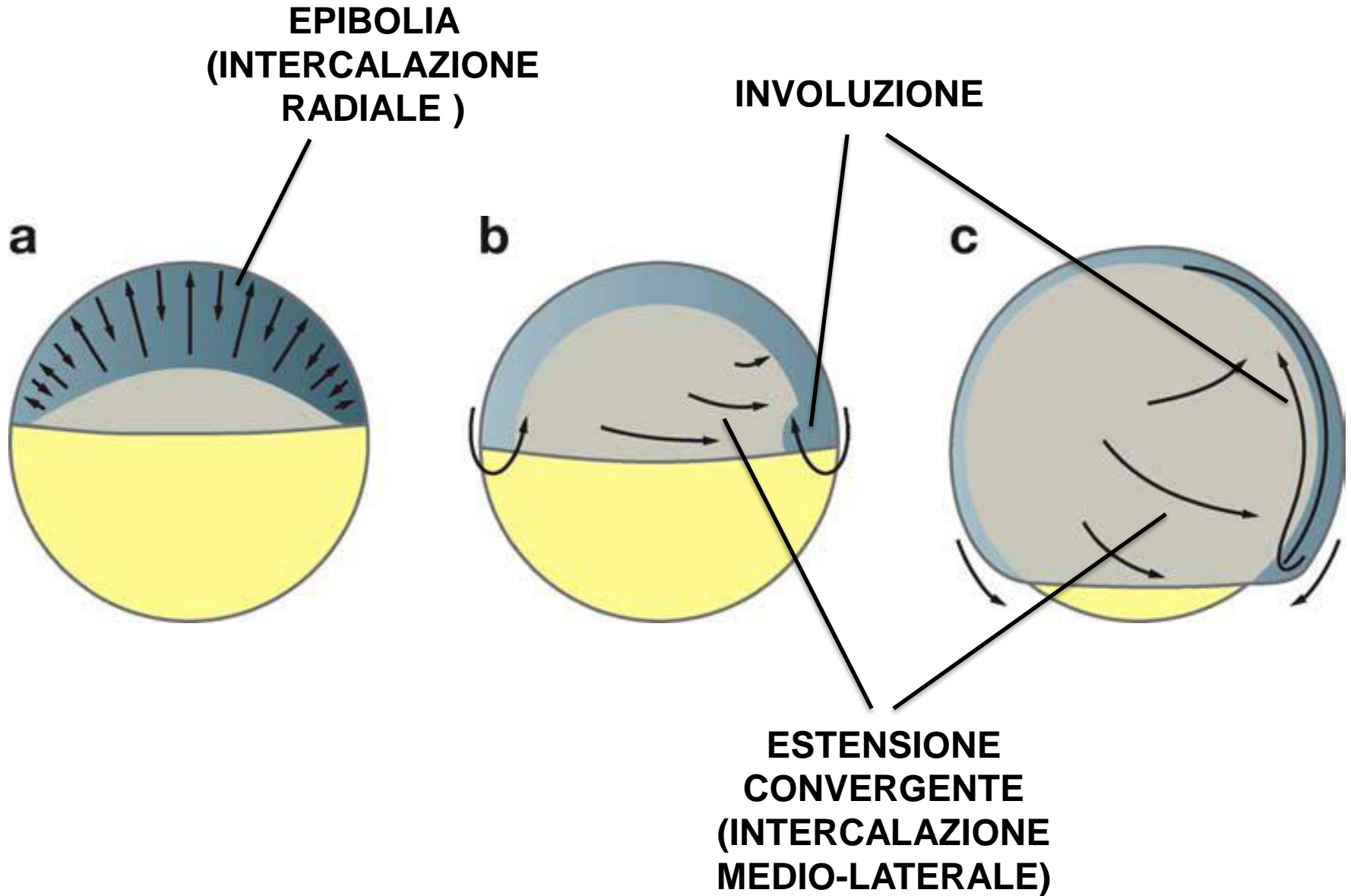


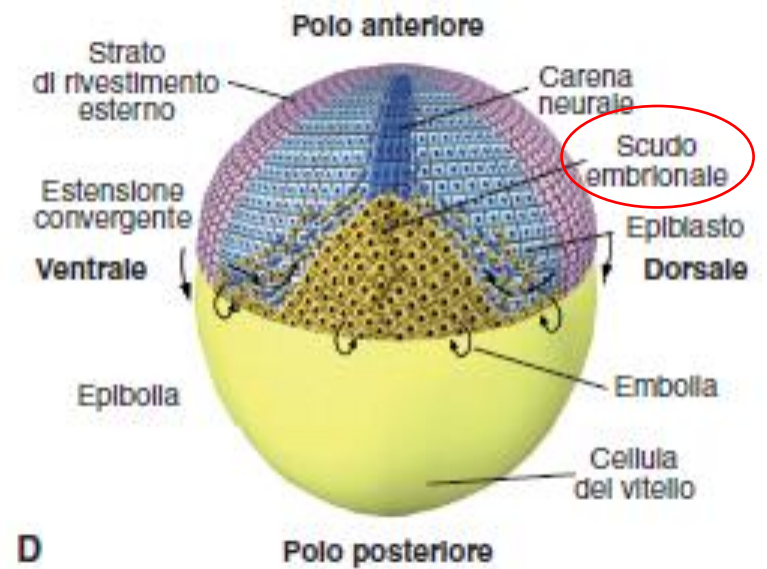
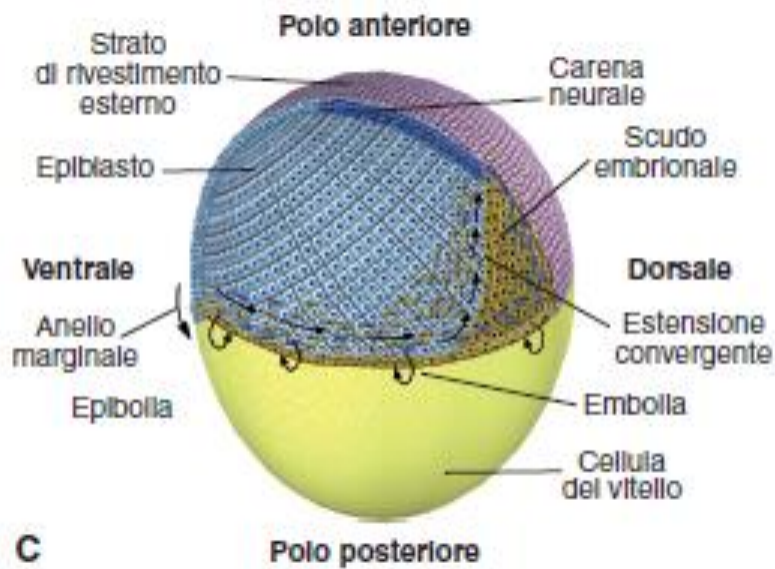
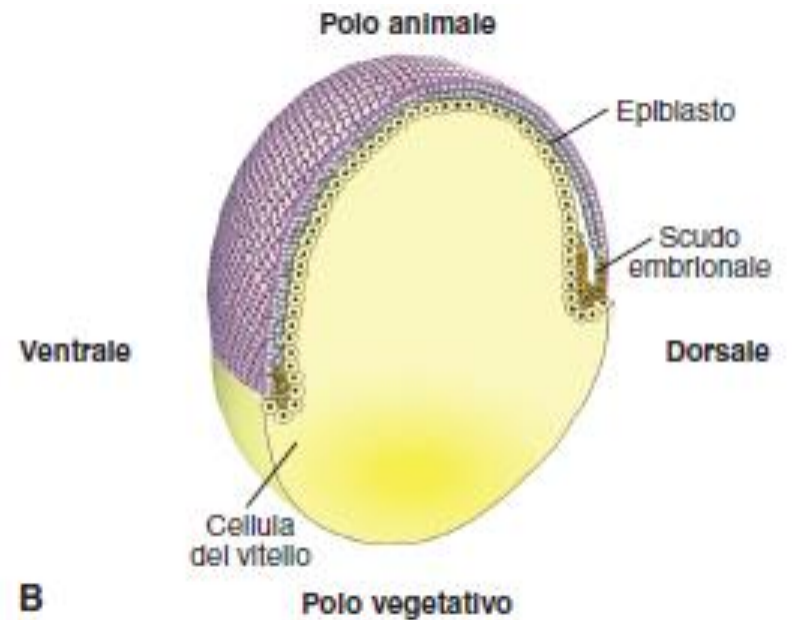
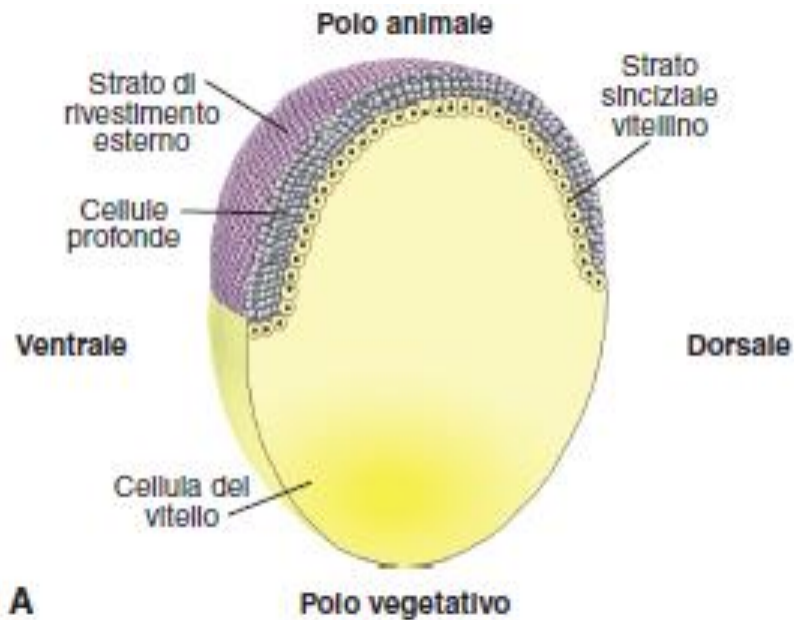
Anello germinativo

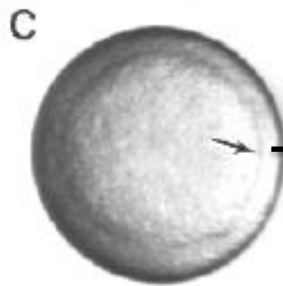
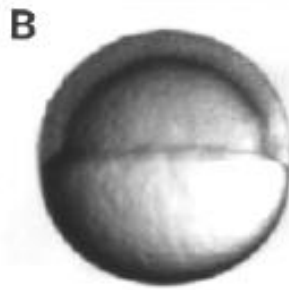
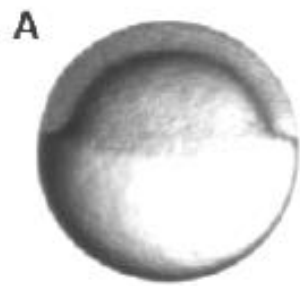




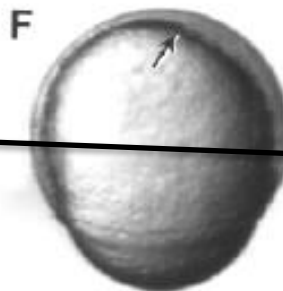
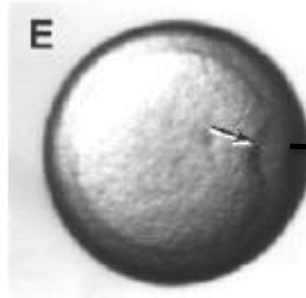
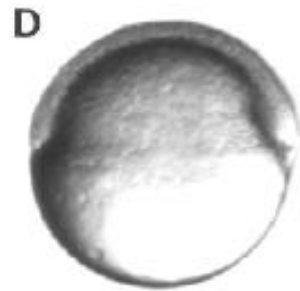
# MOVIMENTI CELLULARI DURANTE LA GASTRULAZIONE IN ZEBRAFISH



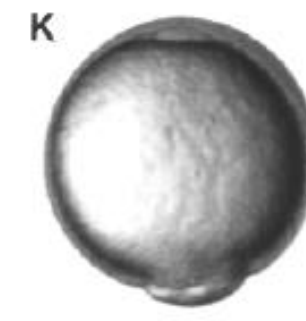
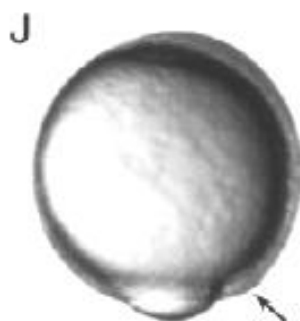
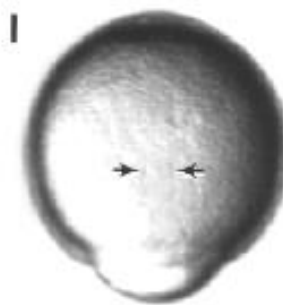
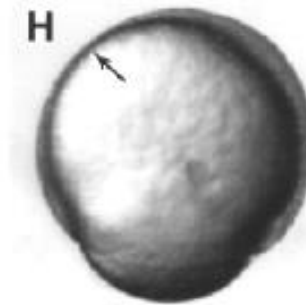
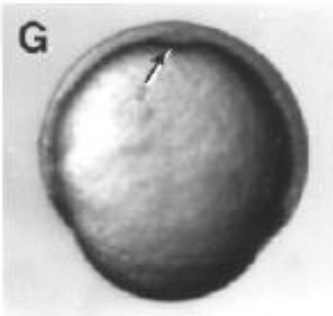


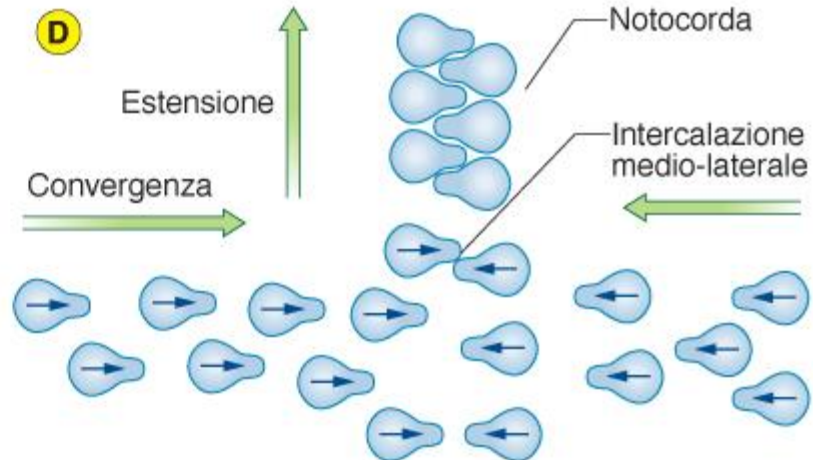
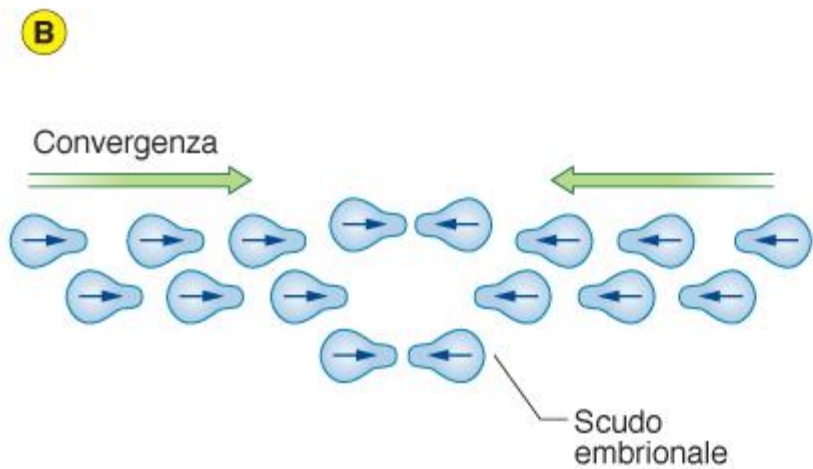
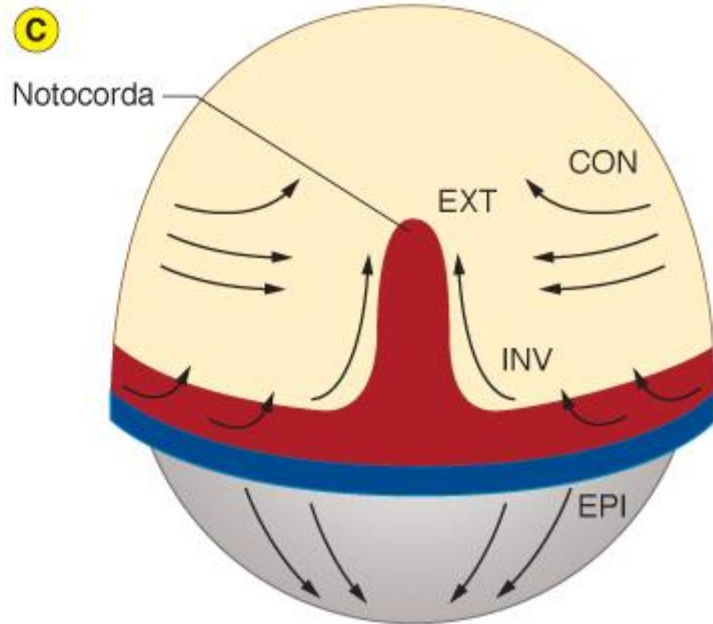
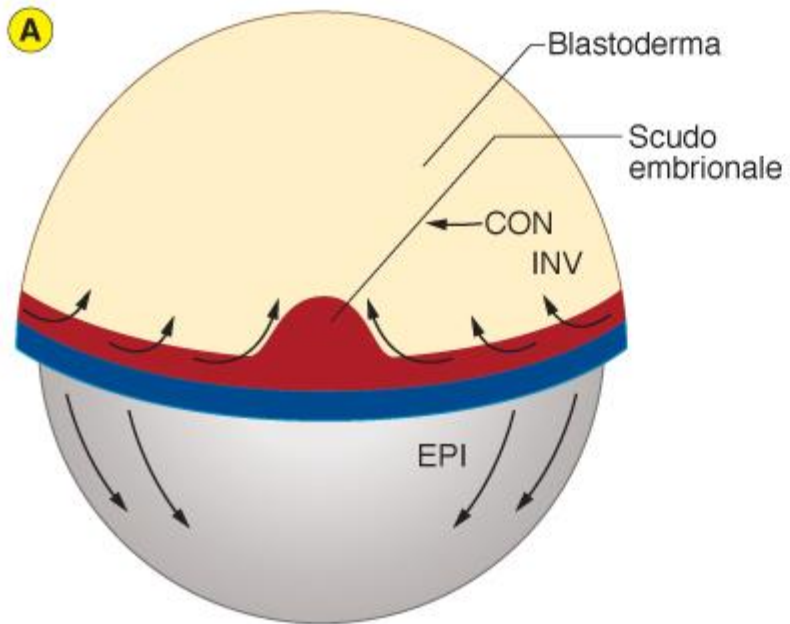


**ANELLO  
GERMINATIVO**



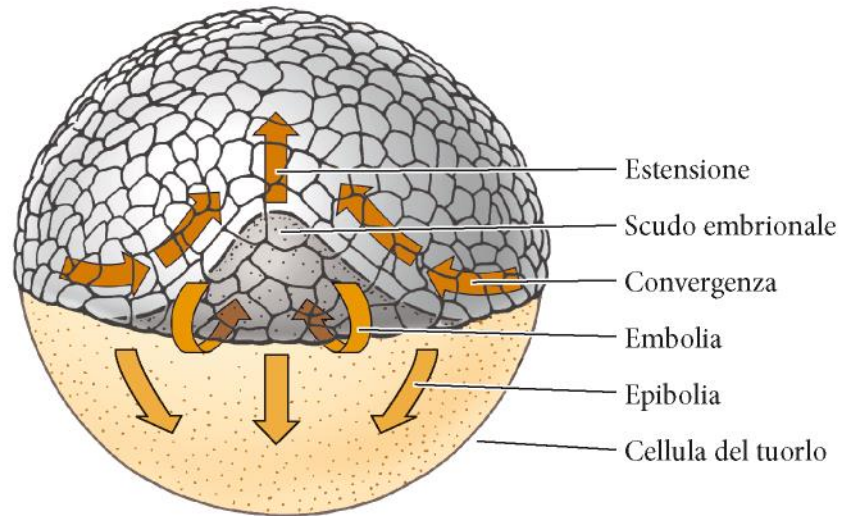
**SCUDO**



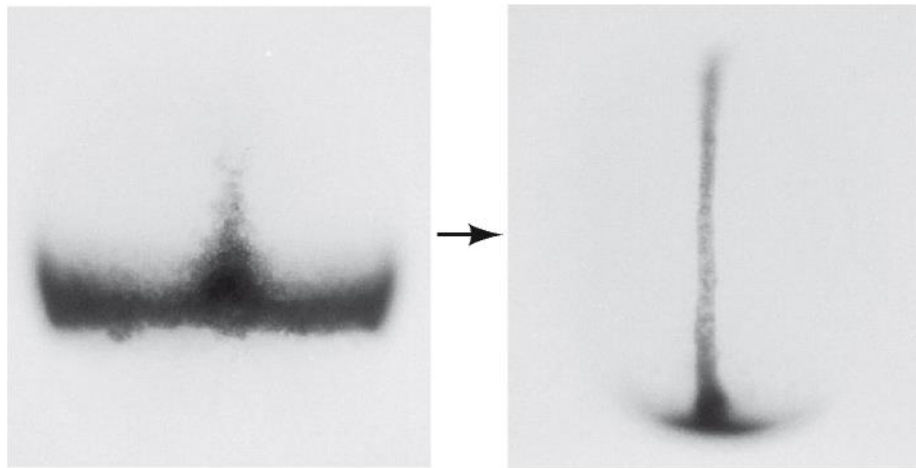


(A)

Polo animale



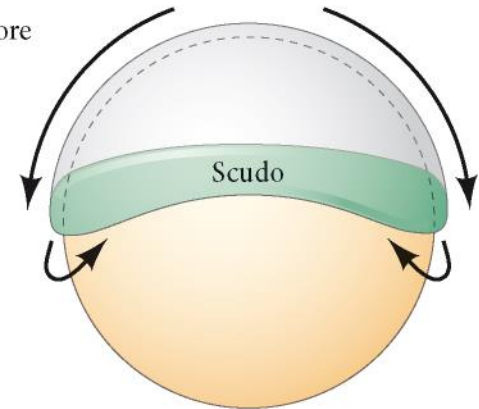
(C)



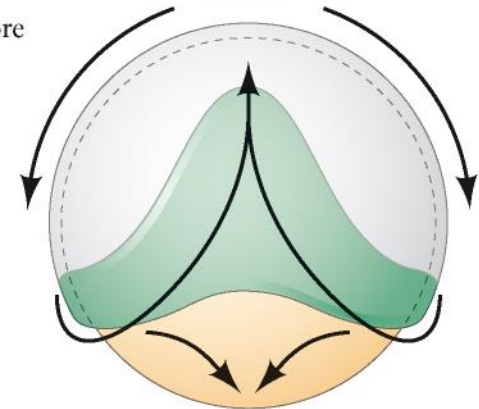
(B)

Visione dorsale

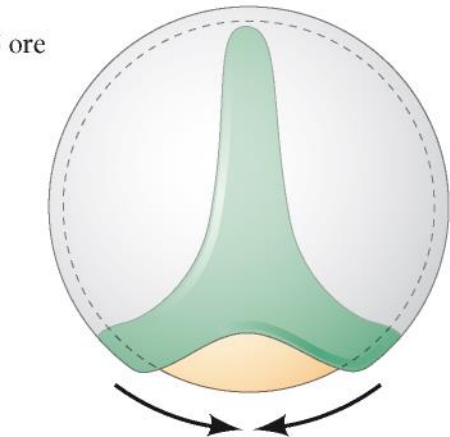
7,5 ore



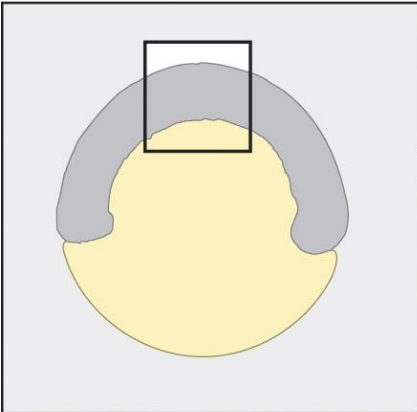
10 ore



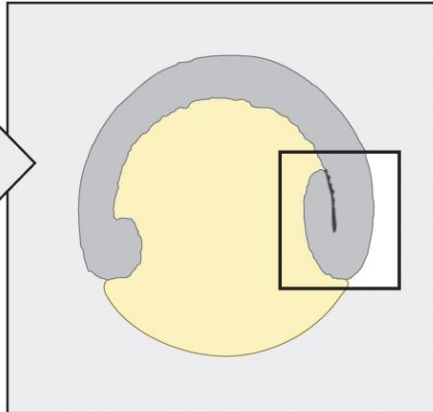
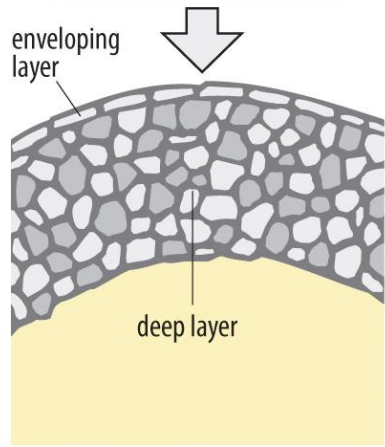
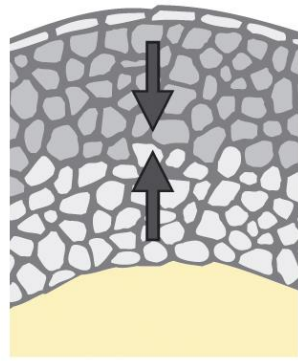
12,5 ore



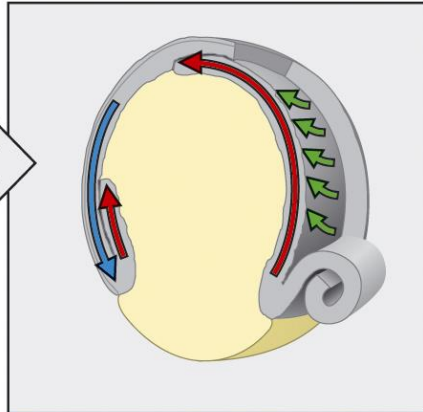
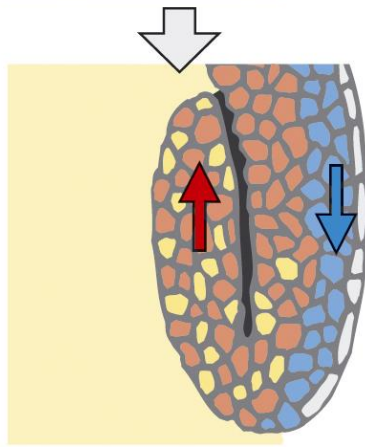
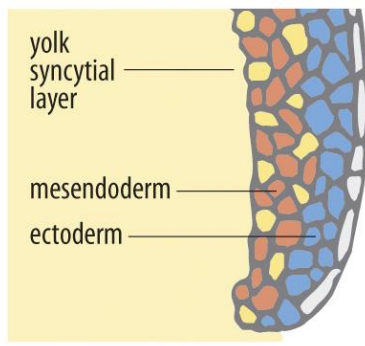
 Convergence and extension  
 Epiboly     Involution



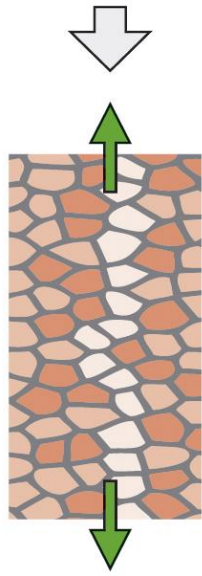
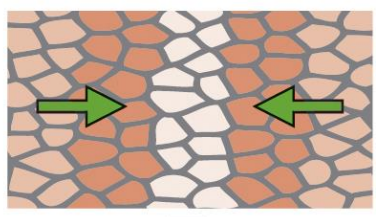
**Radial intercalation**

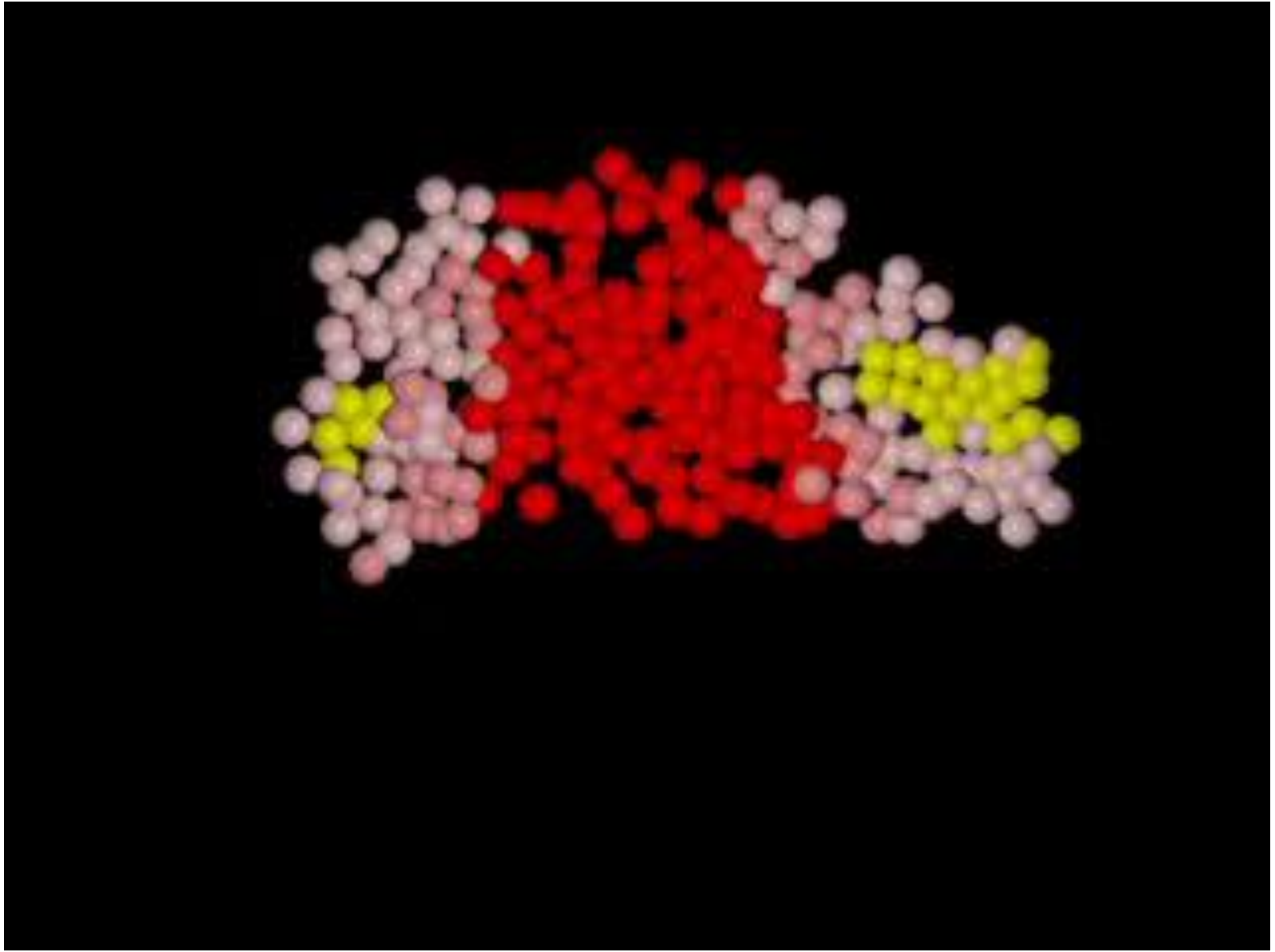


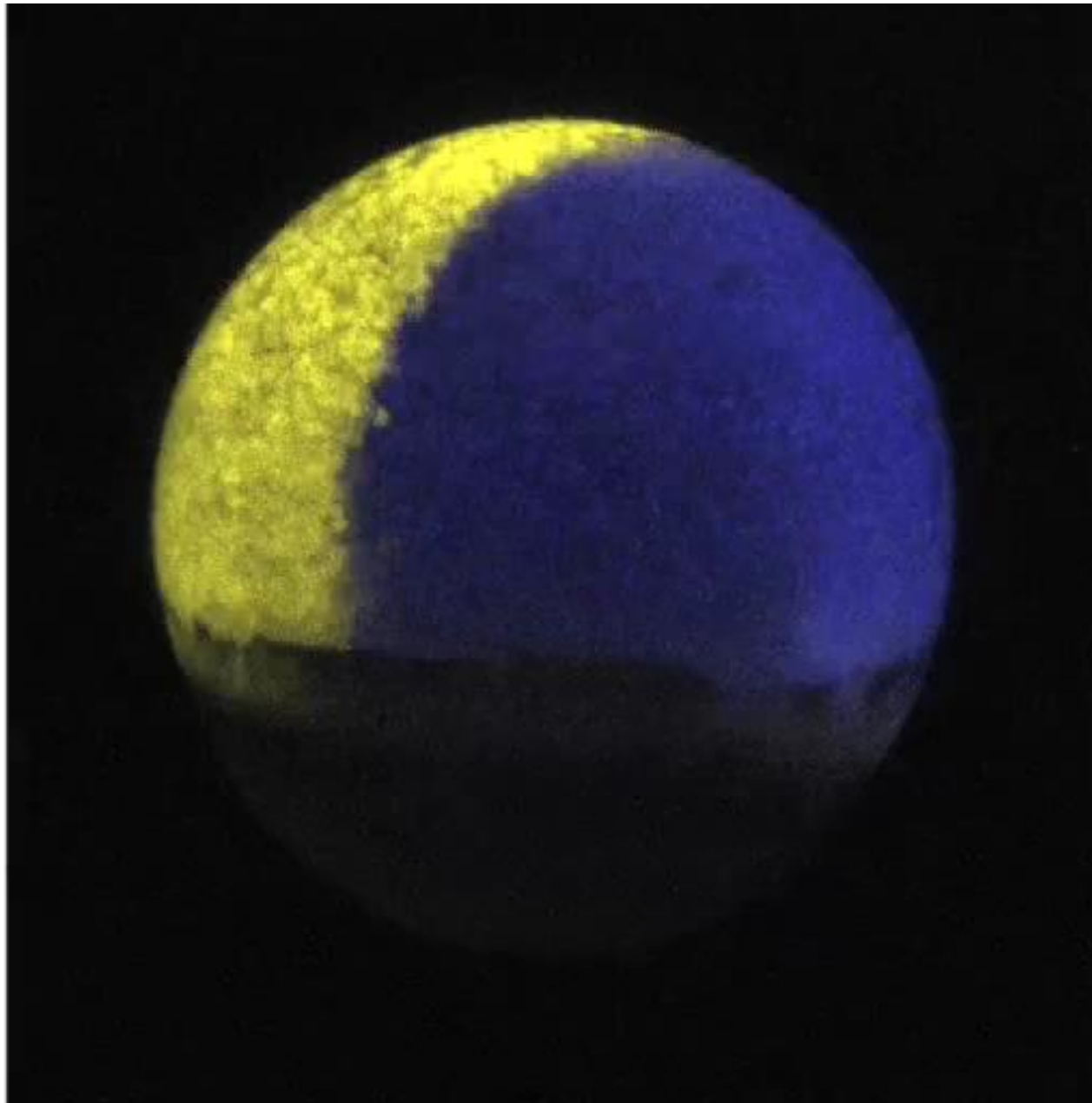
**Epiboly**



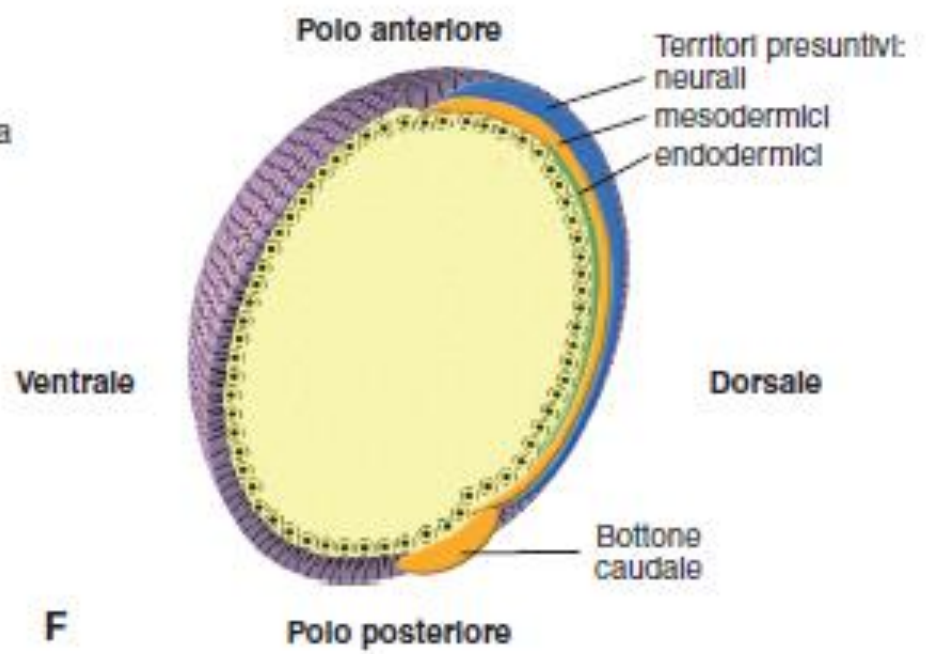
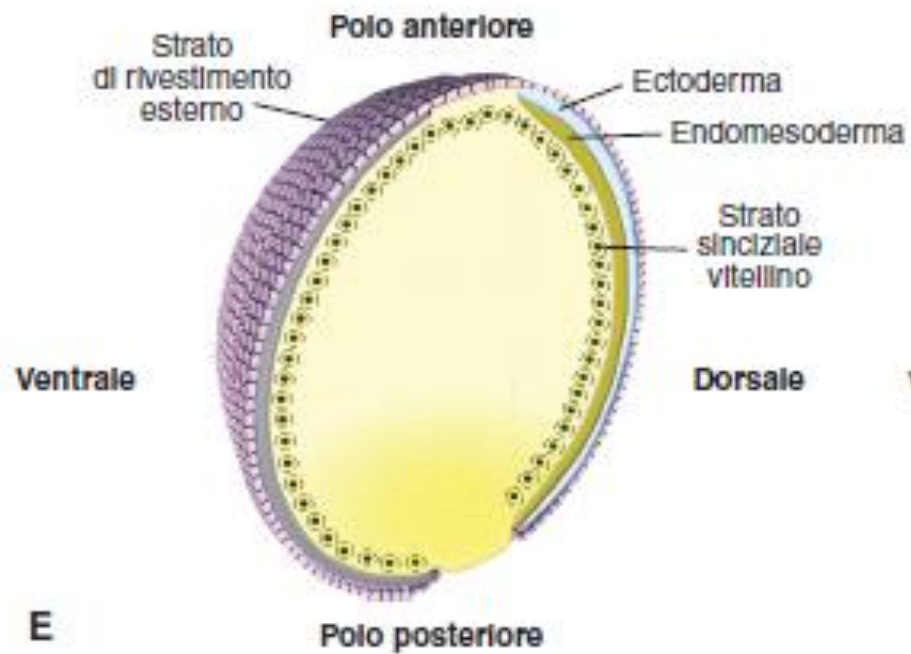
**Convergent extension**

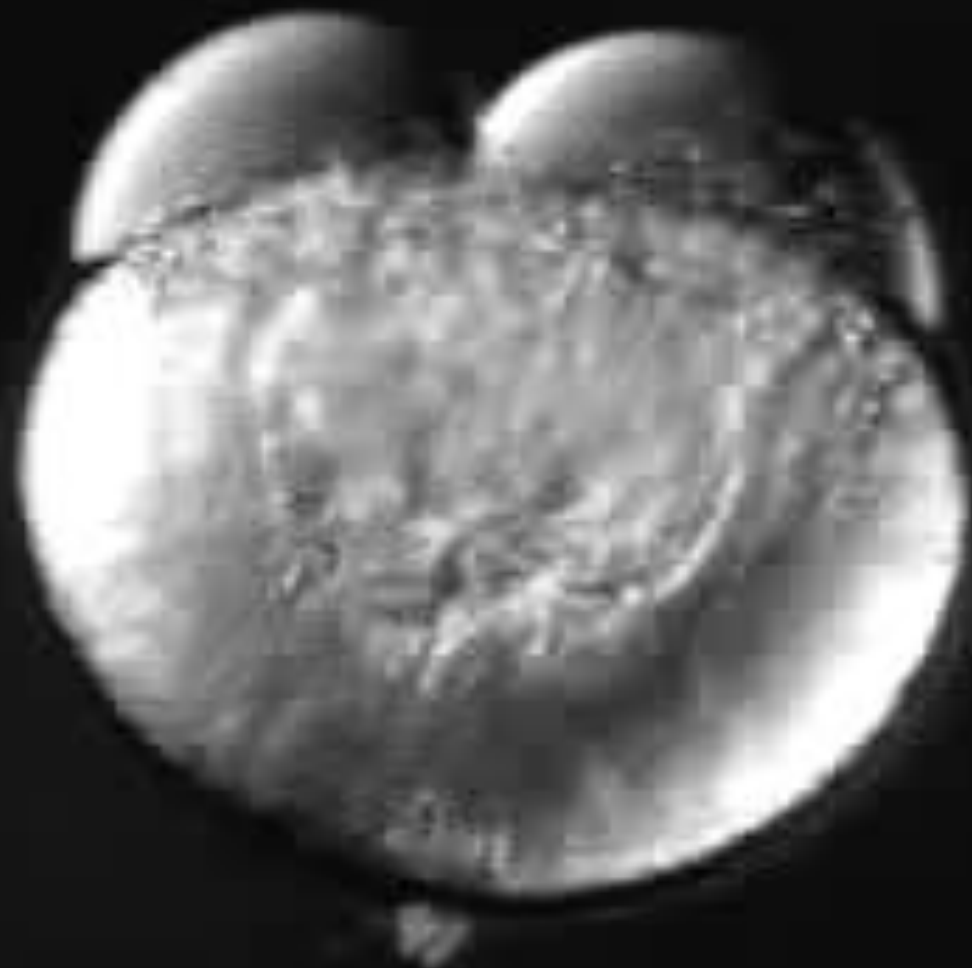




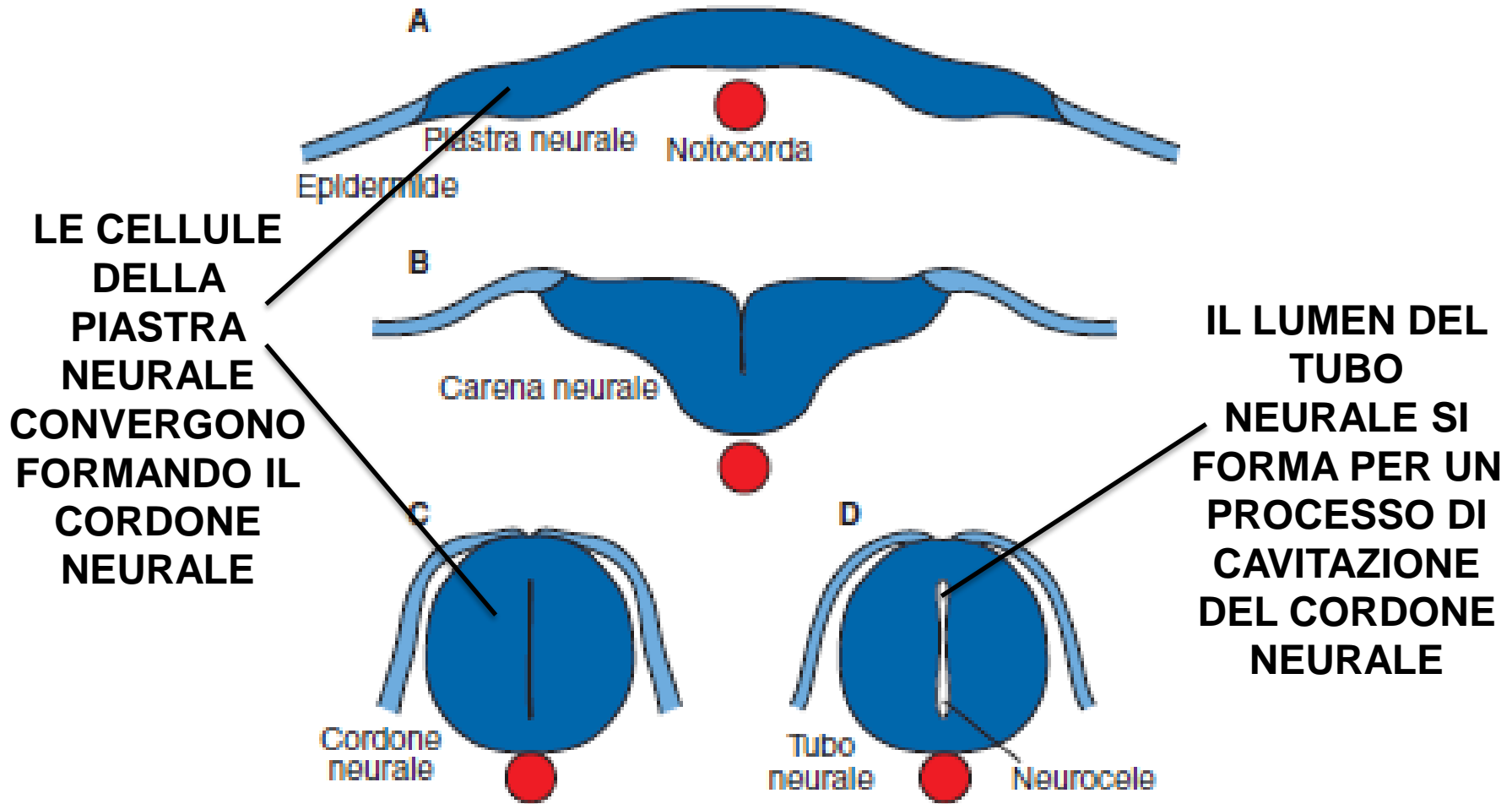




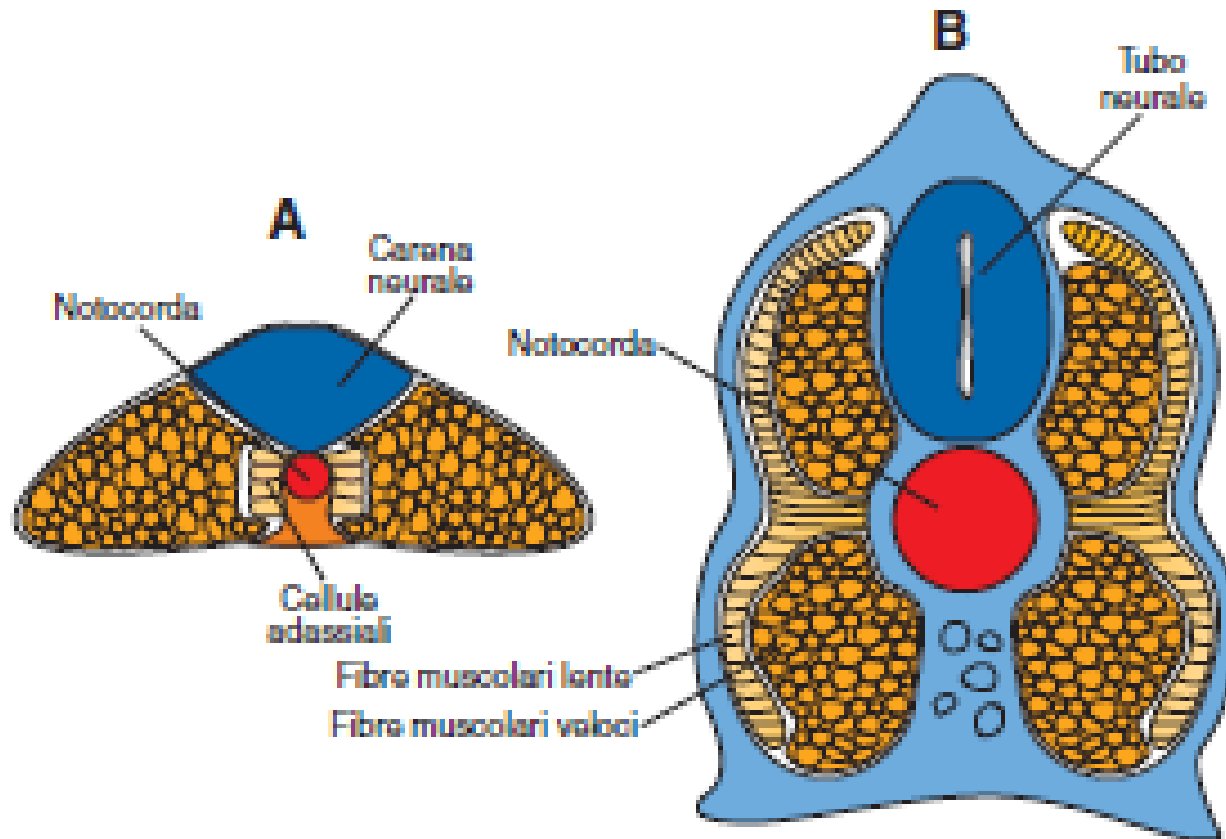




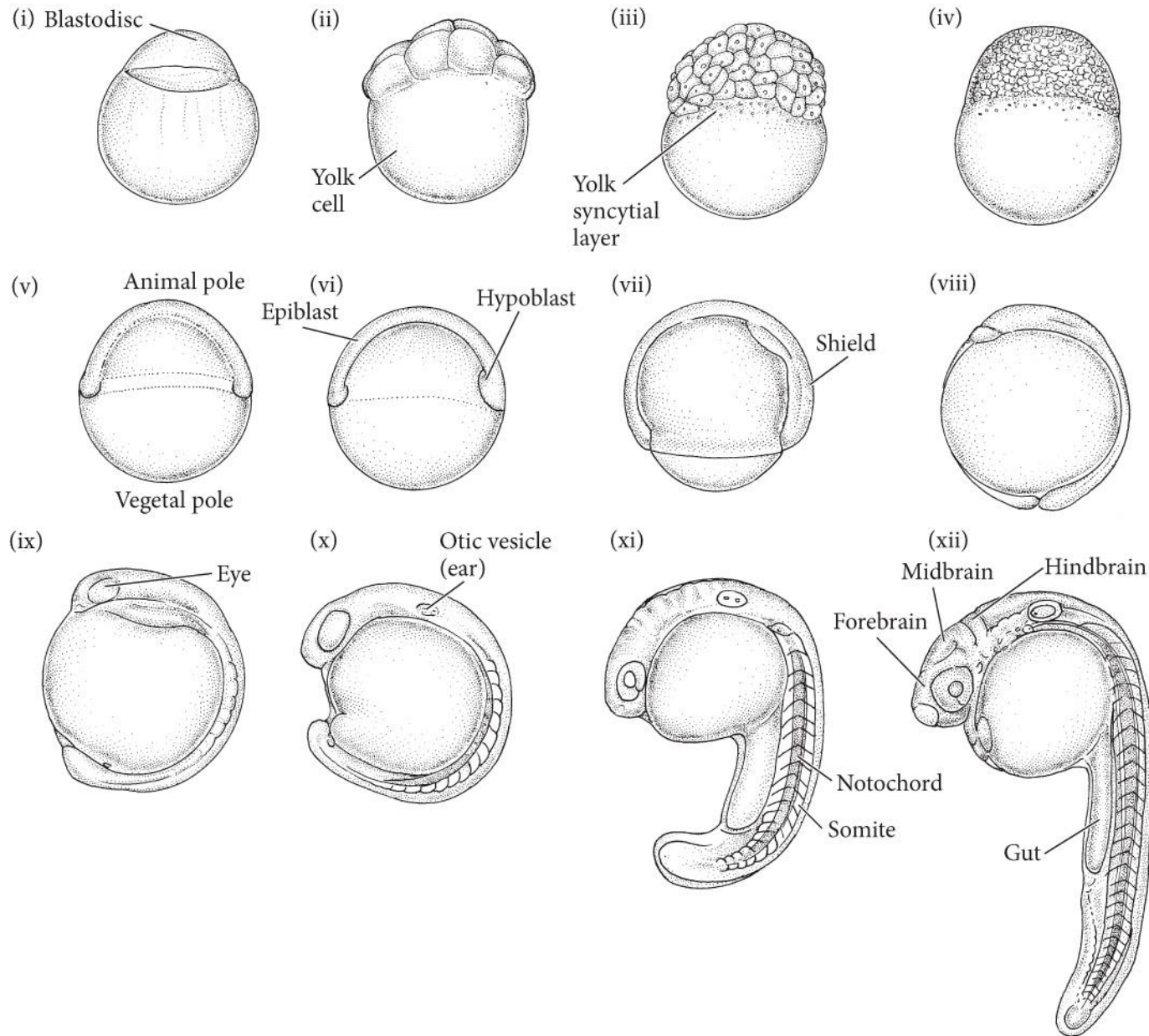
# FASI DELLA NEURULAZIONE IN ZEBRAFISH



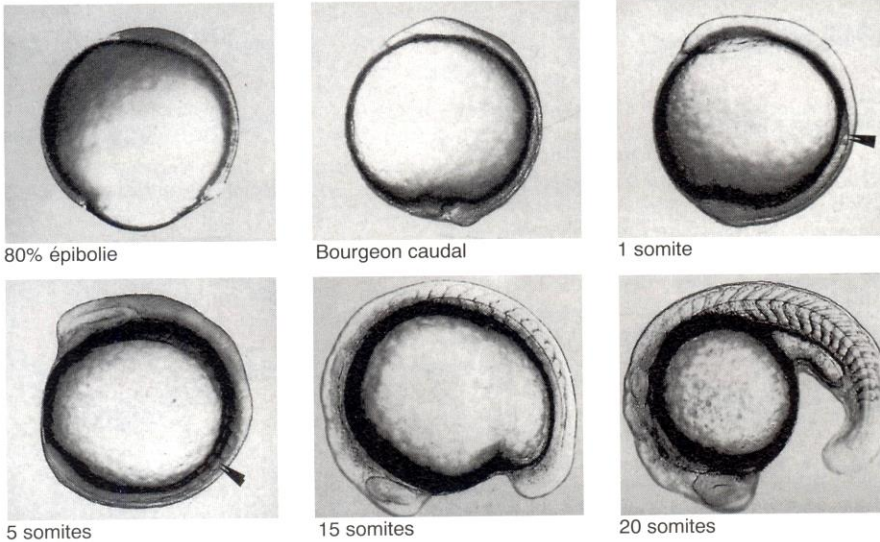
**Figura 8**



**Figura 7**



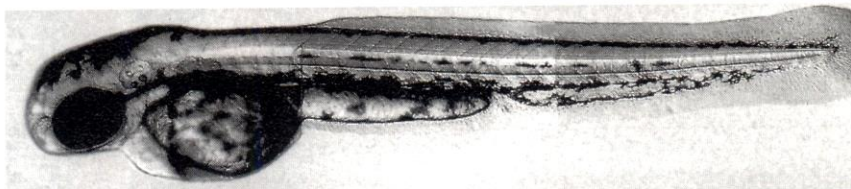
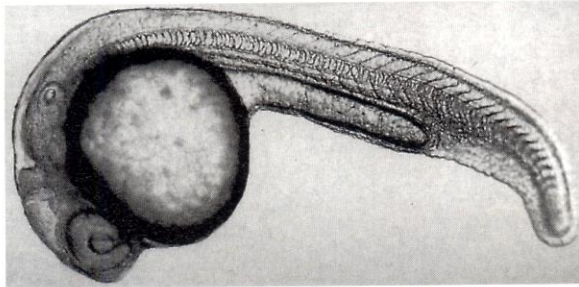
a) Formation du jeune bourgeon caudal et somitogénèse



**BOTTONE CAUDALE**



b) Redressement du bourgeon caudal

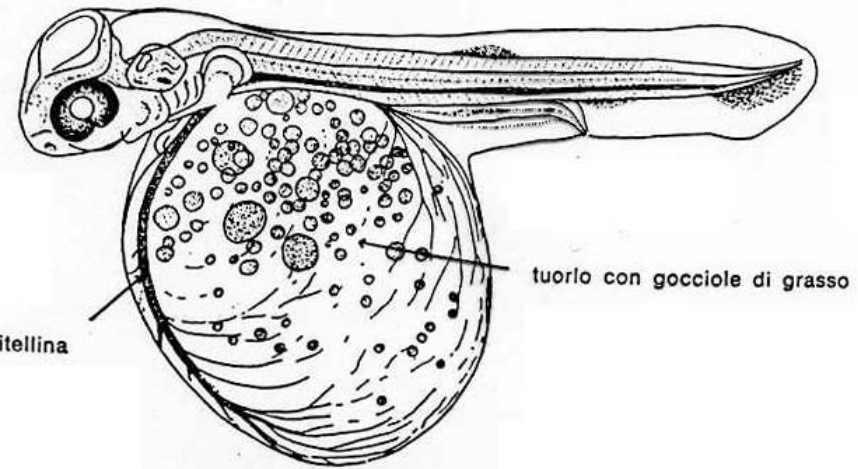


Bourgeon caudal âgé

c) Formation de la larve nageuse



(d'après Boulekbache, 1998)



**Sacco del tuorlo**