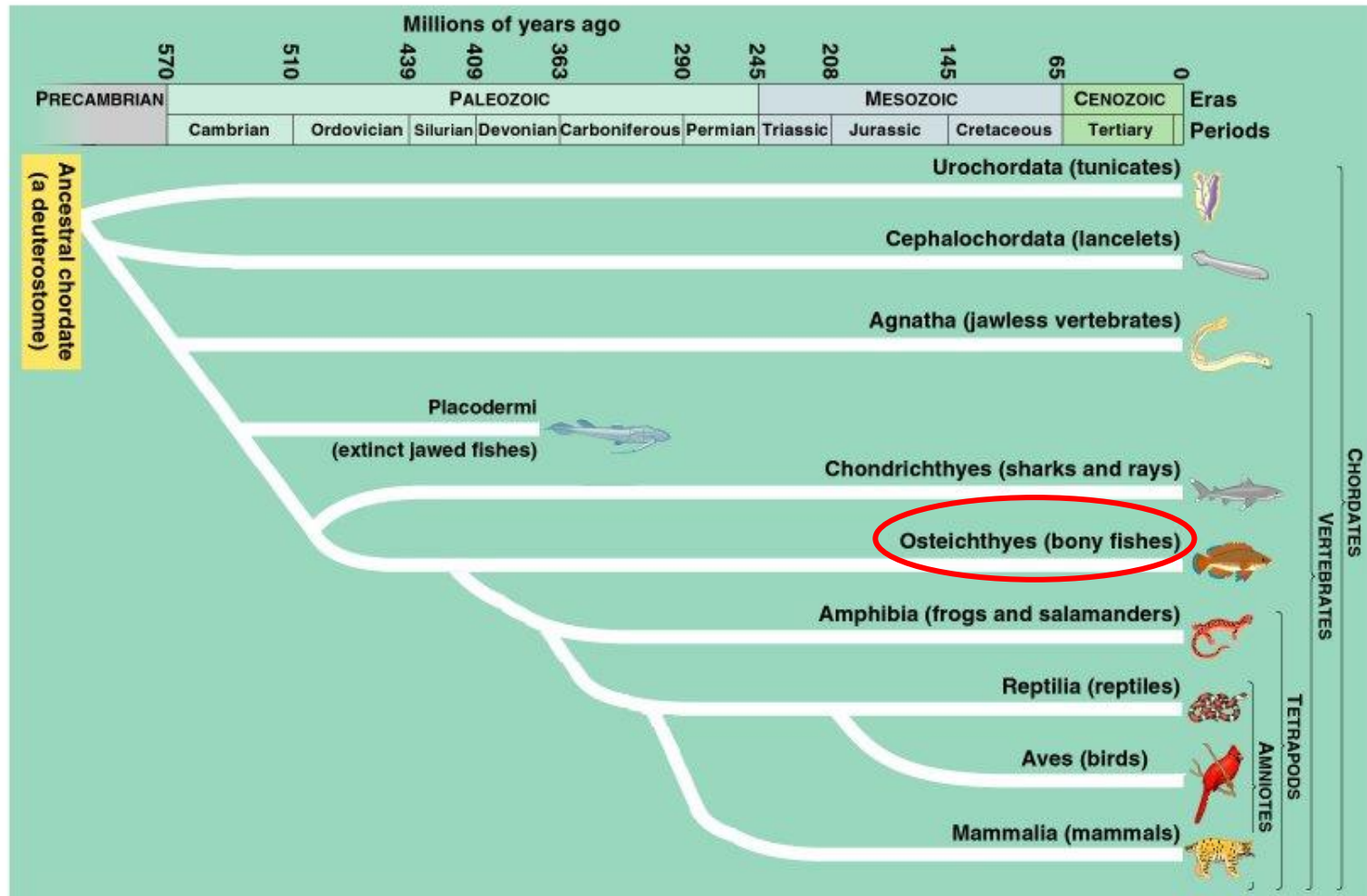
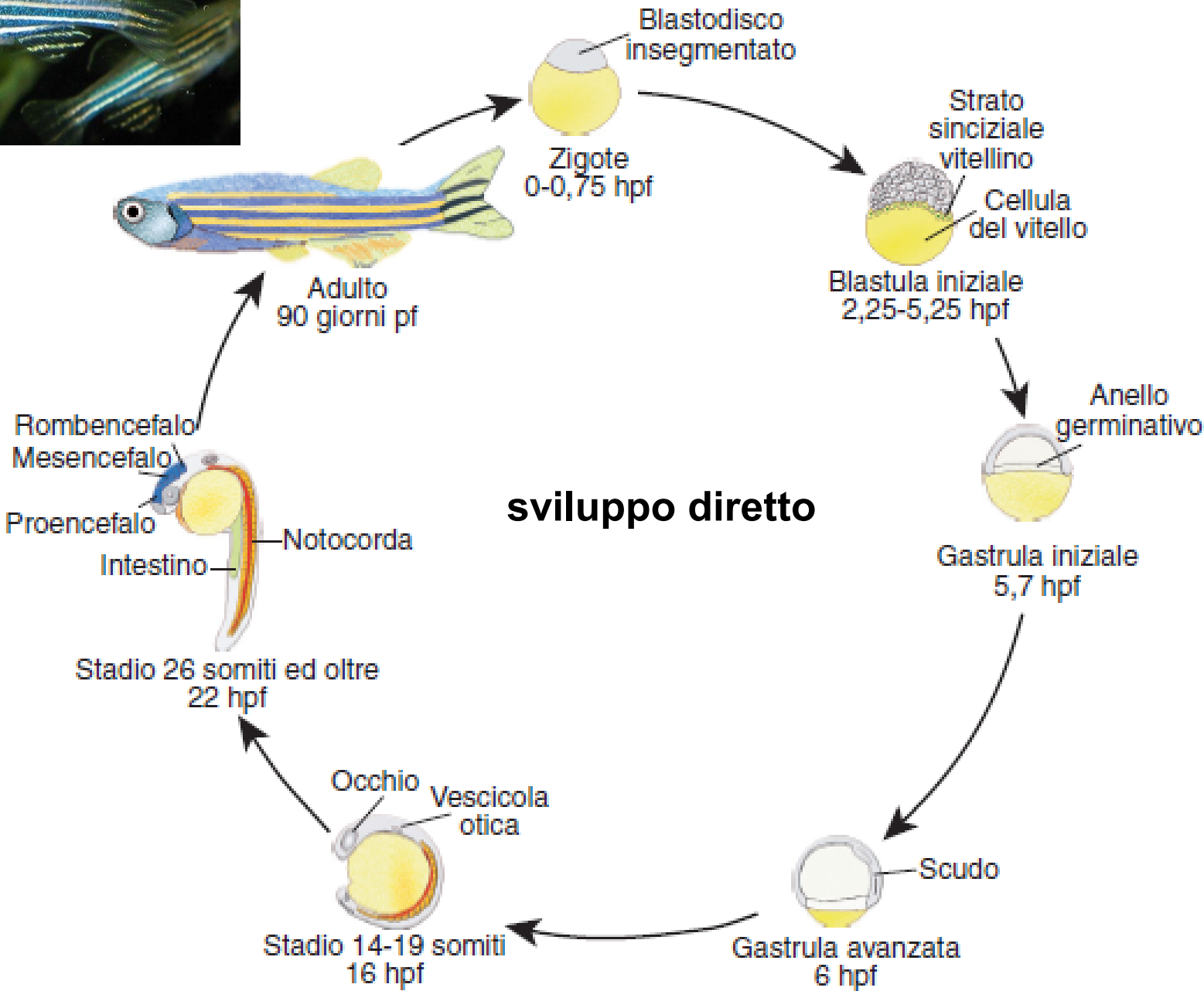
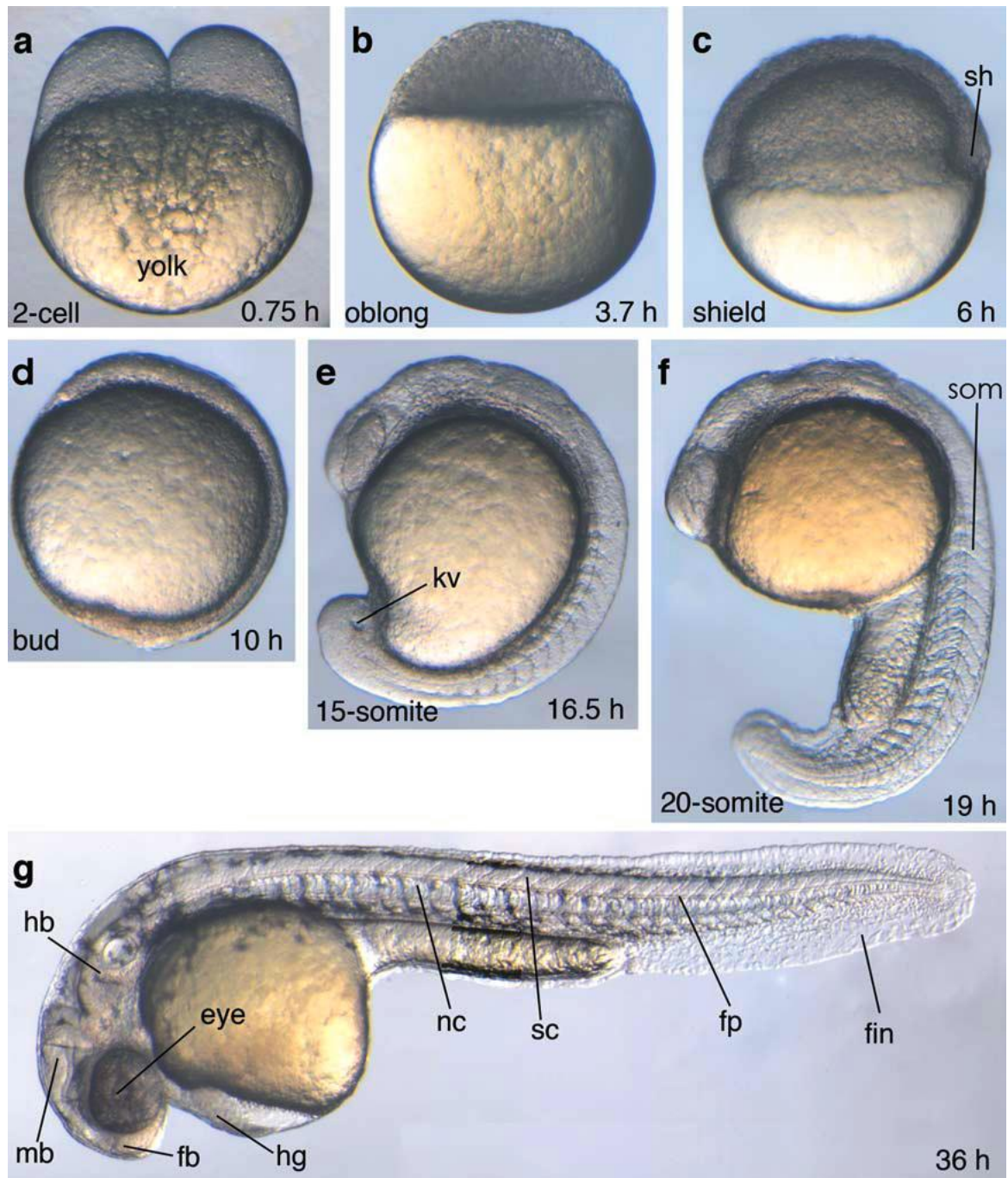


# FILOGENESI DEI CORDATI

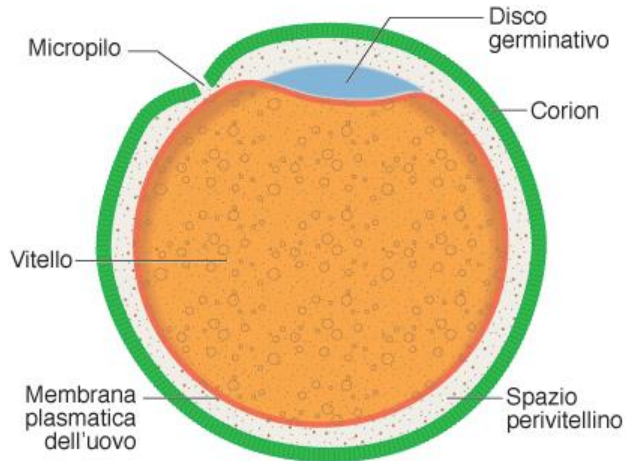


# ZEBRAFISH (*Danio rerio*)

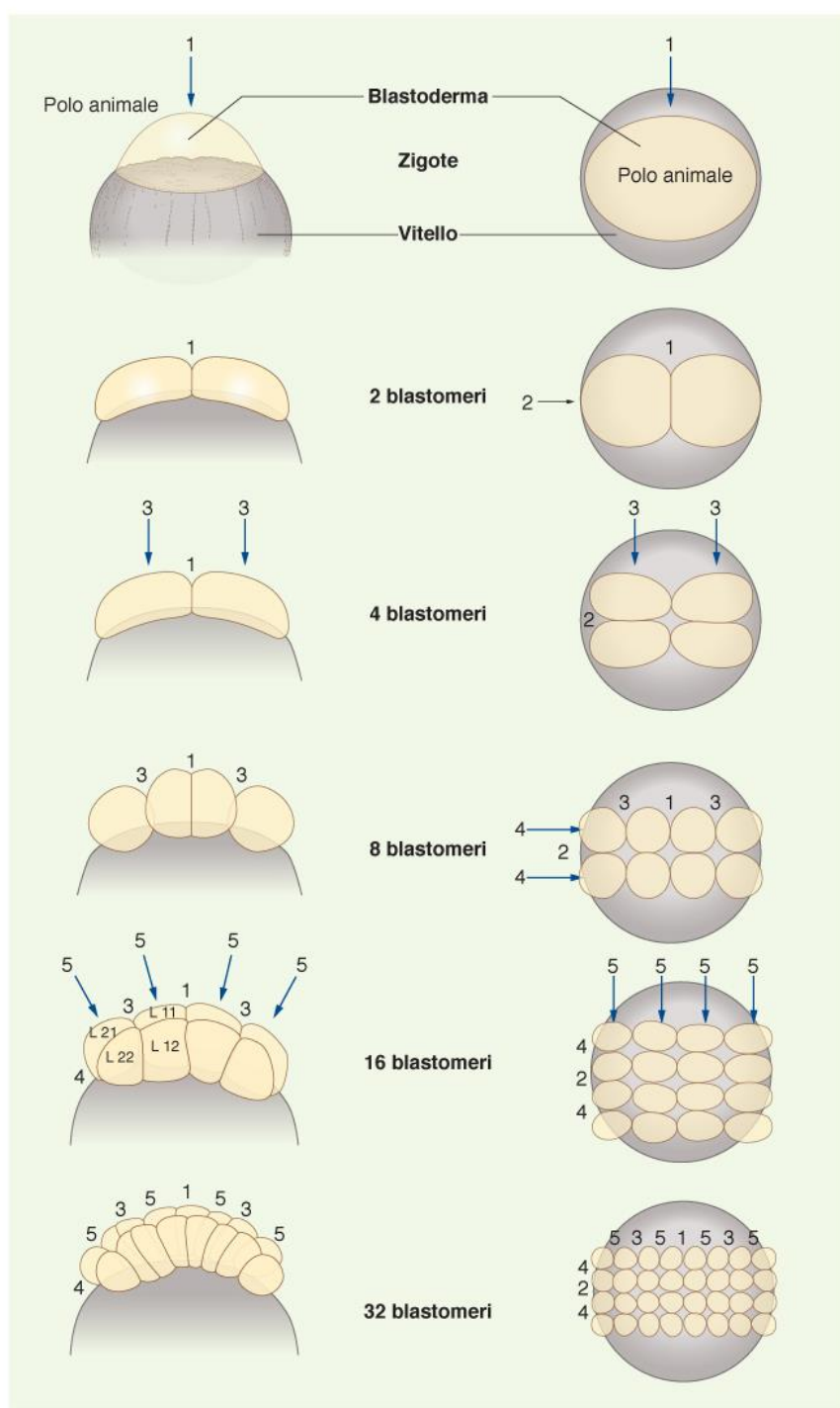
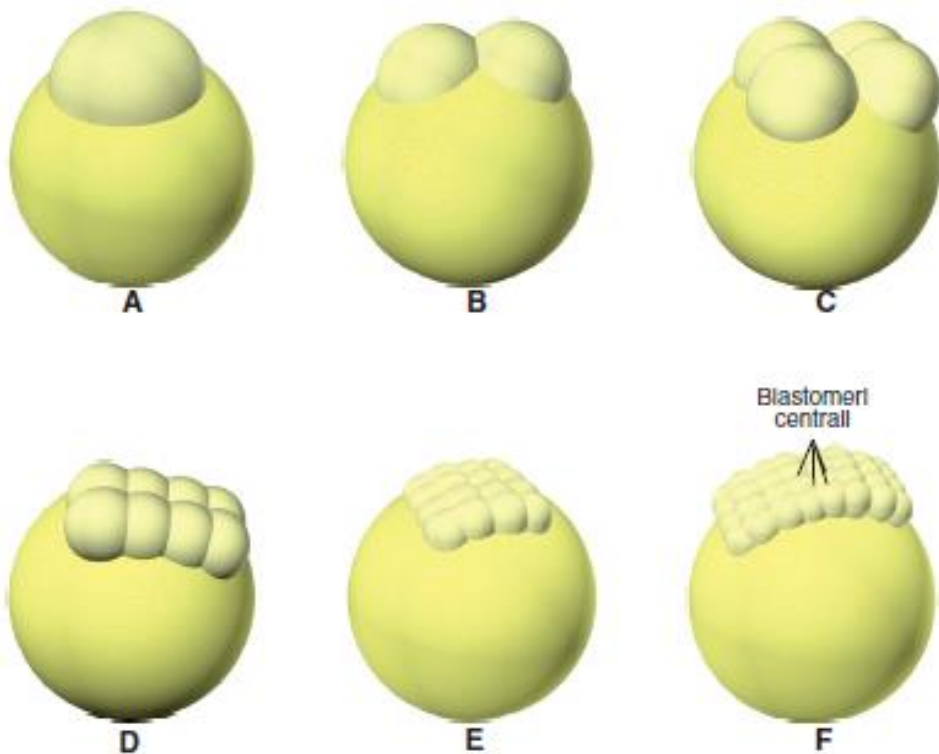


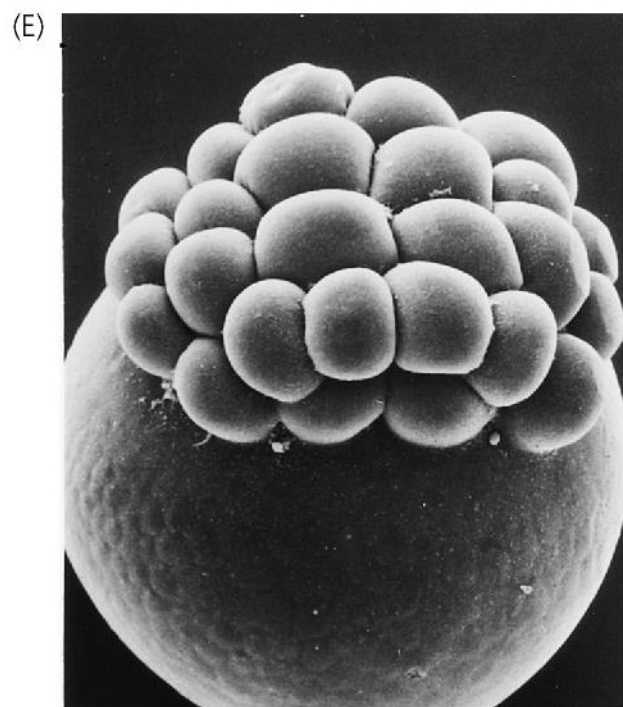
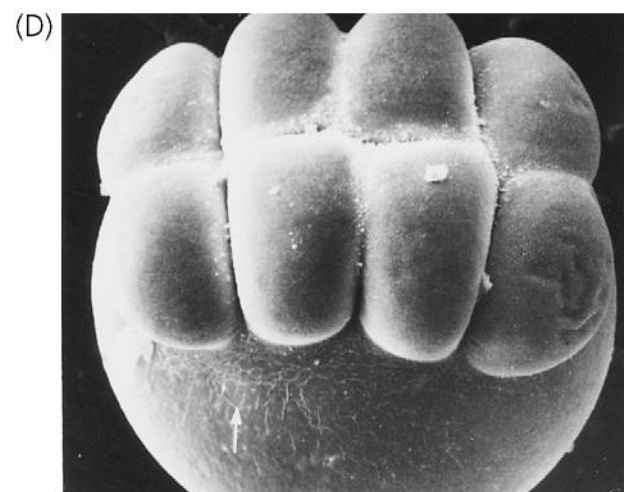
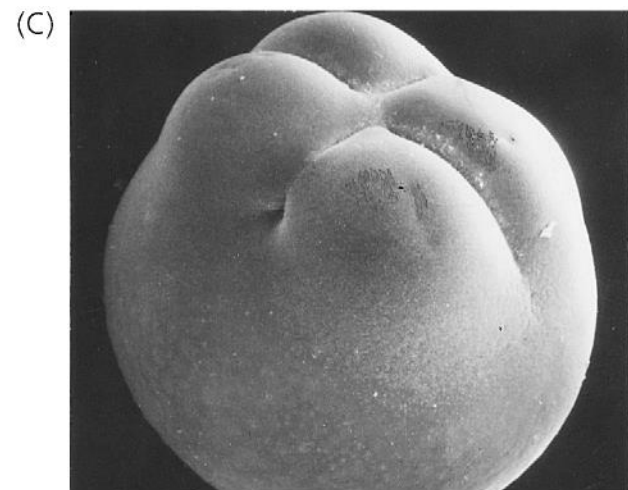
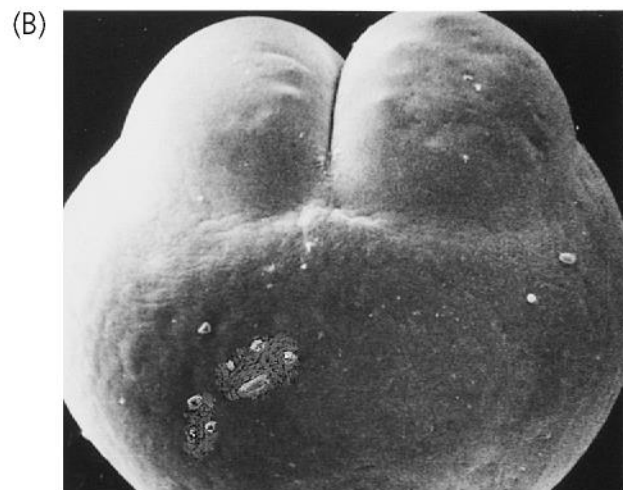


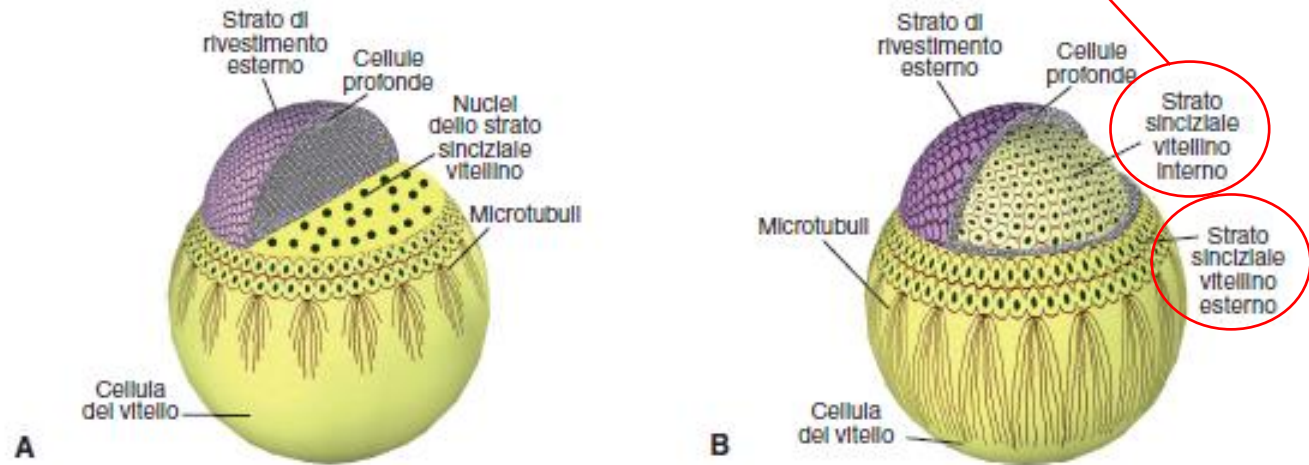
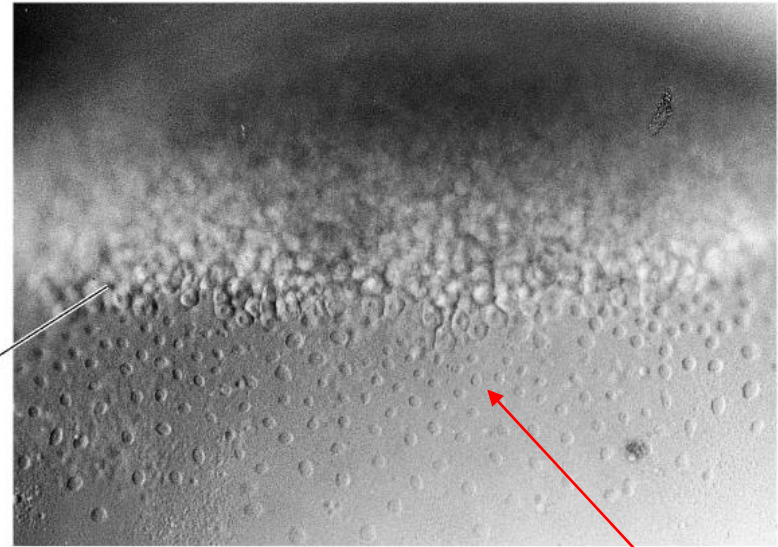
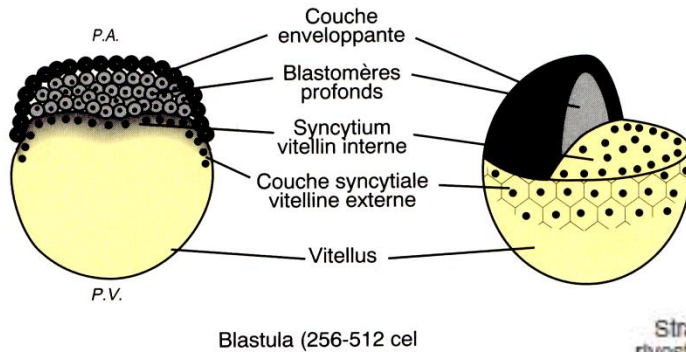
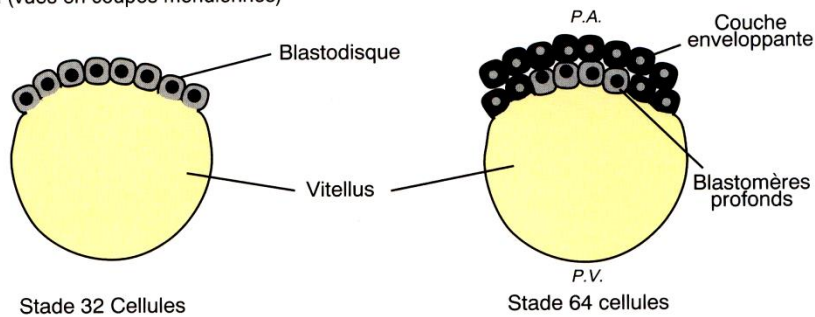
# Uovo telolecitico



## Segmentazione meroblastica discoidale

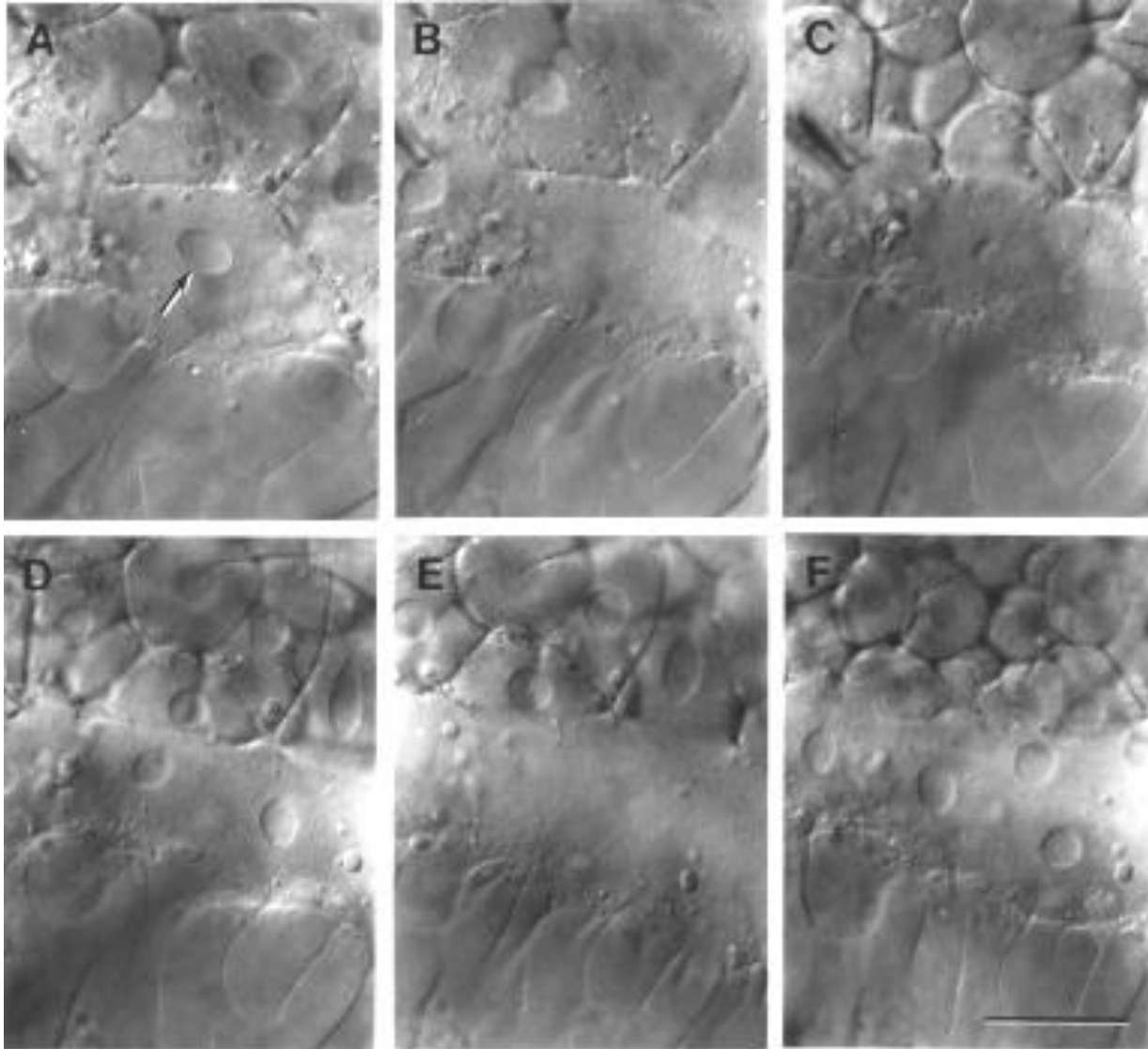






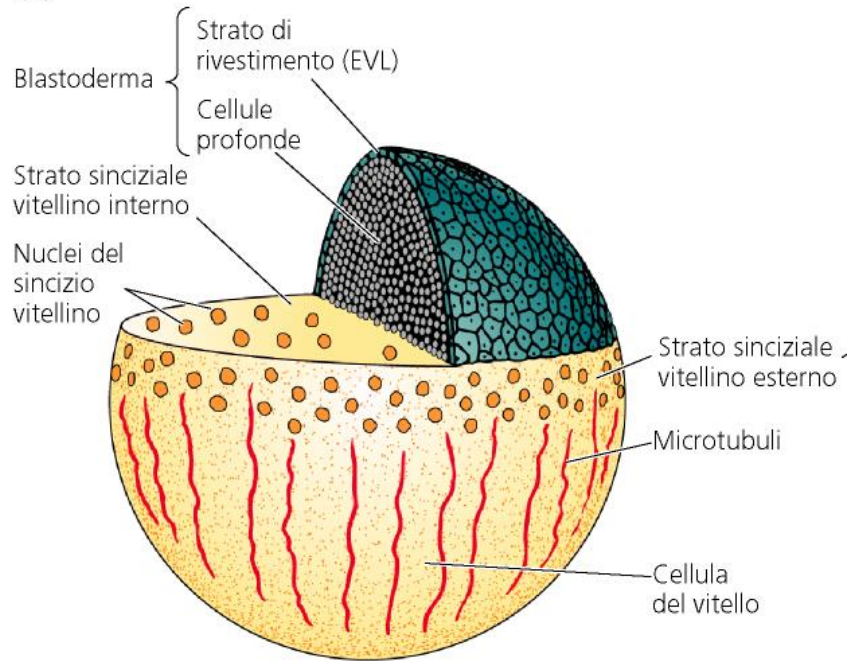
1. Rivestimento esterno: **periderma**
2. **Blastomeri profondi**: formano l'embrione
3. **Sincizio vitellino**

# FORMAZIONE DELLO STRATO SINCIZIALE VITELLINO

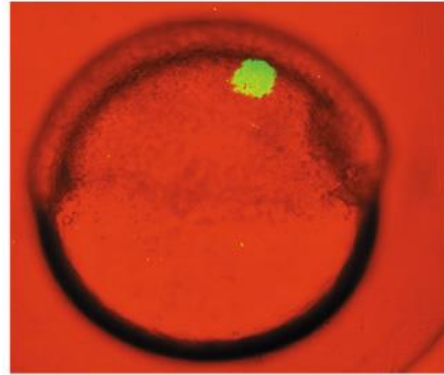


# MAPPA DEI TERRITORI PRESUNTIVI NELLA BLASTULA DI ZEBRAFISH

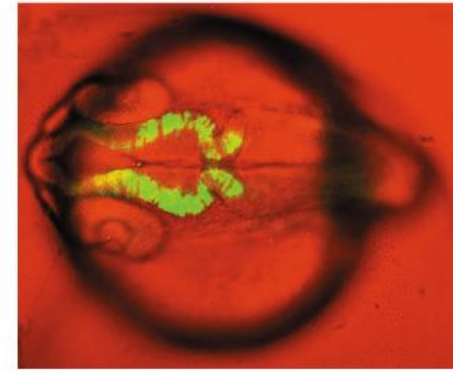
(A)



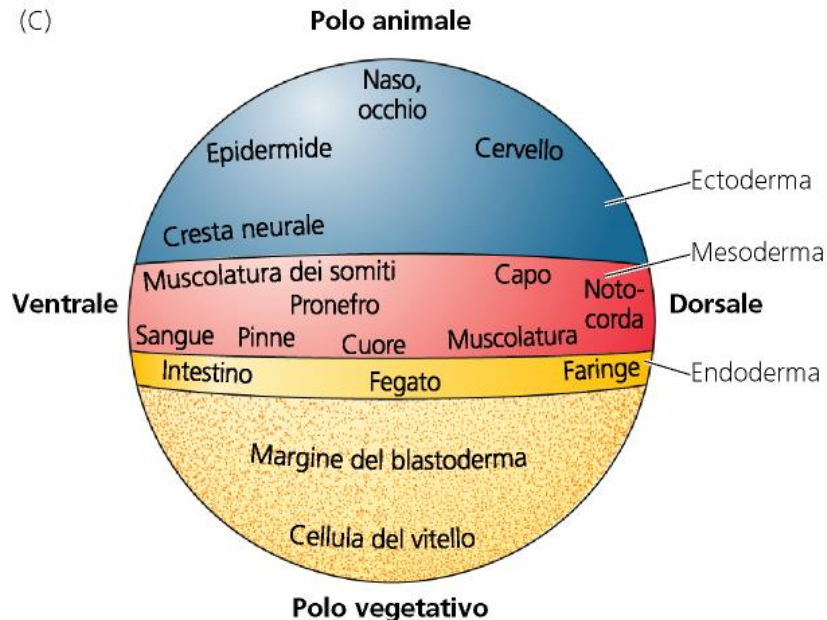
(A)



(B)

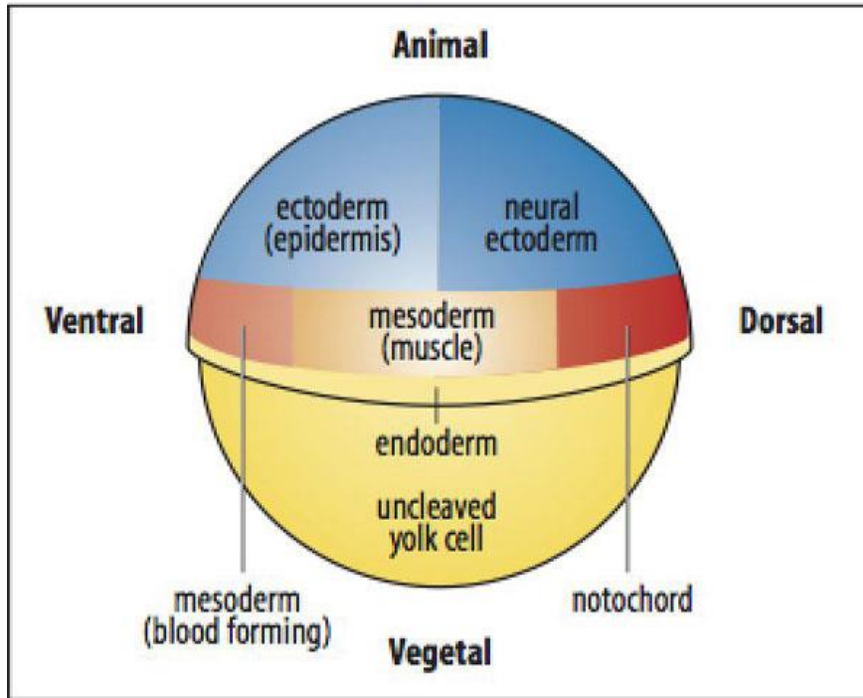


(C)



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.

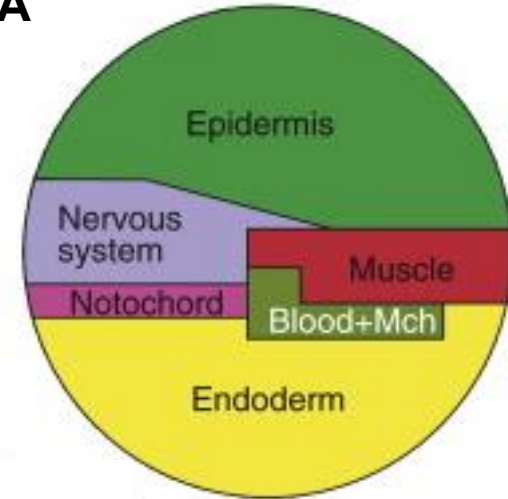
# LE MAPPE DEI TERRITORI PRESUNTIVI NELLE BLASTULE DI ZEBRAFISH, XENOPUS E TUNICATI RIVELANO UN PIANO DI ORGANIZZAZIONE CONSERVATO



**ZEBRAFISH**

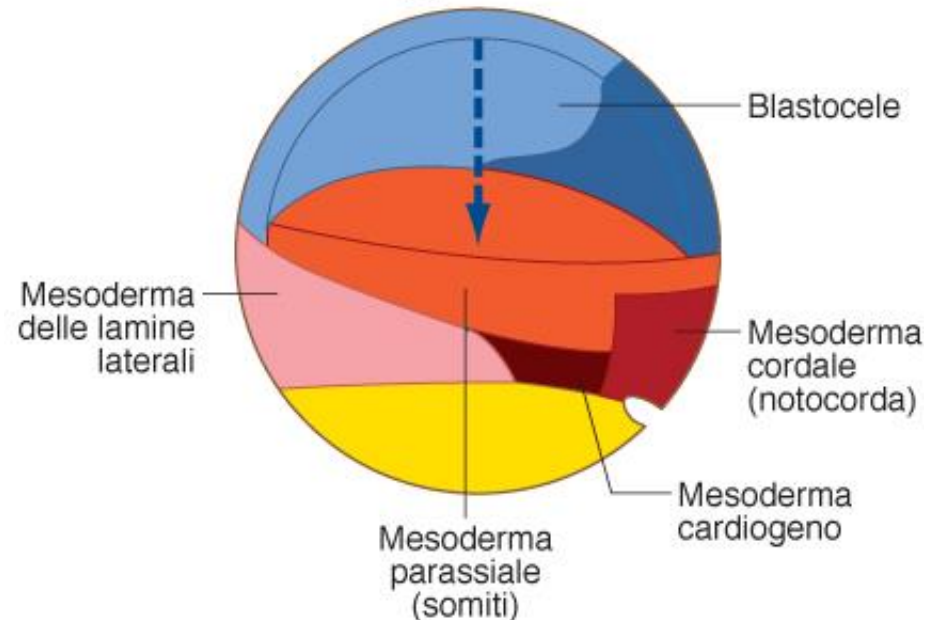
## ASCIDIA

Ascidian fate map

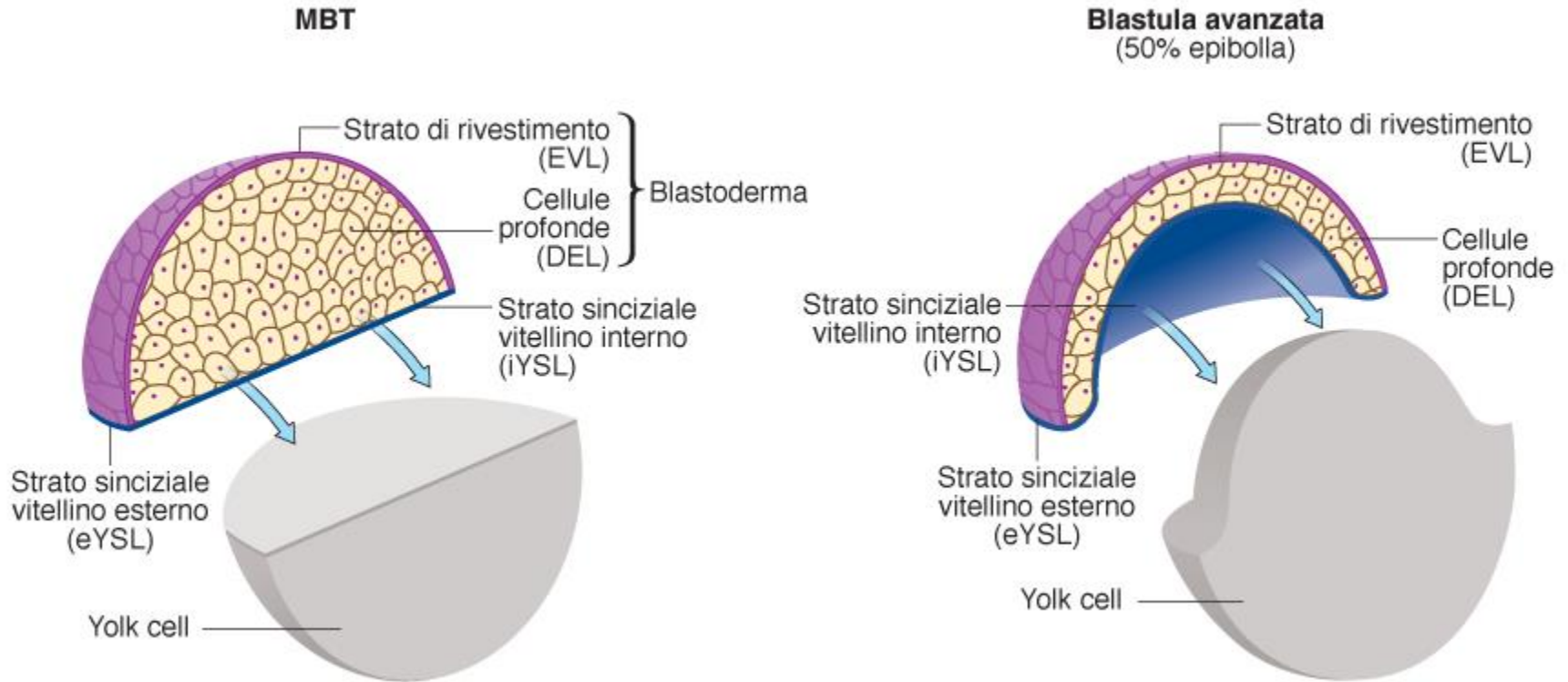


## XENOPUS

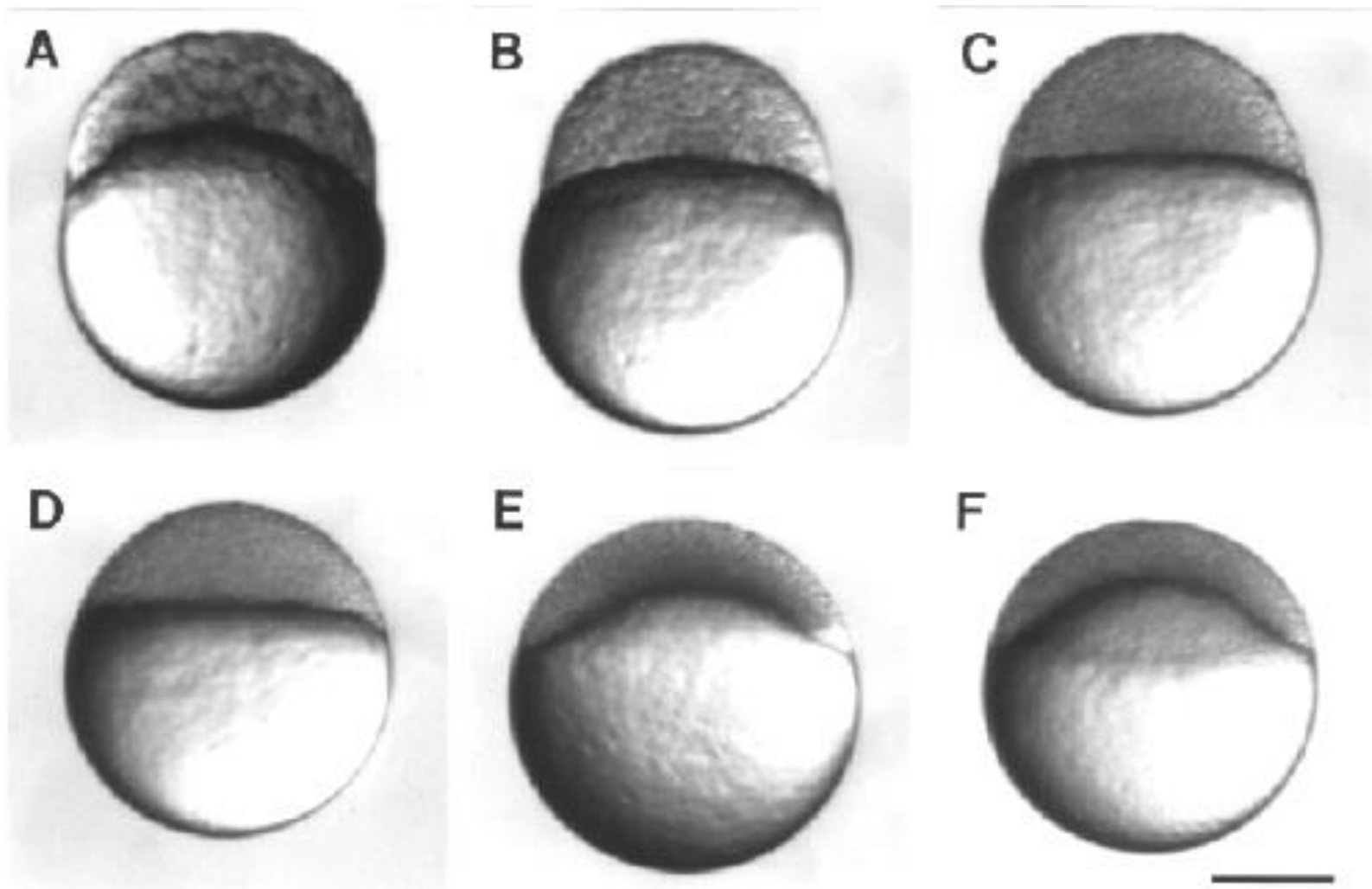
Mappa interna

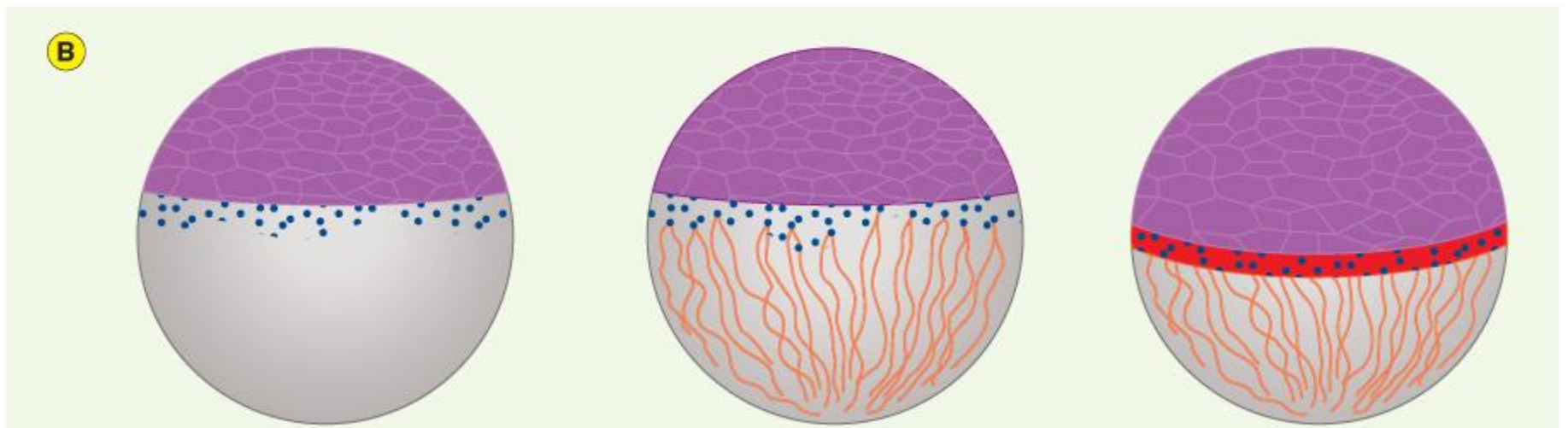
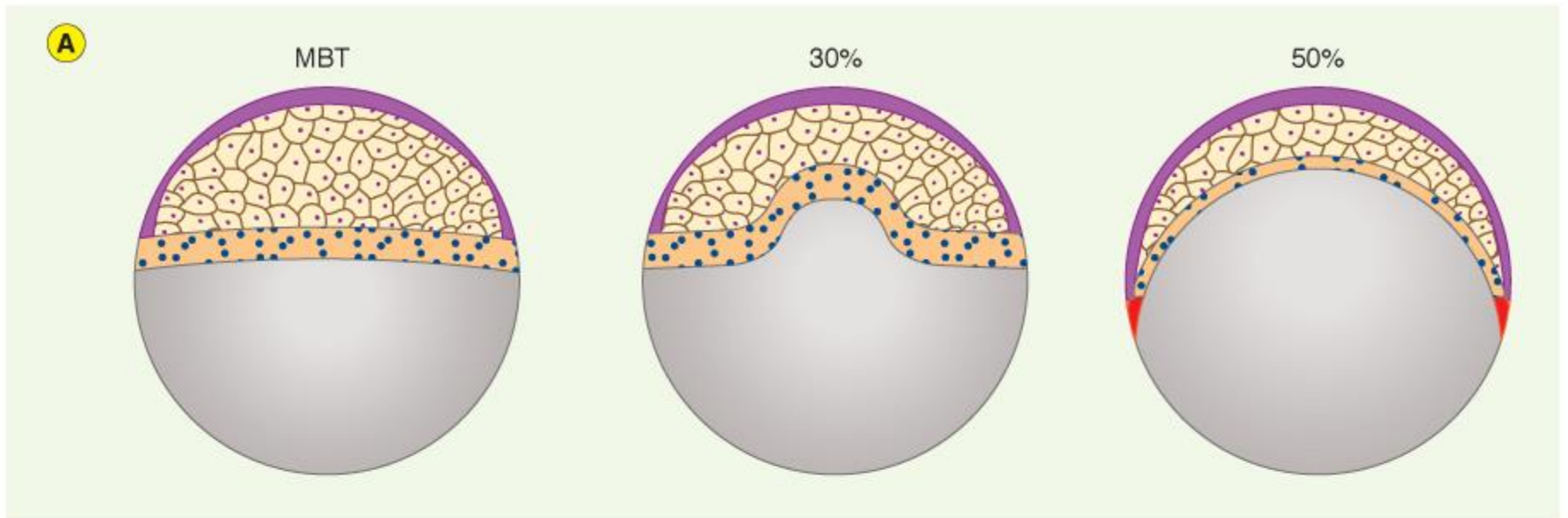


# FASI INIZIALI DELL'EPIBOLIA NELLA BLASTULA DI ZEBRAFISH



**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 → **epibolia**



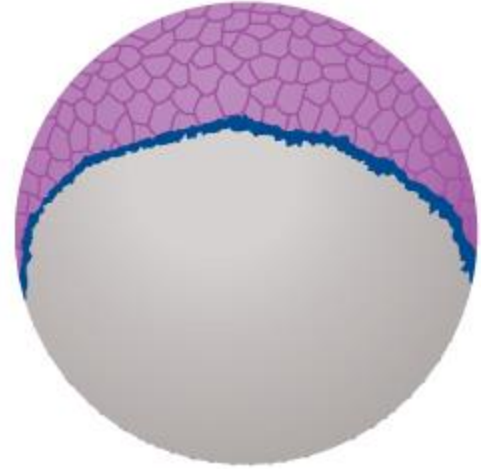
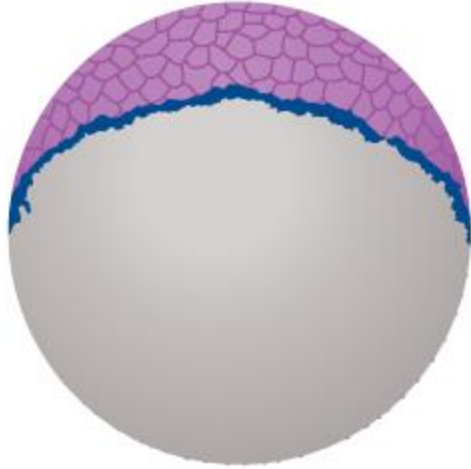
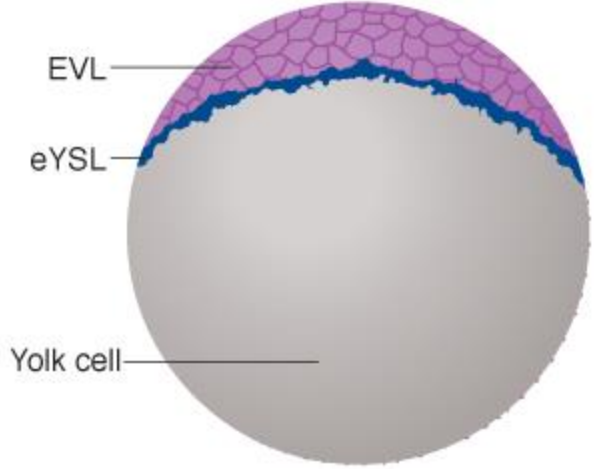


All'epibolia contribuisce la trazione esercitata dai nuclei del **sincizio vitellino**

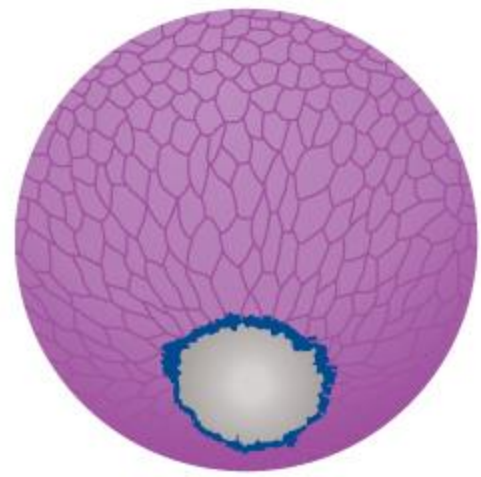
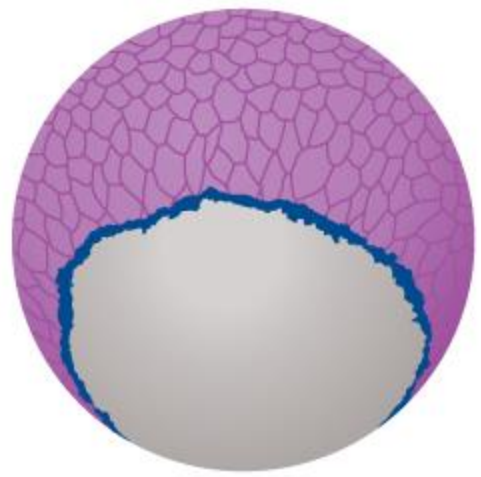


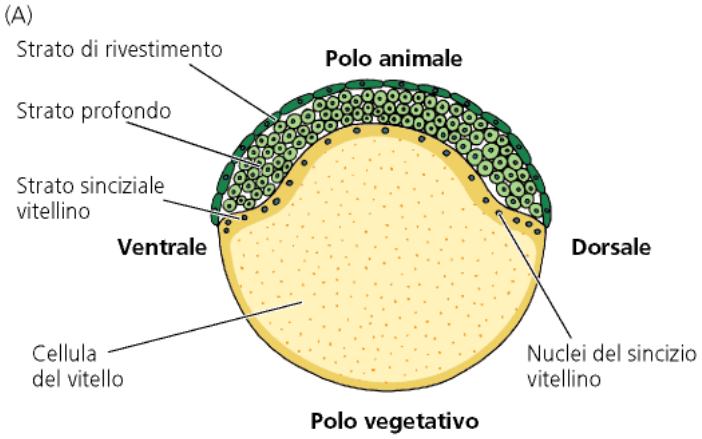


Polo animale



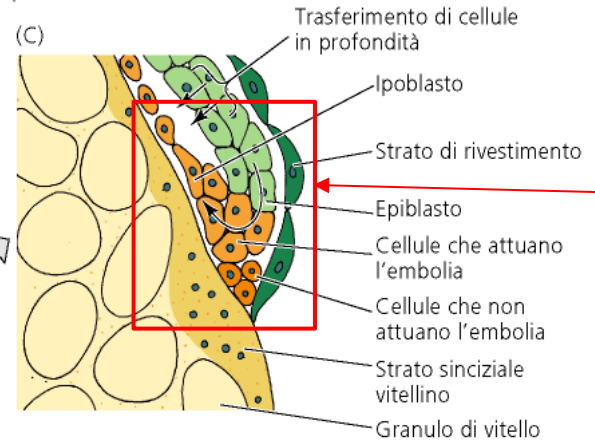
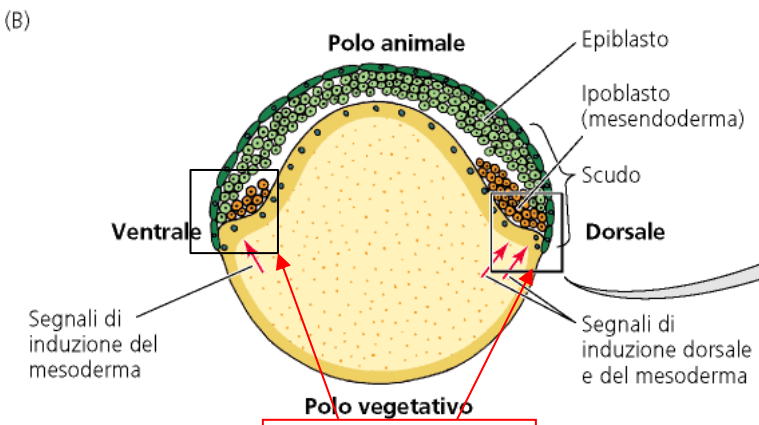
Polo vegetativo



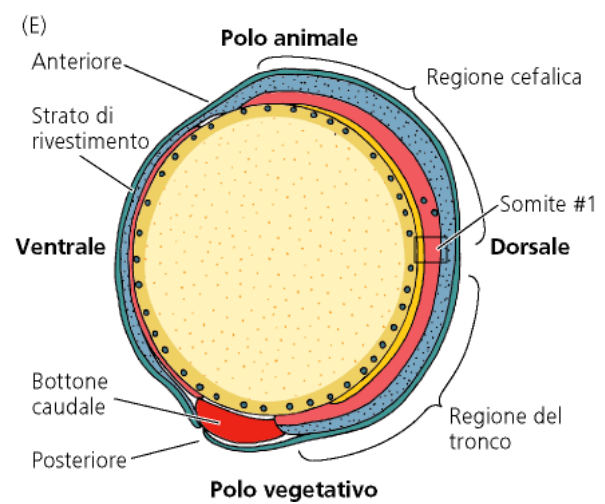
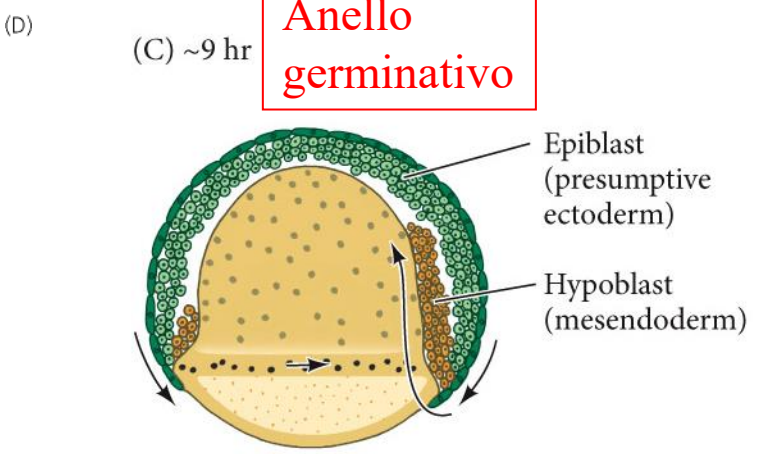


Strato esterno= **periderma** (verde scuro)  
**Epiblasto**= ectoderma (verde)  
**Ipoblasto**= mesoderma (arancio, poi rosso)  
 endoderma (arancio, poi giallo)

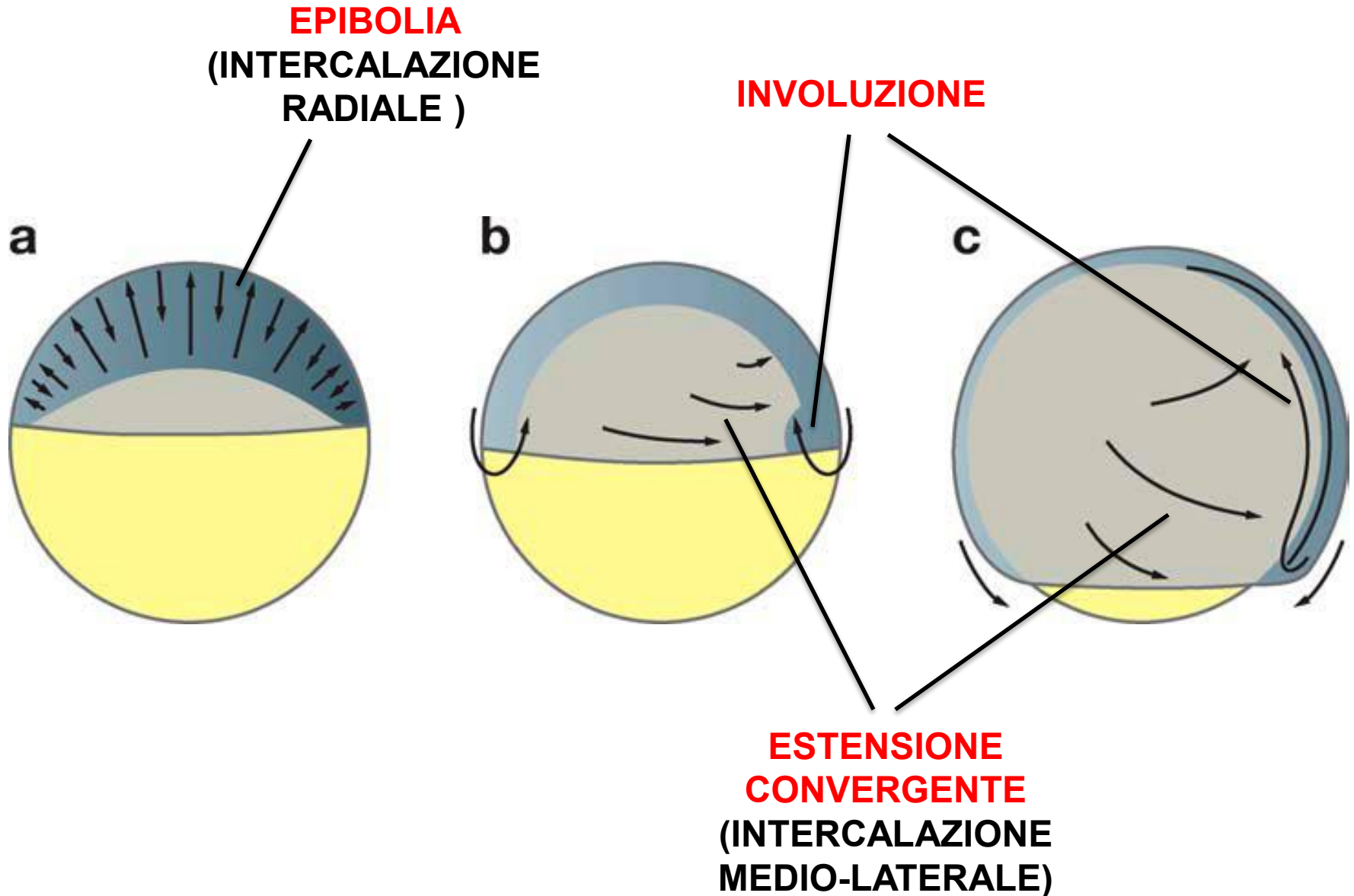
- Mesoderma
- Ectoderma, neuroectoderma
- Epiblasto pluripotente
- Mesendoderma: precursori sia del mesoderma sia dell'endoderma
- Endoderma
- Strato di rivestimento (EVL)

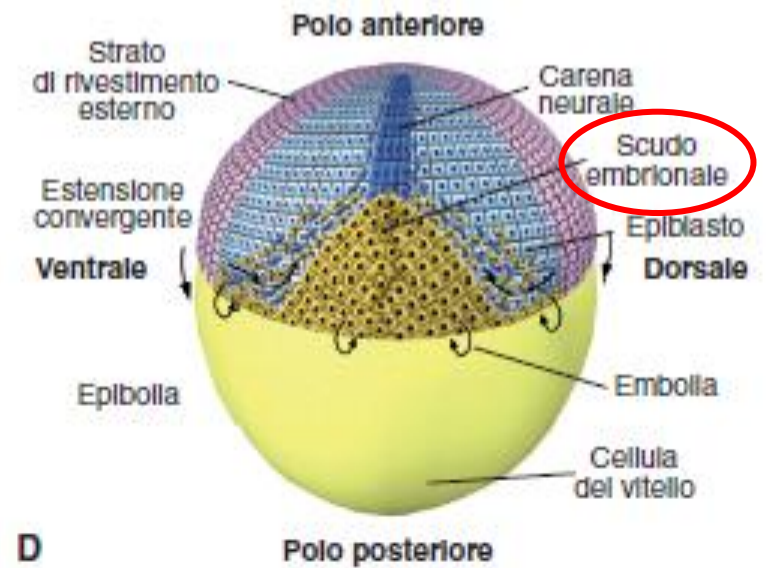
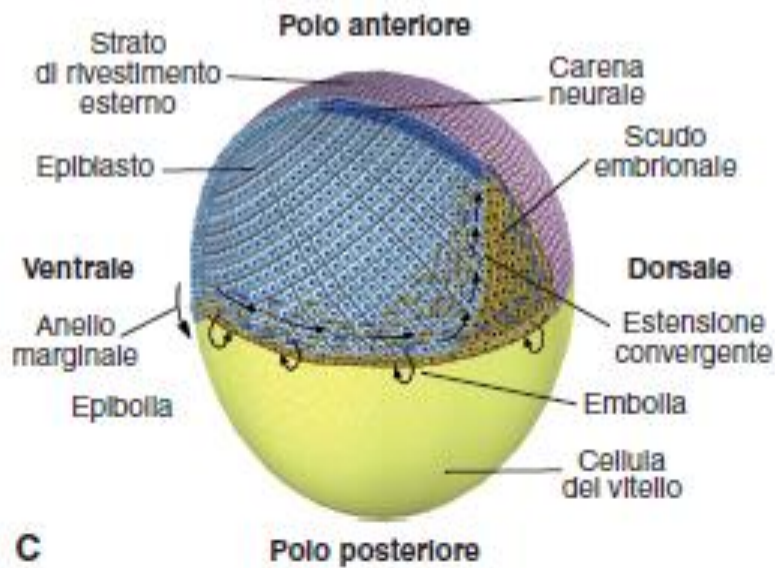
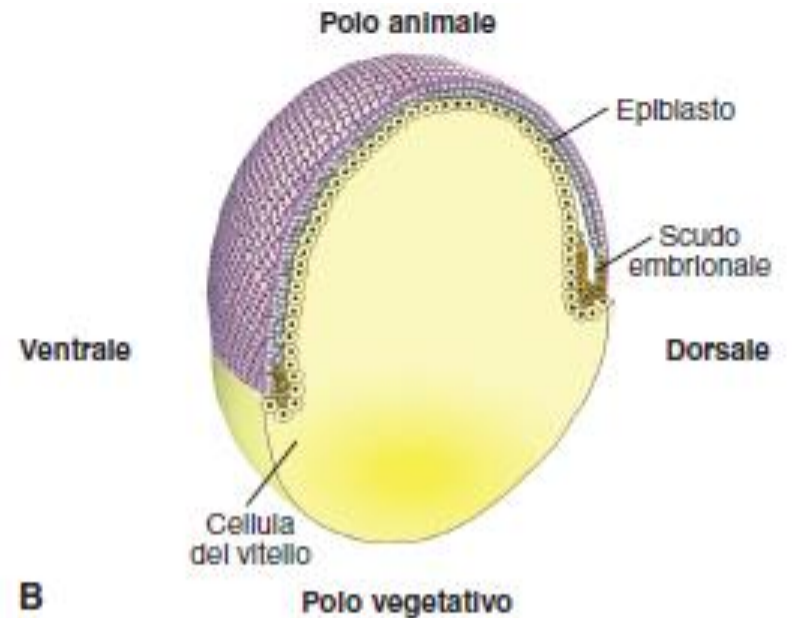
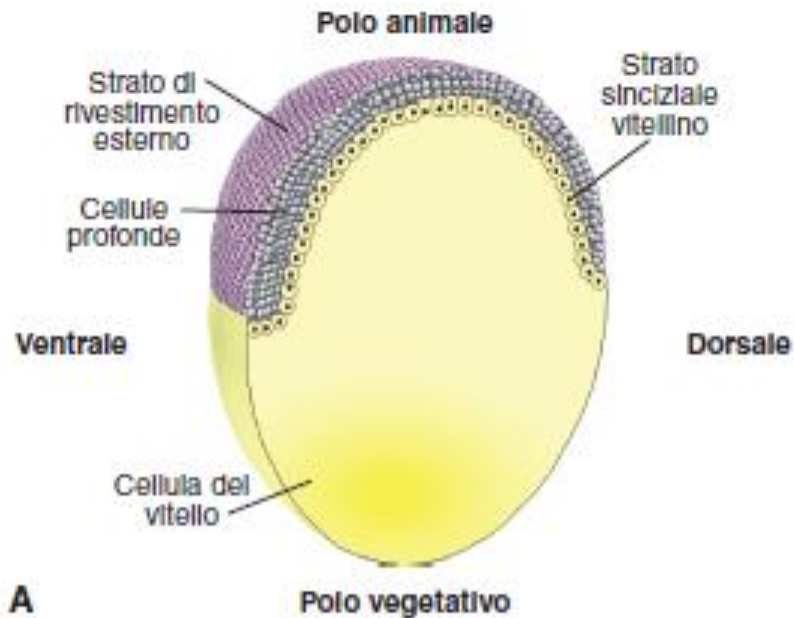


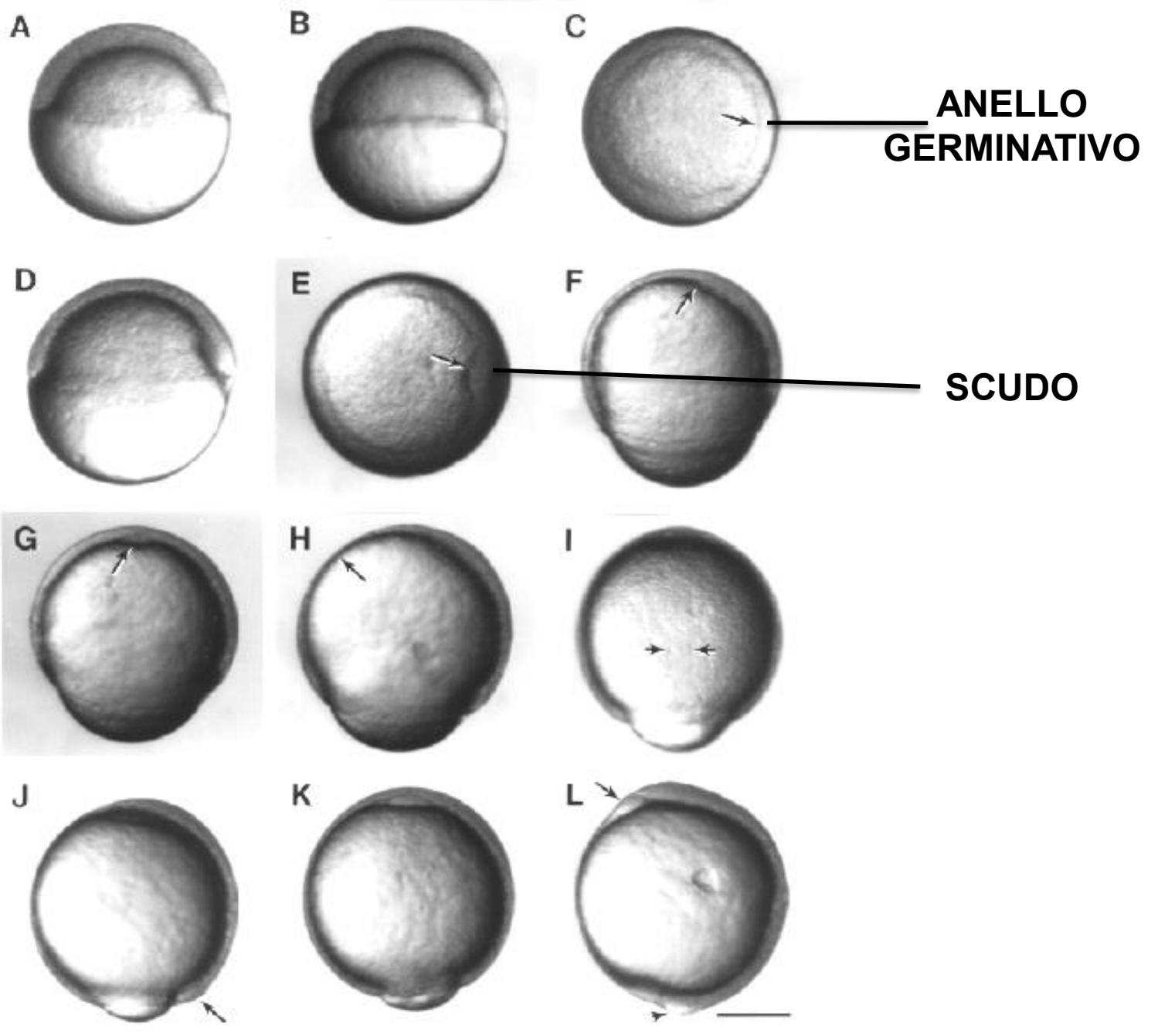
Anello germinativo

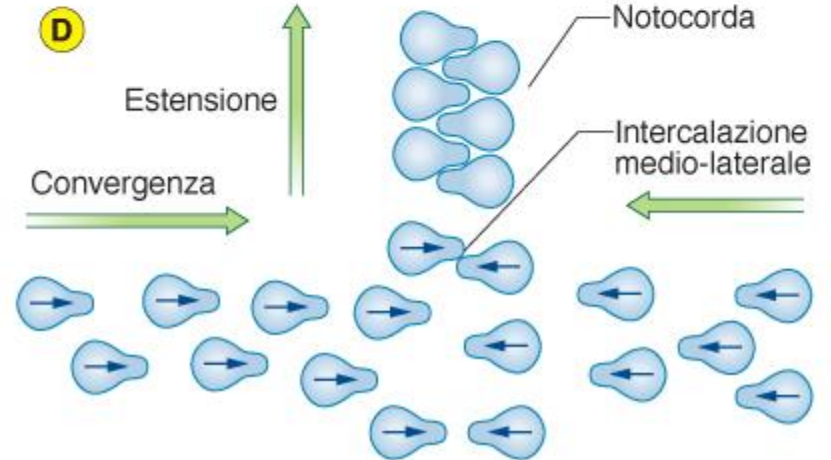
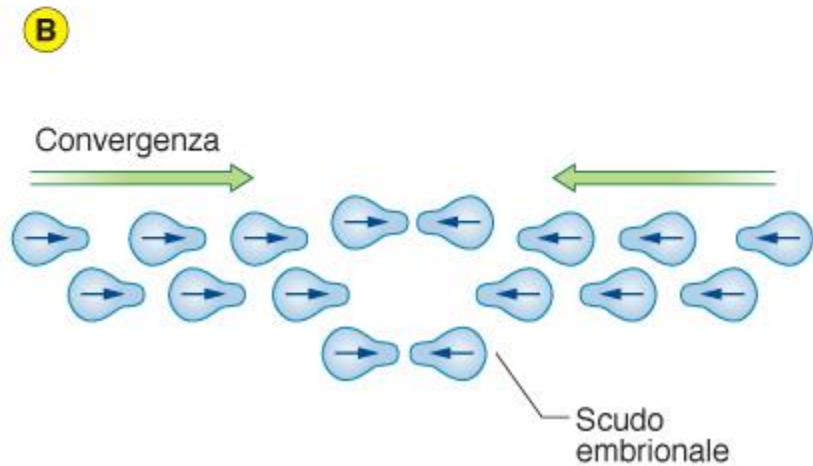
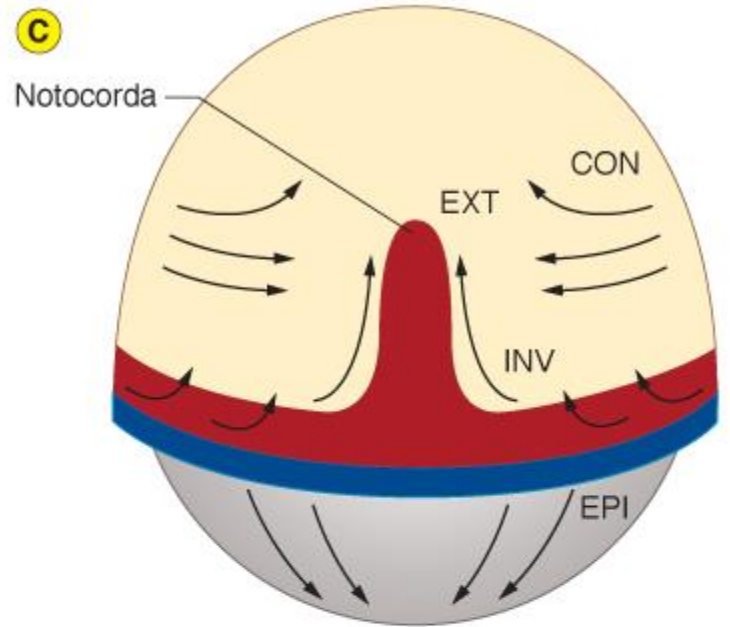
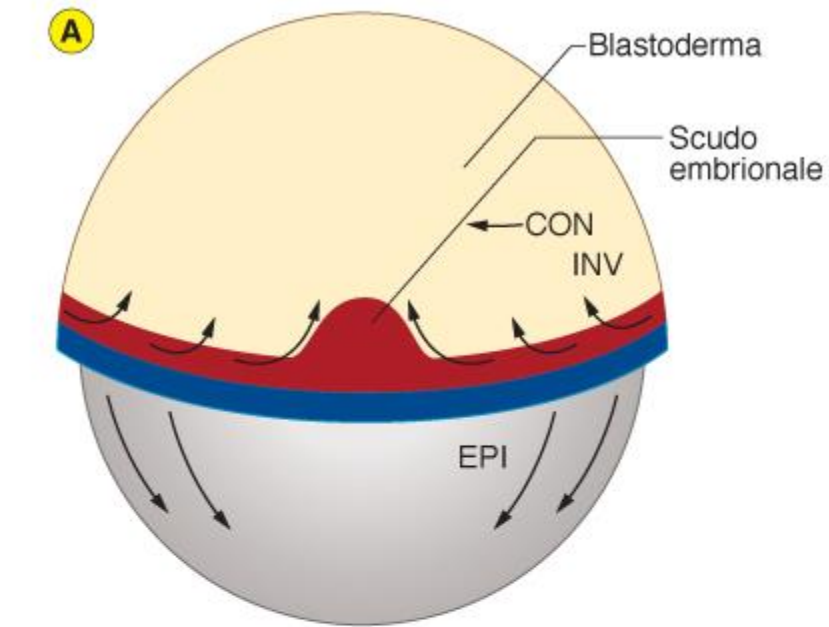


# MOVIMENTI CELLULARI DURANTE LA GASTRULAZIONE IN ZEBRAFISH





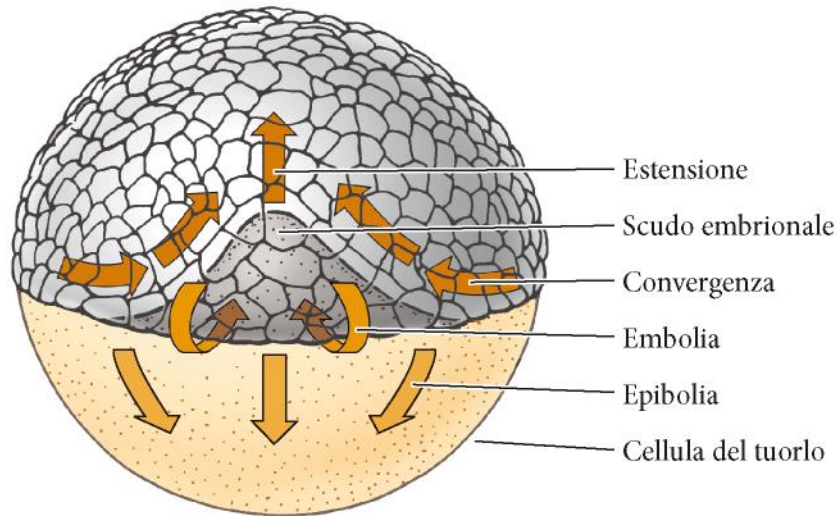




**LE STRUTTURE ASSIALI SI ALLUNGANO PER EFFETTO DI MOVIMENTI DI**  
**INTERCALAZIONE MEDIO-LATERALE DELLE CELLULE DORSALI**  
 Si riduce il numero di file ed aumenta la lunghezza → **estensione convergente**

(A)

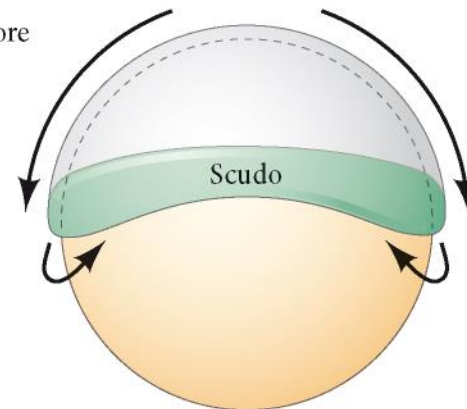
Polo animale



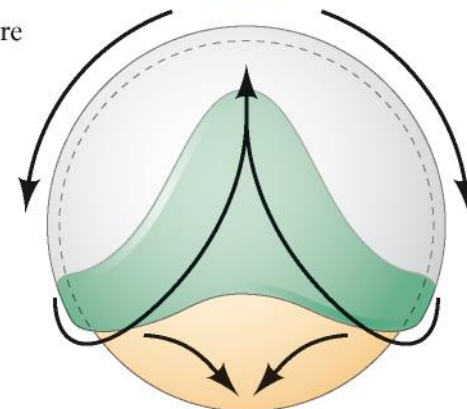
(B)

Visione dorsale

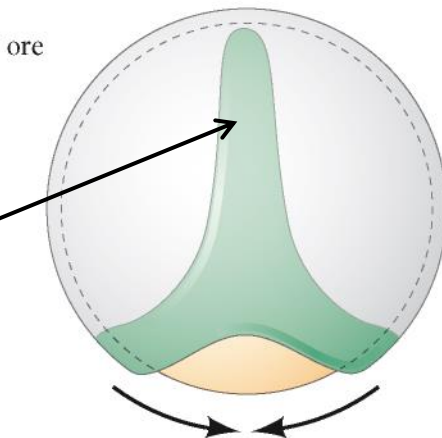
7,5 ore



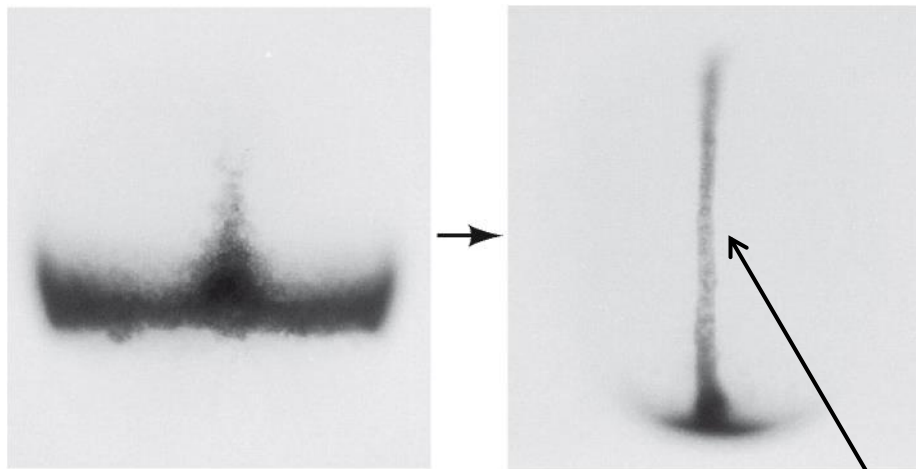
10 ore



12,5 ore

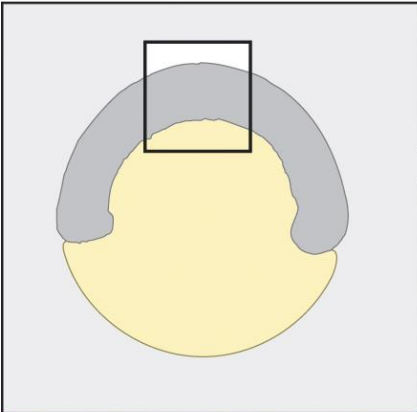


(C)

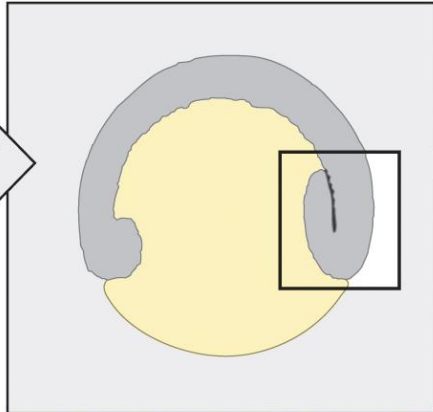
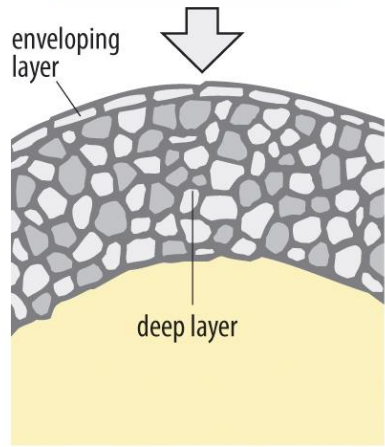
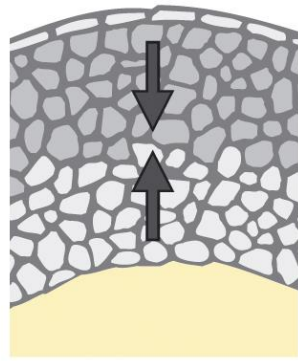


Notocorda

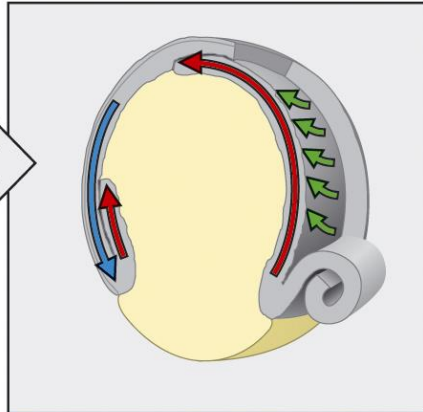
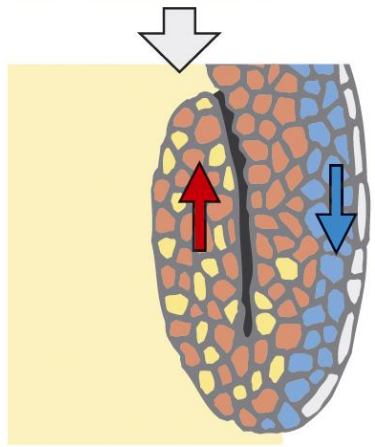
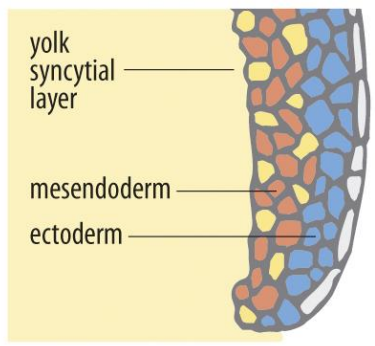
→ Convergence and extension  
→ Epiboly → Involution



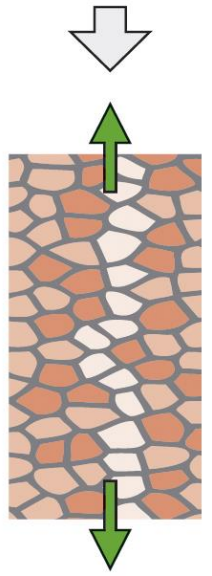
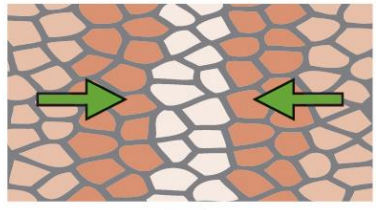
**Radial intercalation**

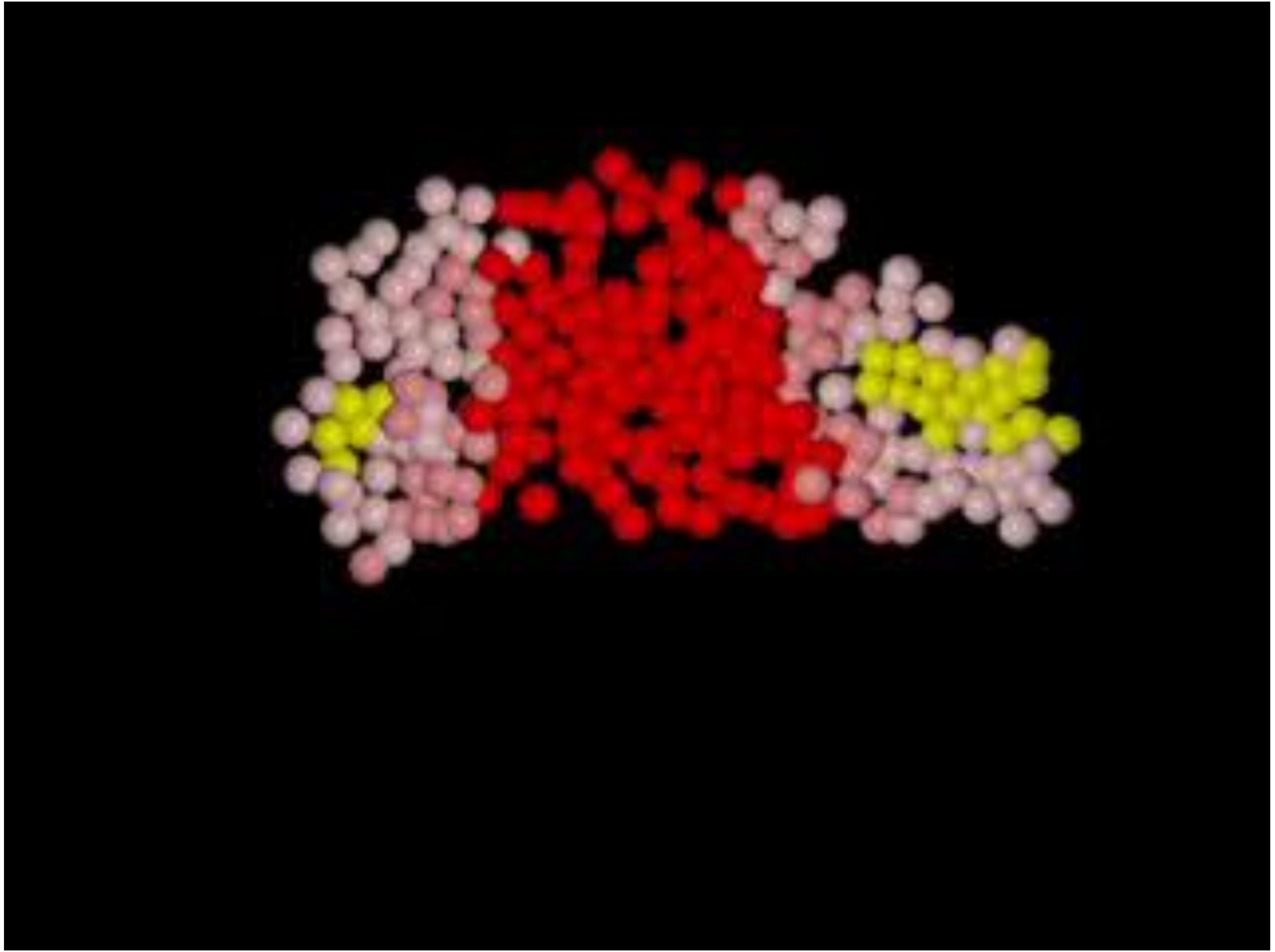


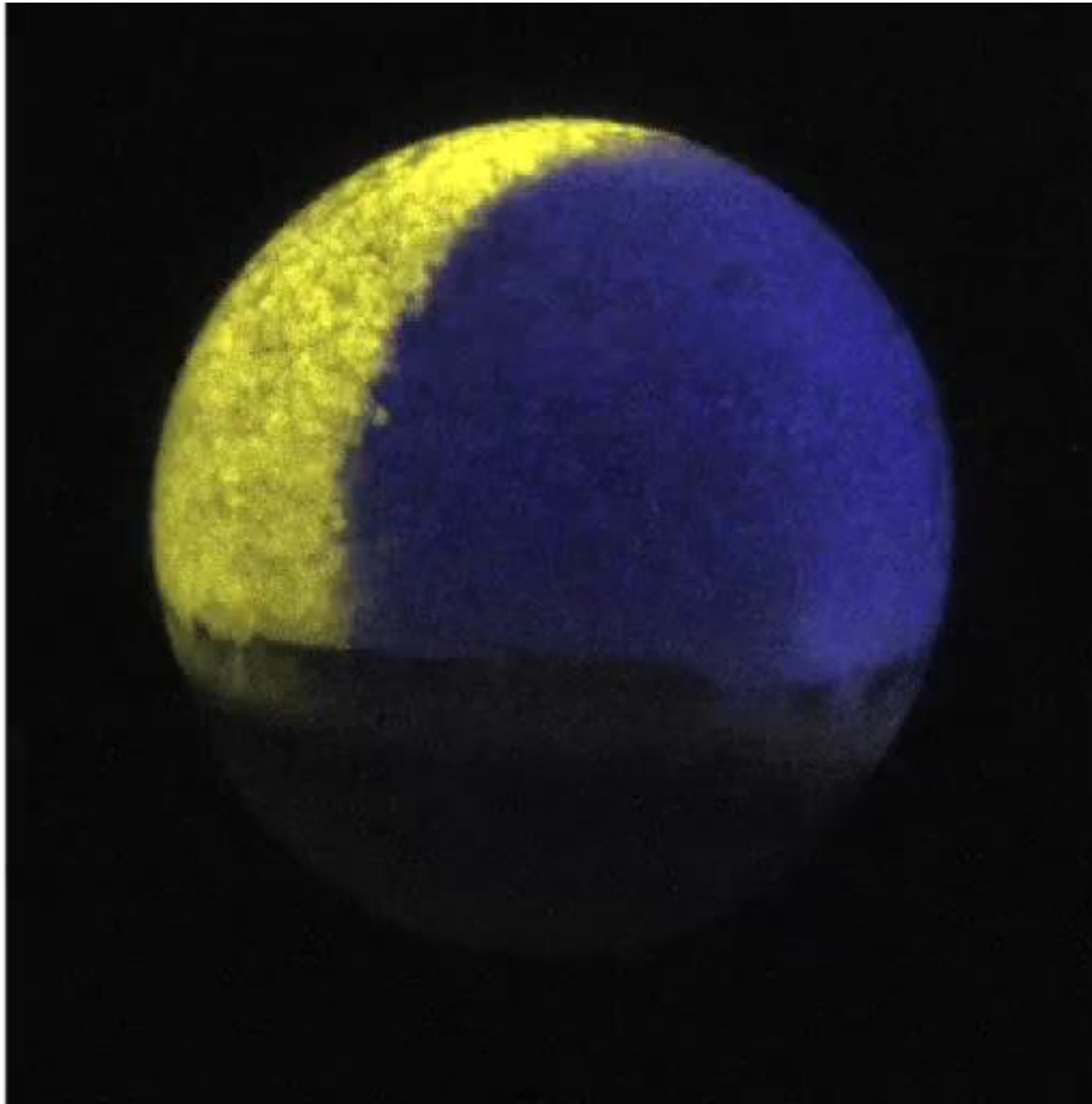
**Epiboly**



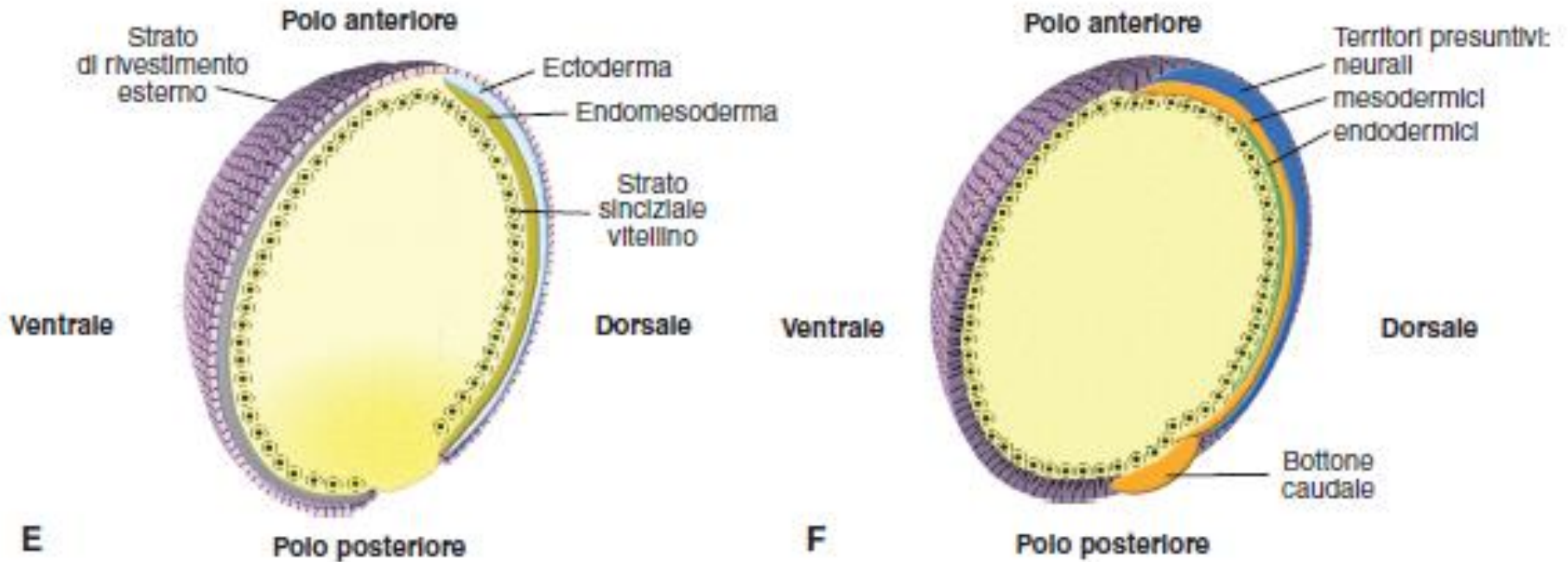
**Convergent extension**

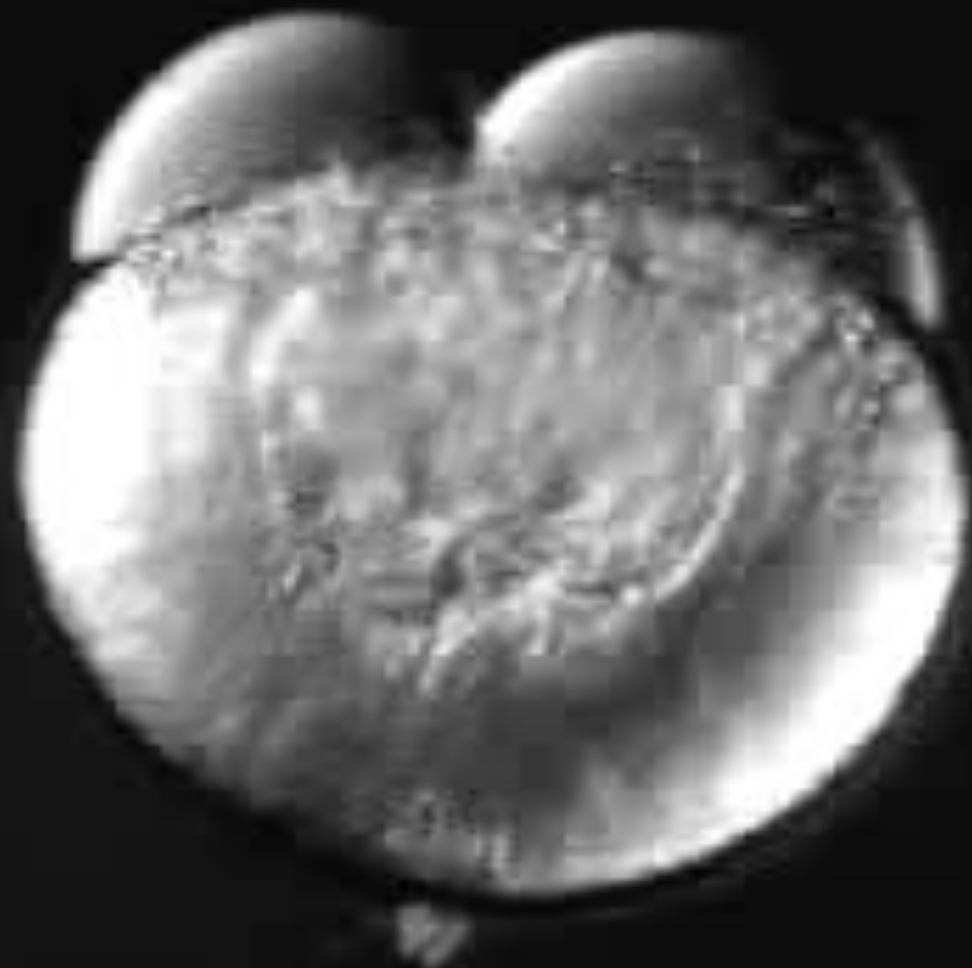






Dopo la gastrulazione l'ipoblasto si separa nei foglietti mesodermico ed endodermico e si forma il tubo digerente





# FASI DELLA NEURULAZIONE IN ZEBRAFISH

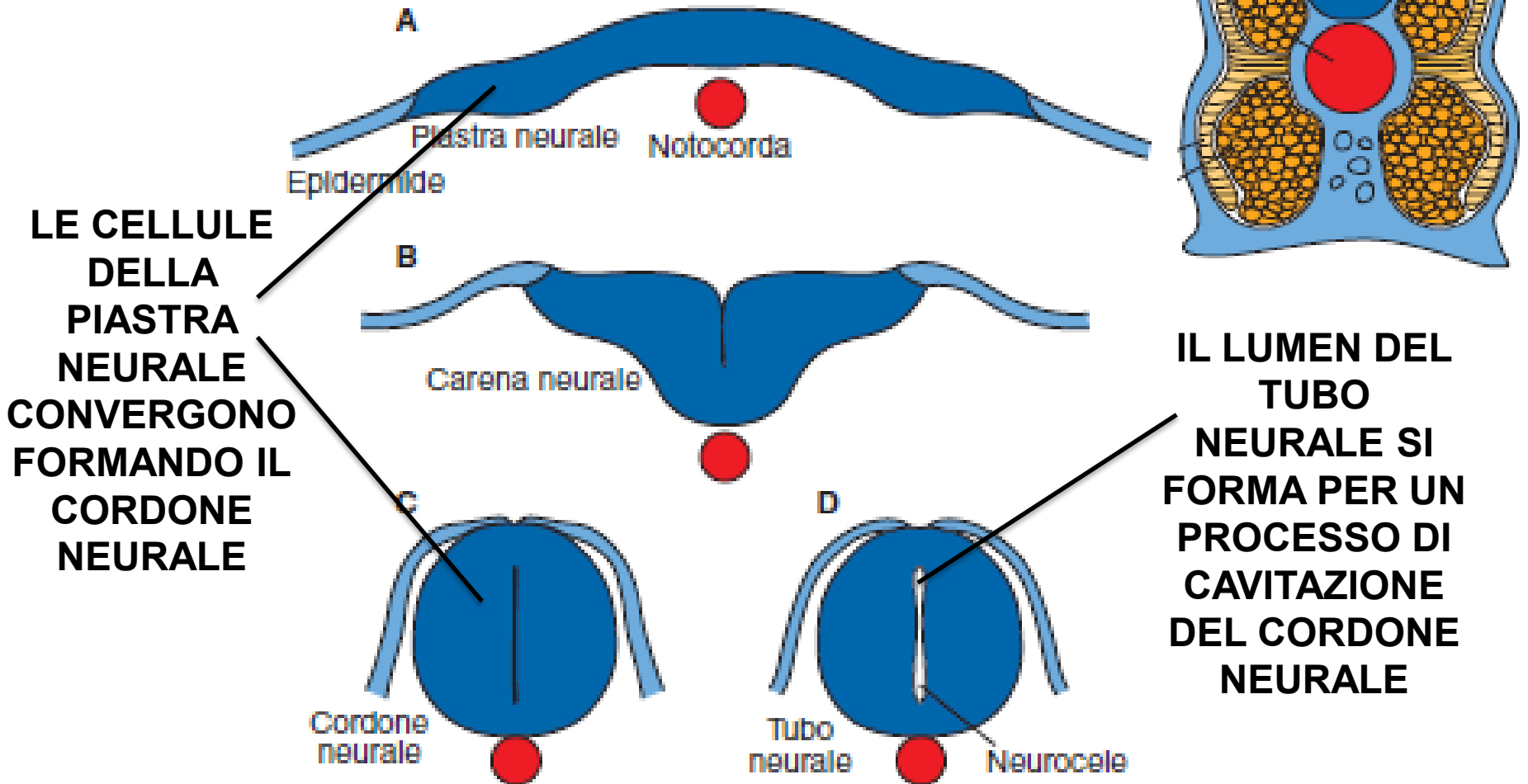
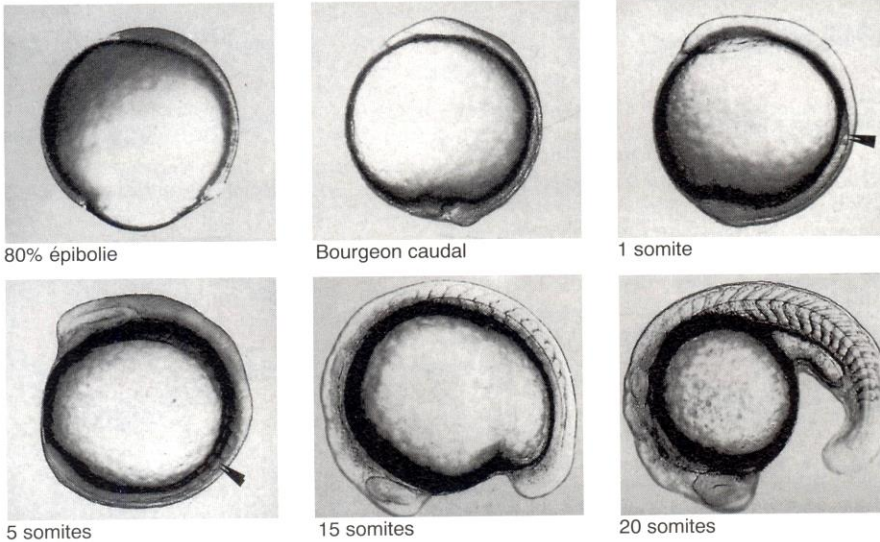
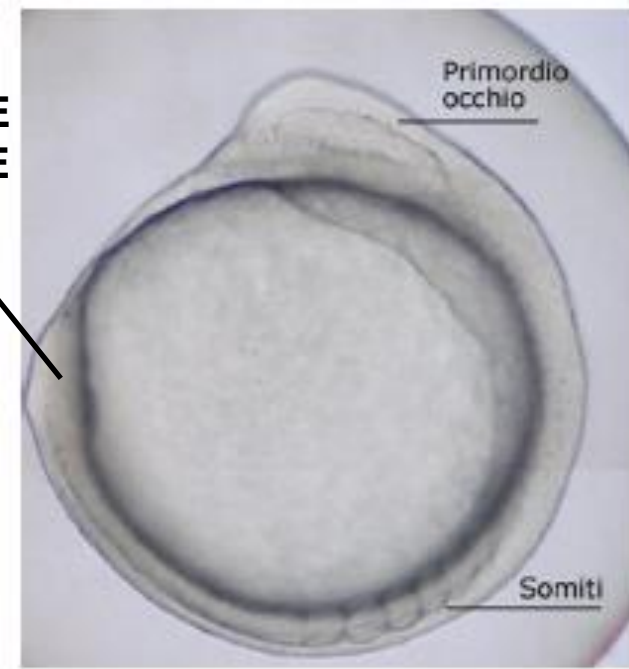


Figura 8

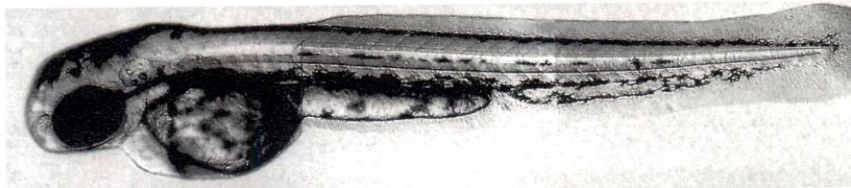
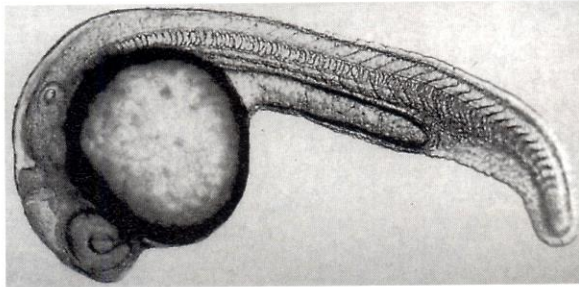
a) Formation du jeune bourgeon caudal et somitogénèse



**BOTTONE CAUDALE**



b) Redressement du bourgeon caudal

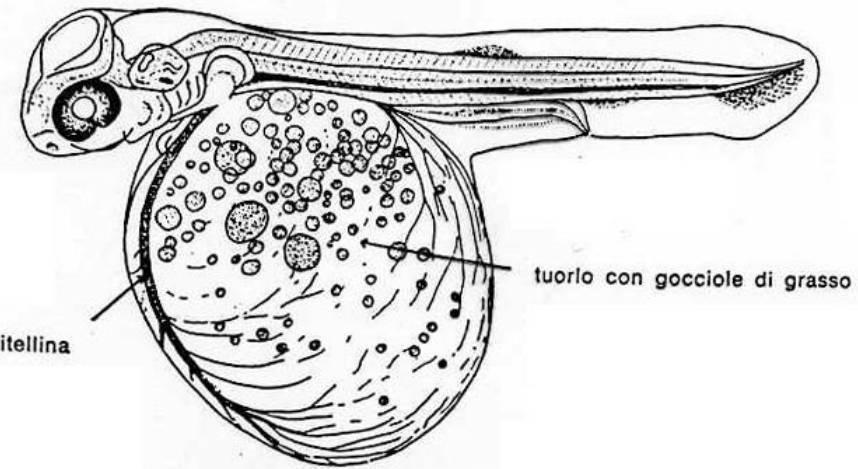


Bourgeon caudal âgé

c) Formation de la larve nageuse



(d'après Boulekbache, 1998)



**Sacco del tuorlo**