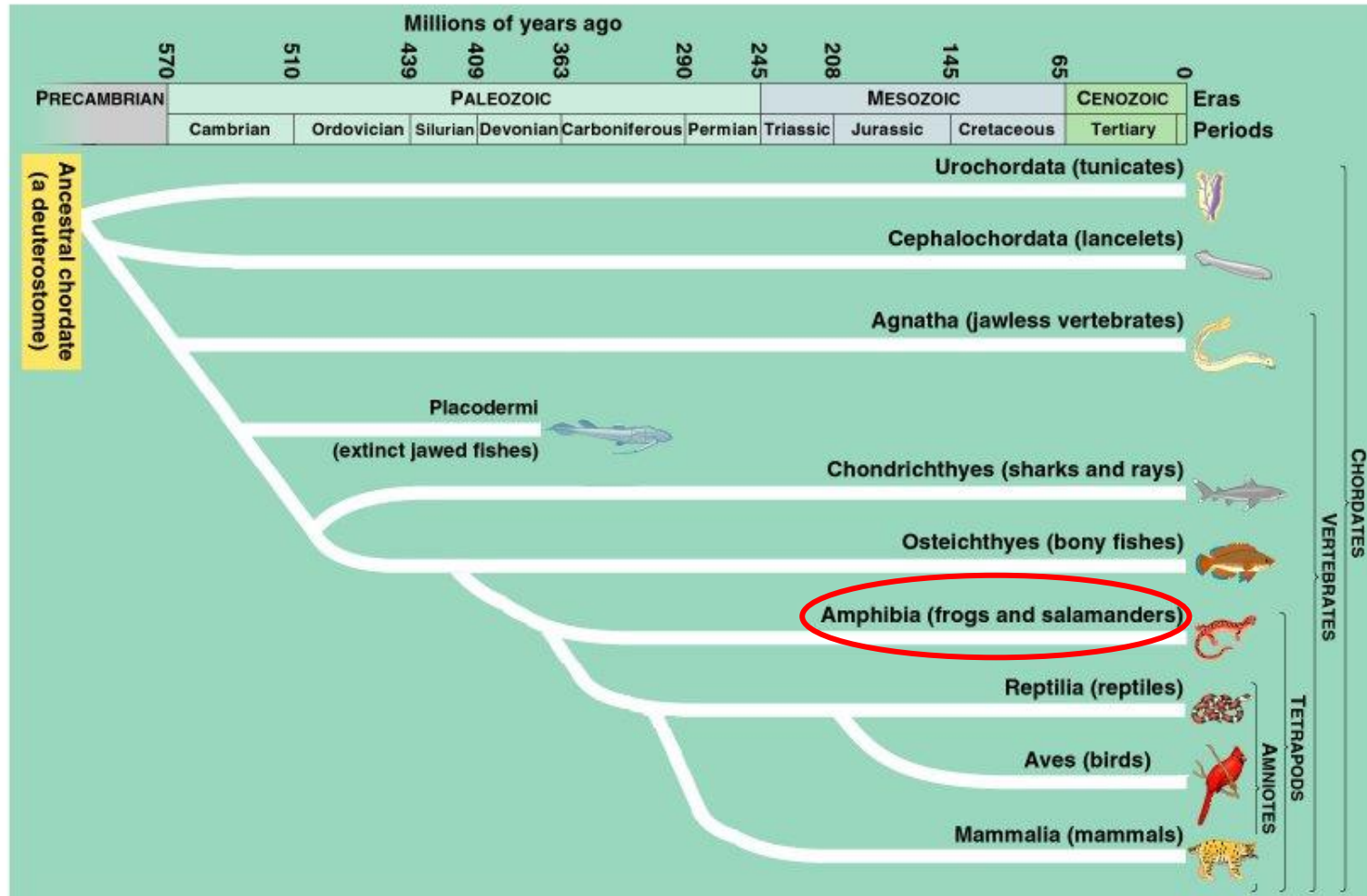
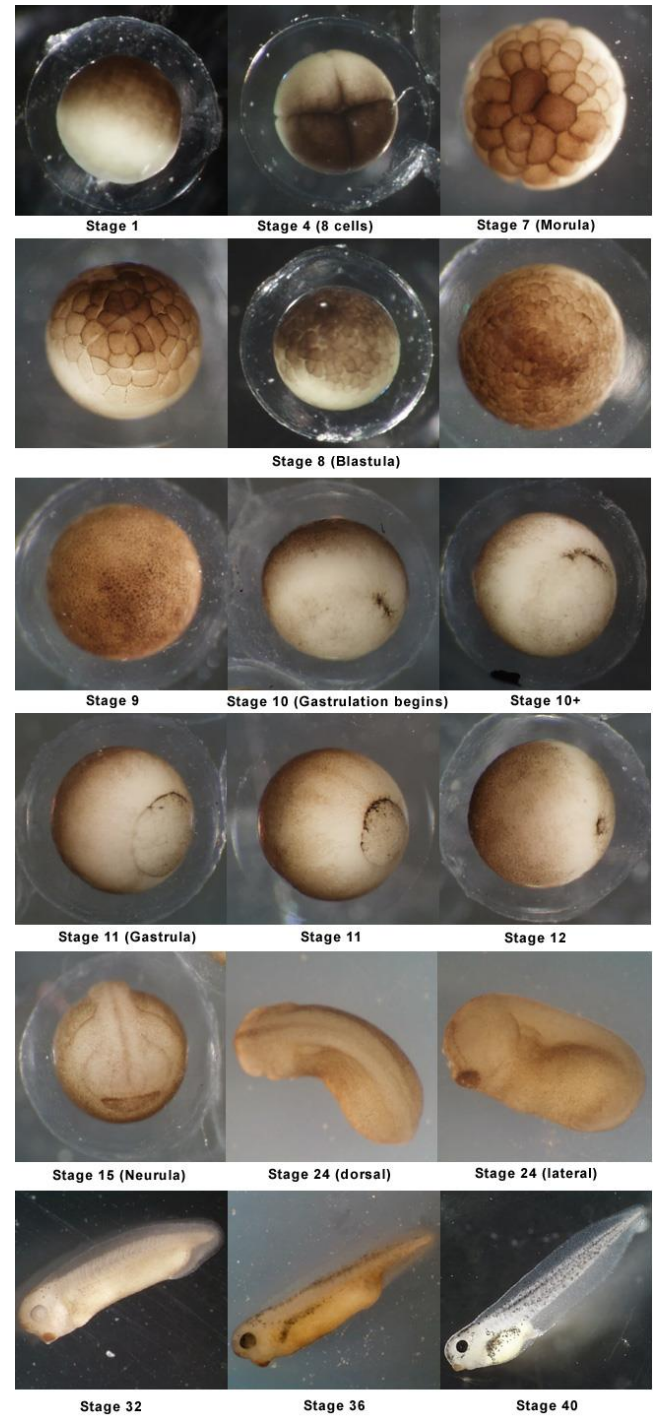
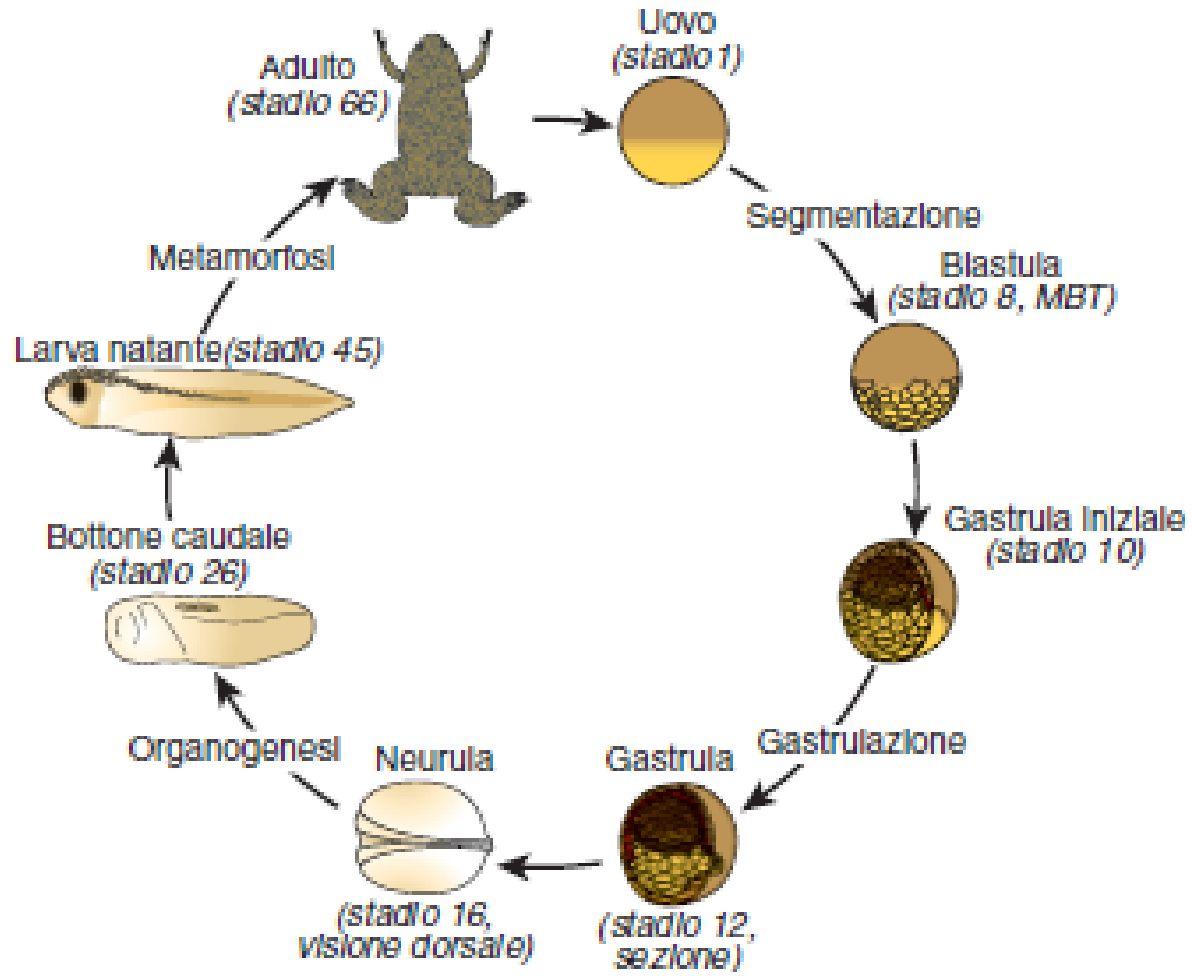


FILOGENESI DEI CORDATI

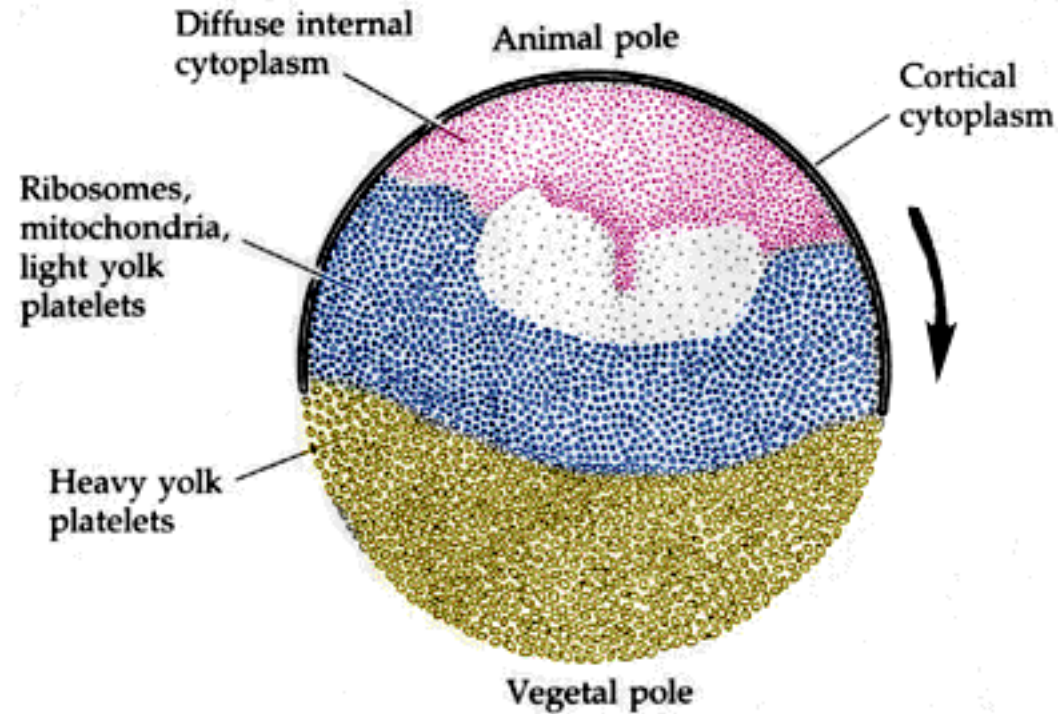
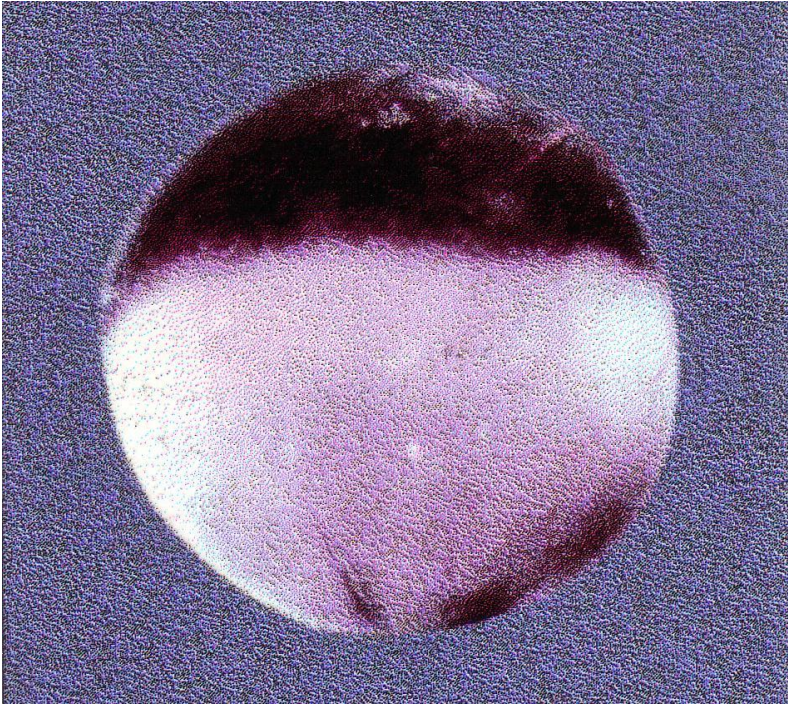


XENOPUS LAEVIS: ANFIBIO ANURO SVILUPPO INDIRETTO

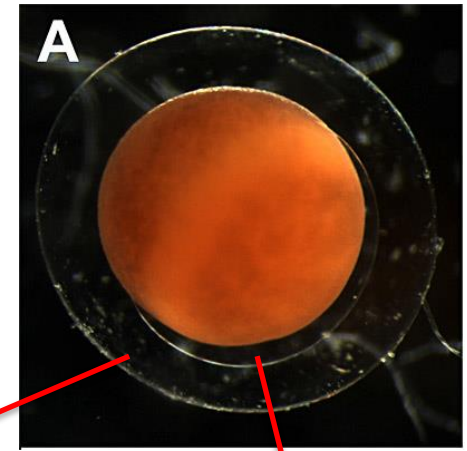
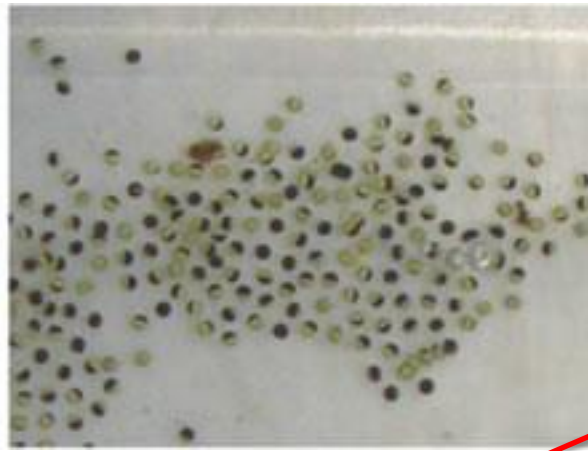


Uovo mesolecitico

Il vitello e' maggiormente concentrato al polo vegetativo
Il citoplasma corticale animale e' ricco di melanina

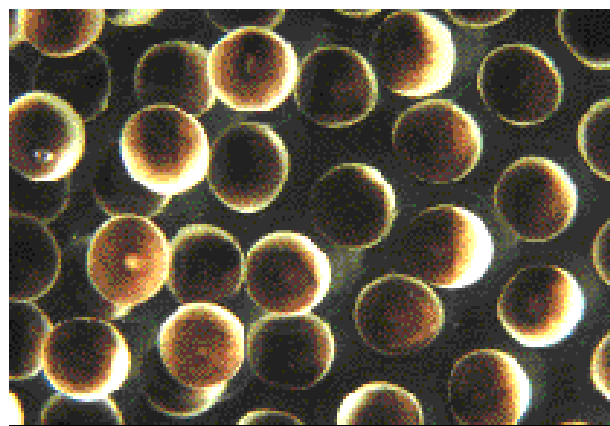
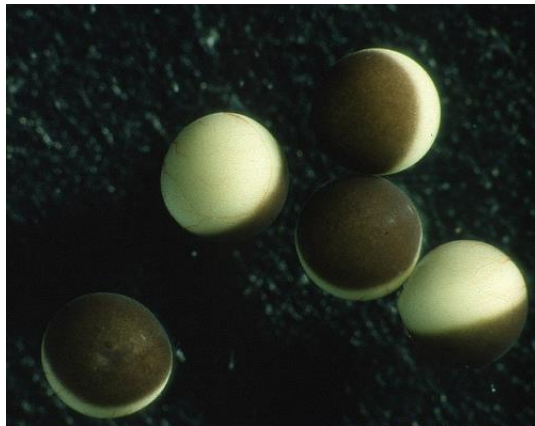


FECONDAZIONE E SVILUPPO AVVENGONO ESTERNAMENTE

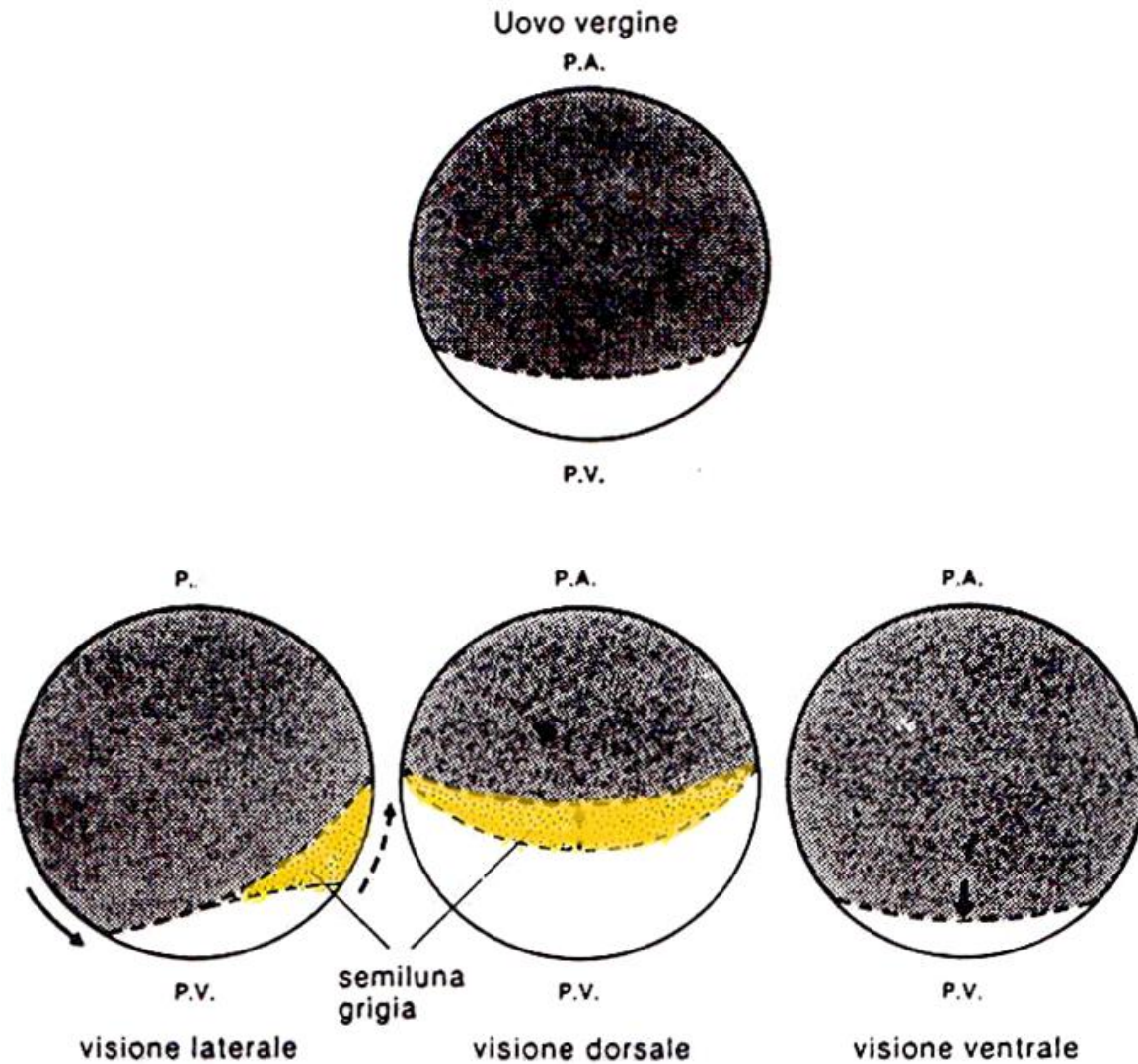


INVOLUCRO GELATINOSO

INVOLUCRO VITELLINO



ROTAZIONE CORTICALE



LA FECONDAZIONE ATTIVA LA ROTAZIONE CORTICALE

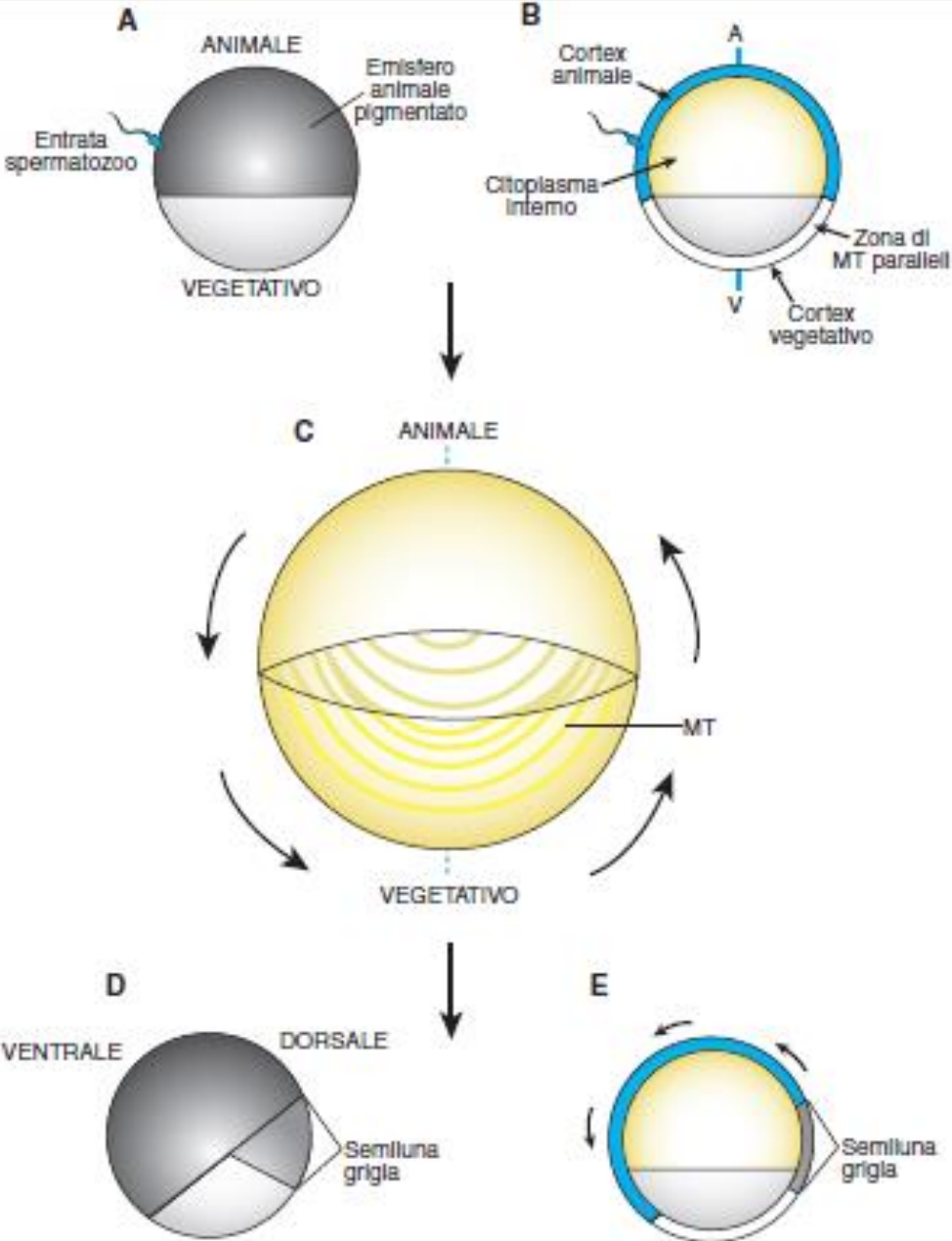
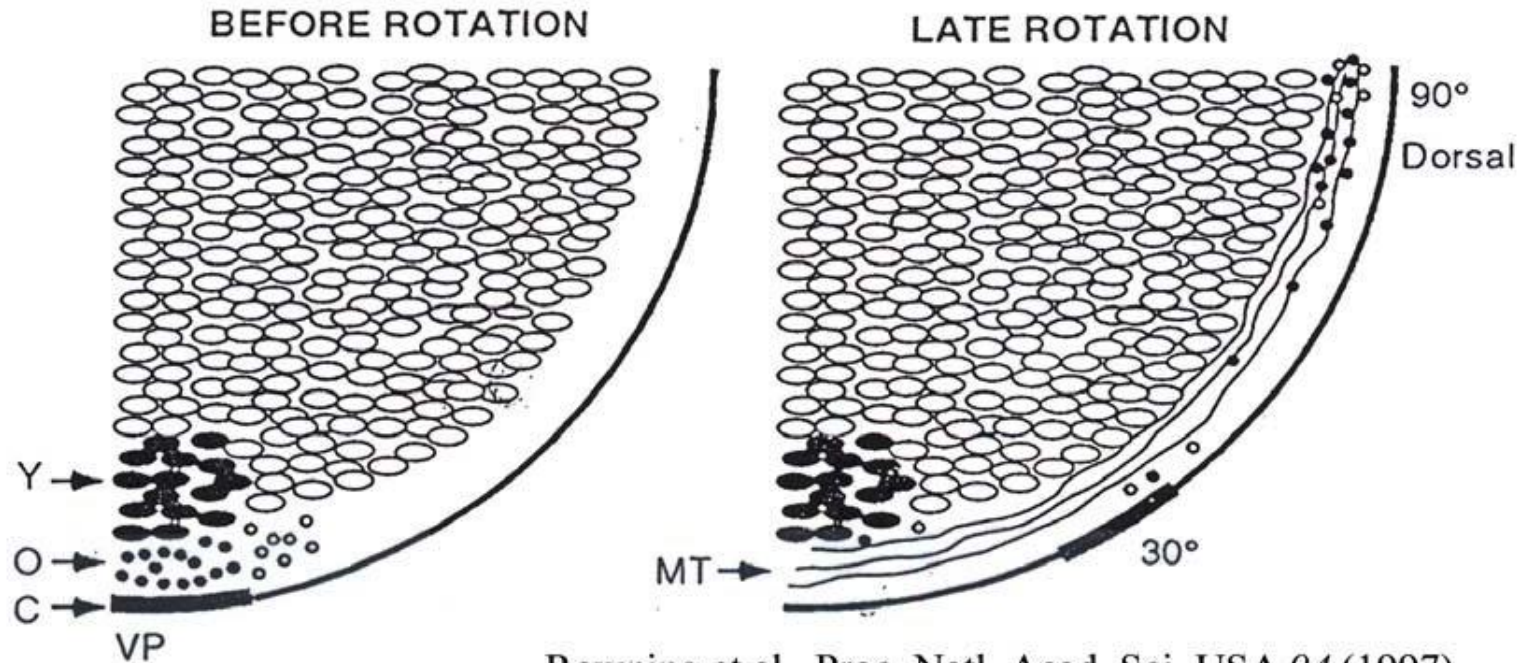


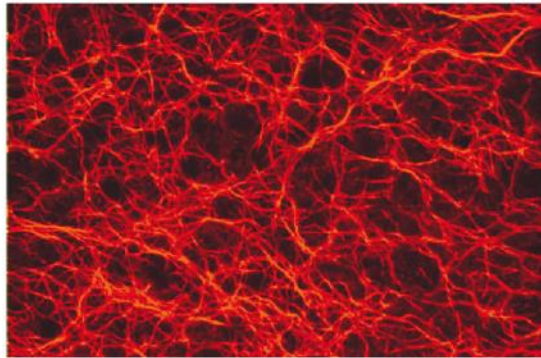
Figura 1

LA ROTAZIONE CORTICALE AVVIENE MEDIANTE UNA RIORGANIZZAZIONE DEI MICROTUBULI

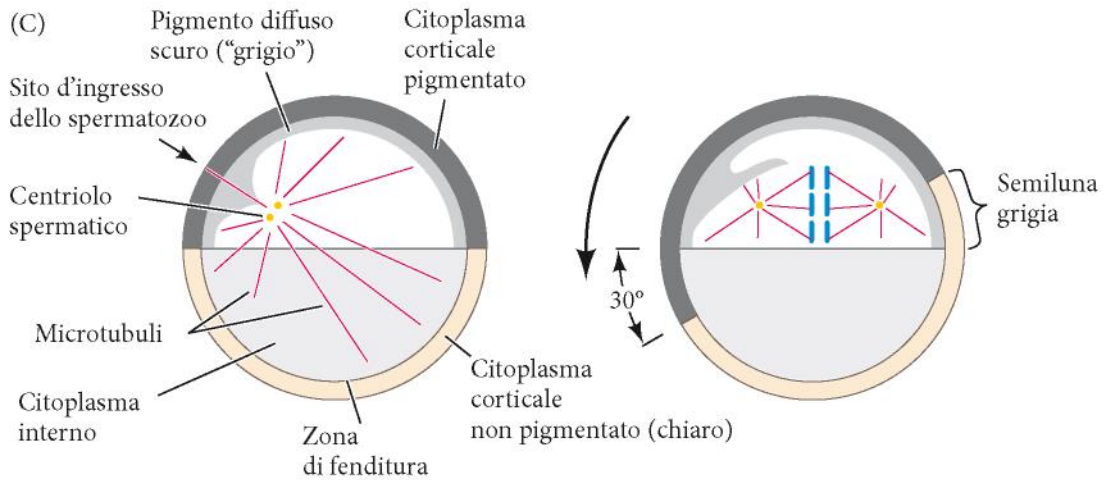
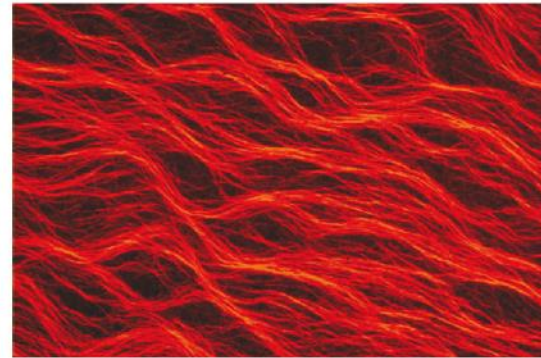


Rowning et al., Proc. Natl. Acad. Sci. USA 94 (1997)

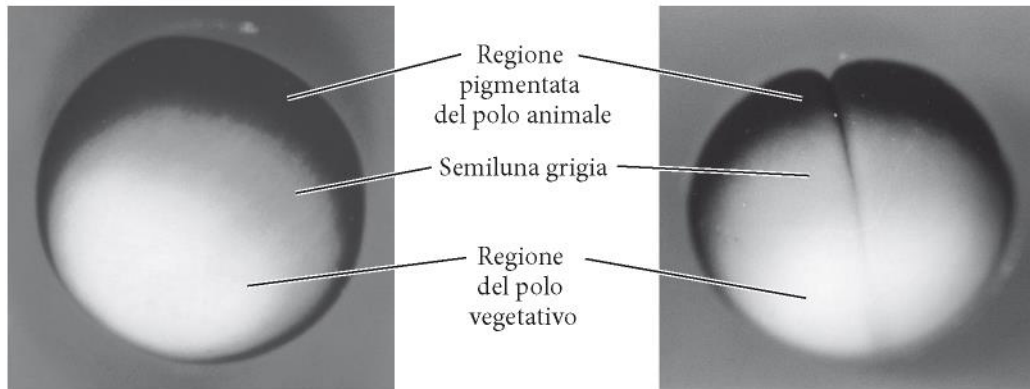
(A) 0,50



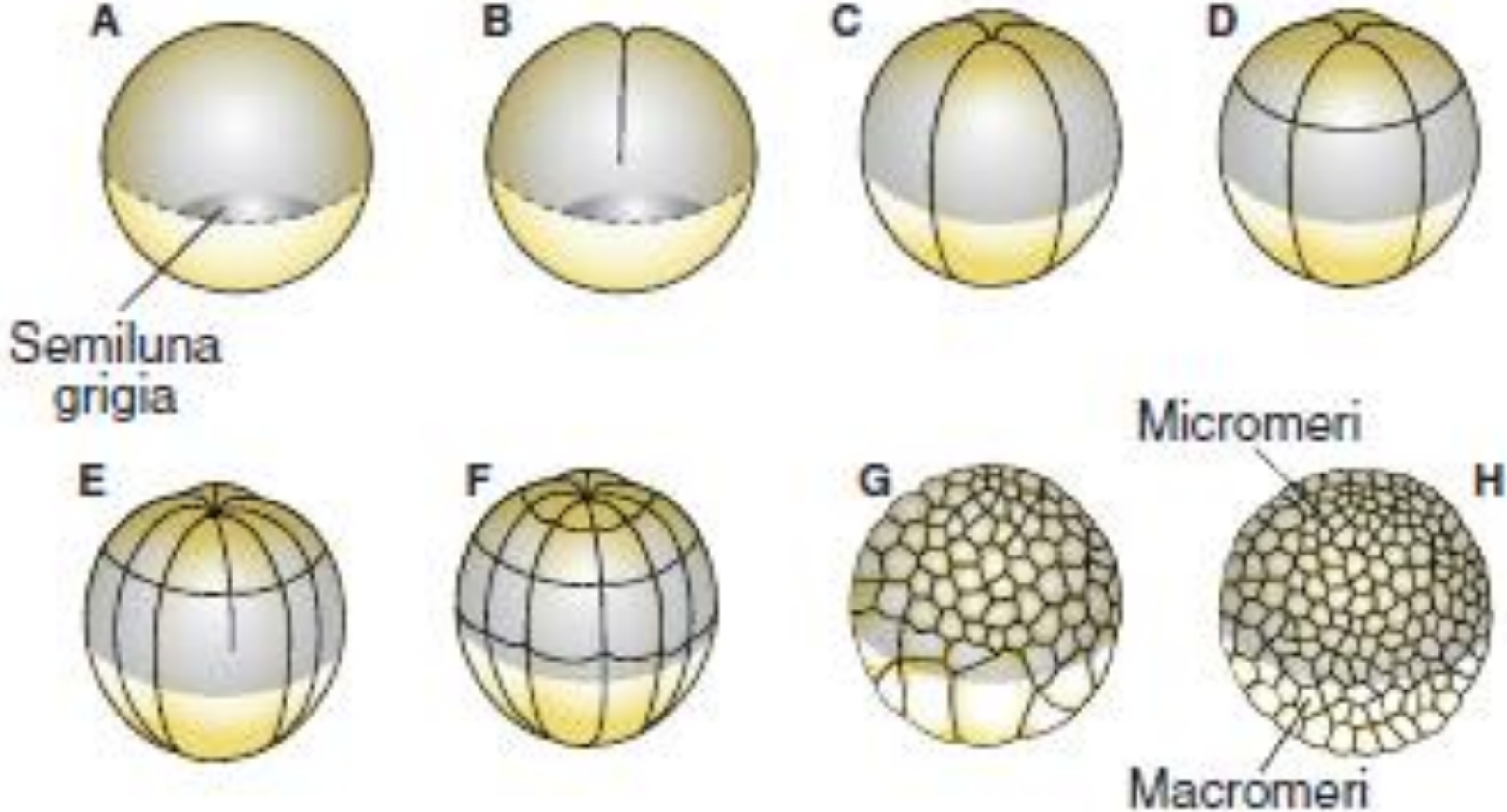
(B) 0,70



(D)

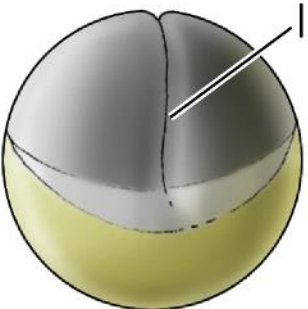


SEGMENTAZIONE OBLASTICA RADIALE INEGUALE

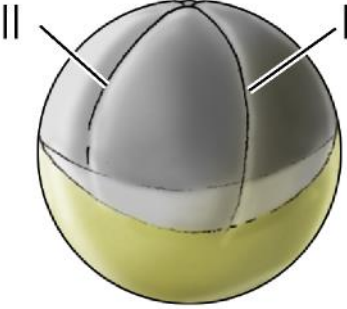


SEGMENTAZIONE OBLASTICA RADIALE INEGUALE

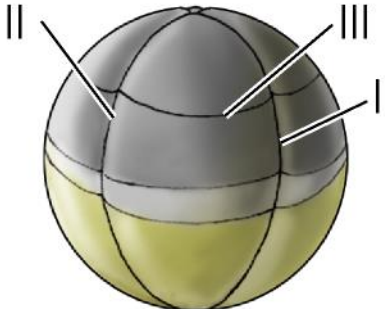
(A)



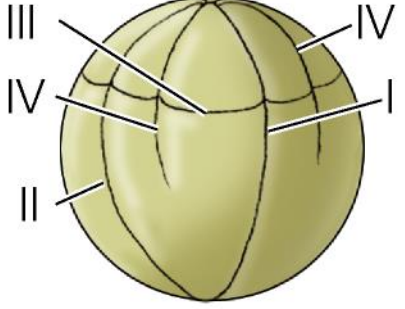
(B)



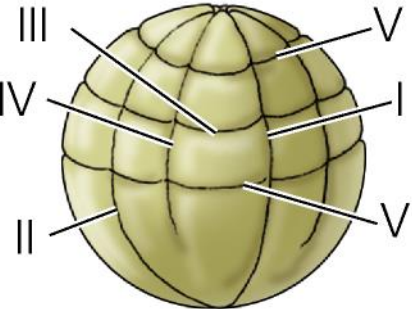
(C)



(D)



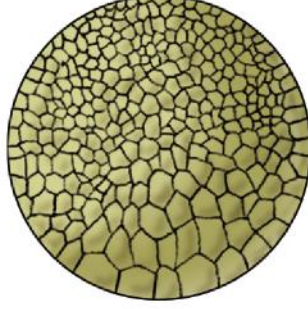
(E)



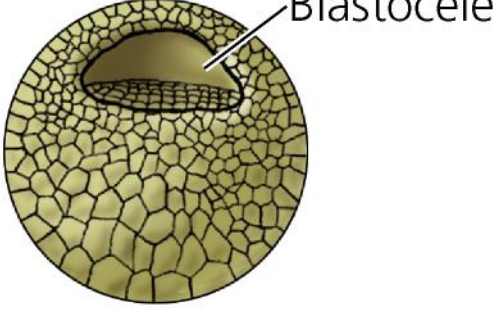
(F)

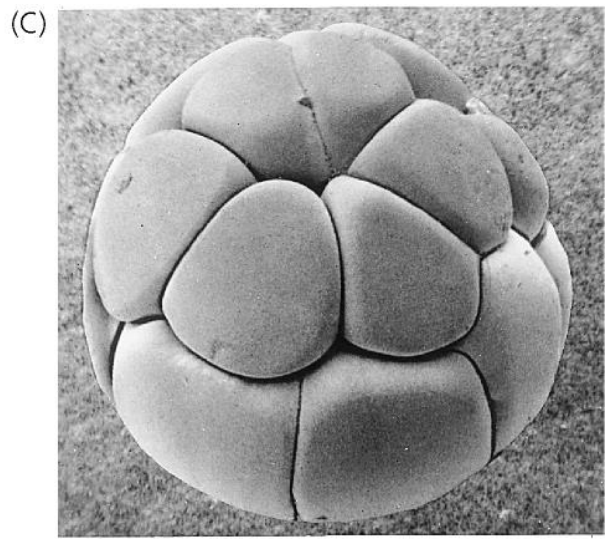
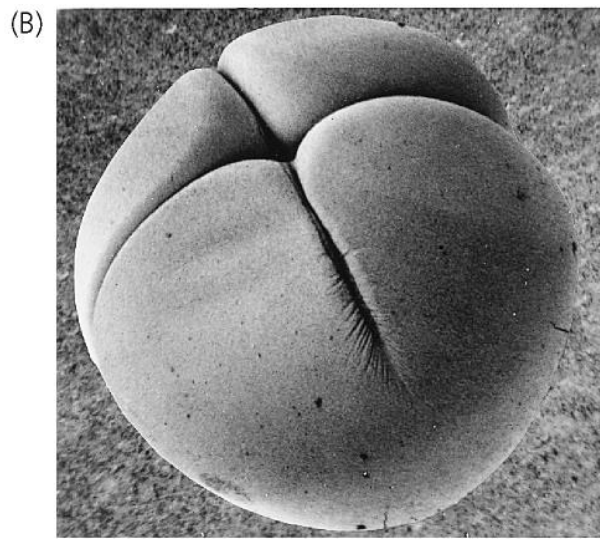
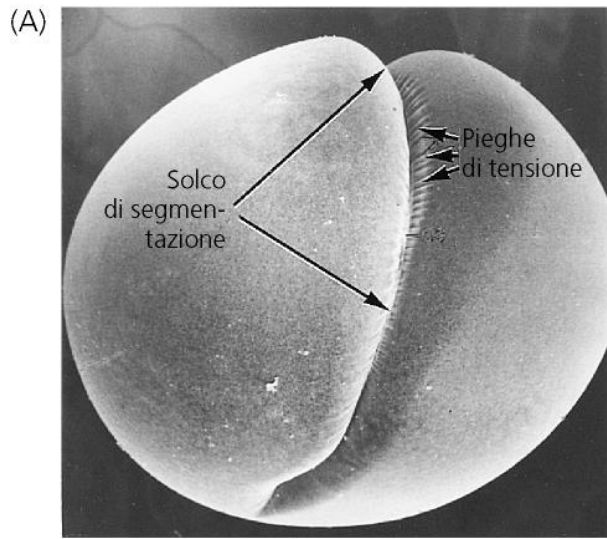


(G)



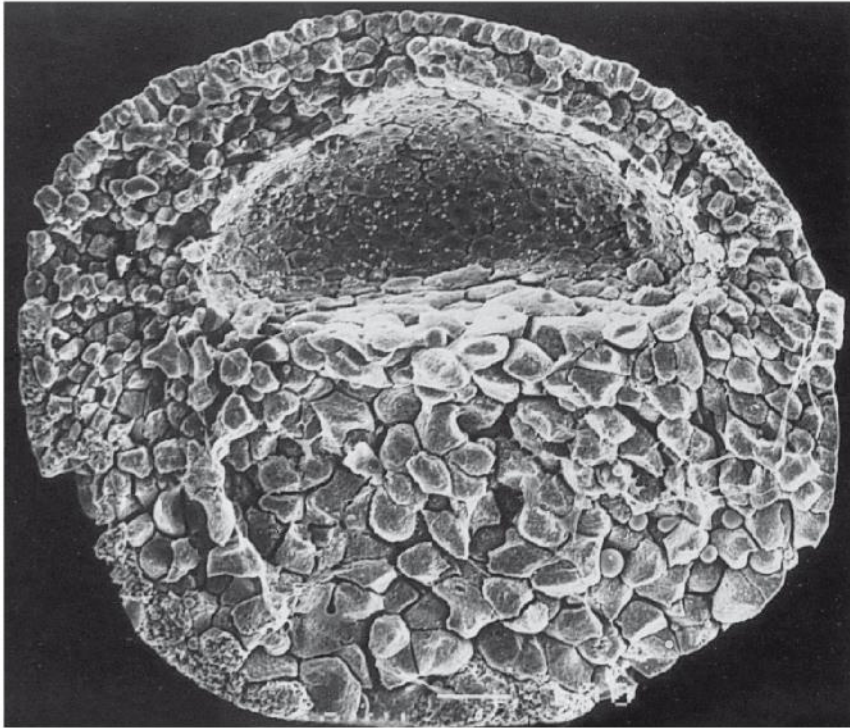
(H)



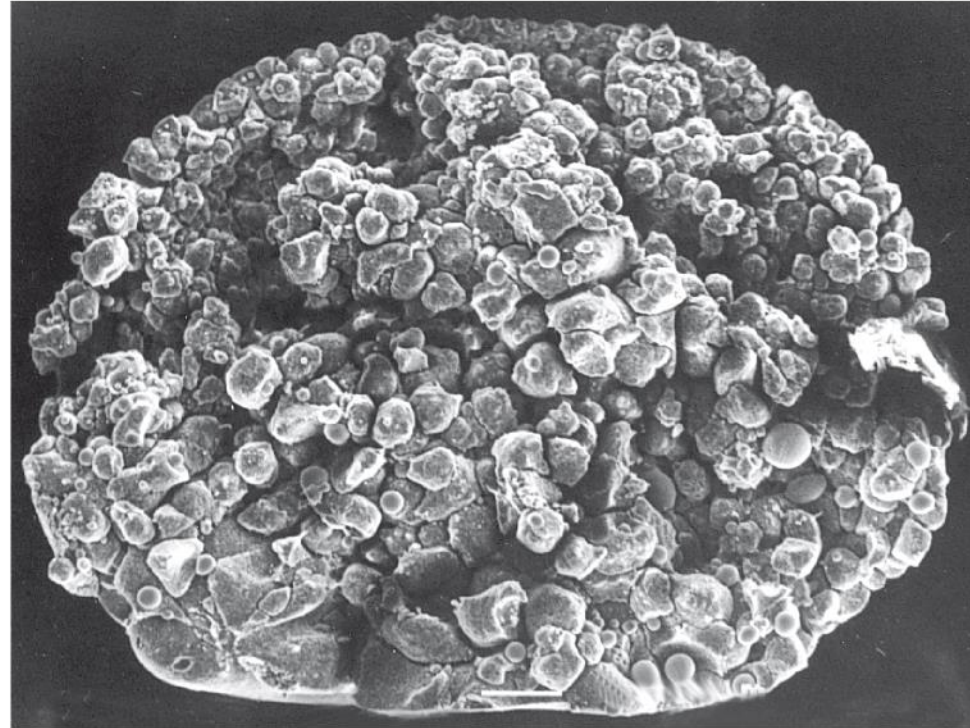


L'interazione fra i blastomeri e' promossa da molecole di adesione (Caderine)

(A)

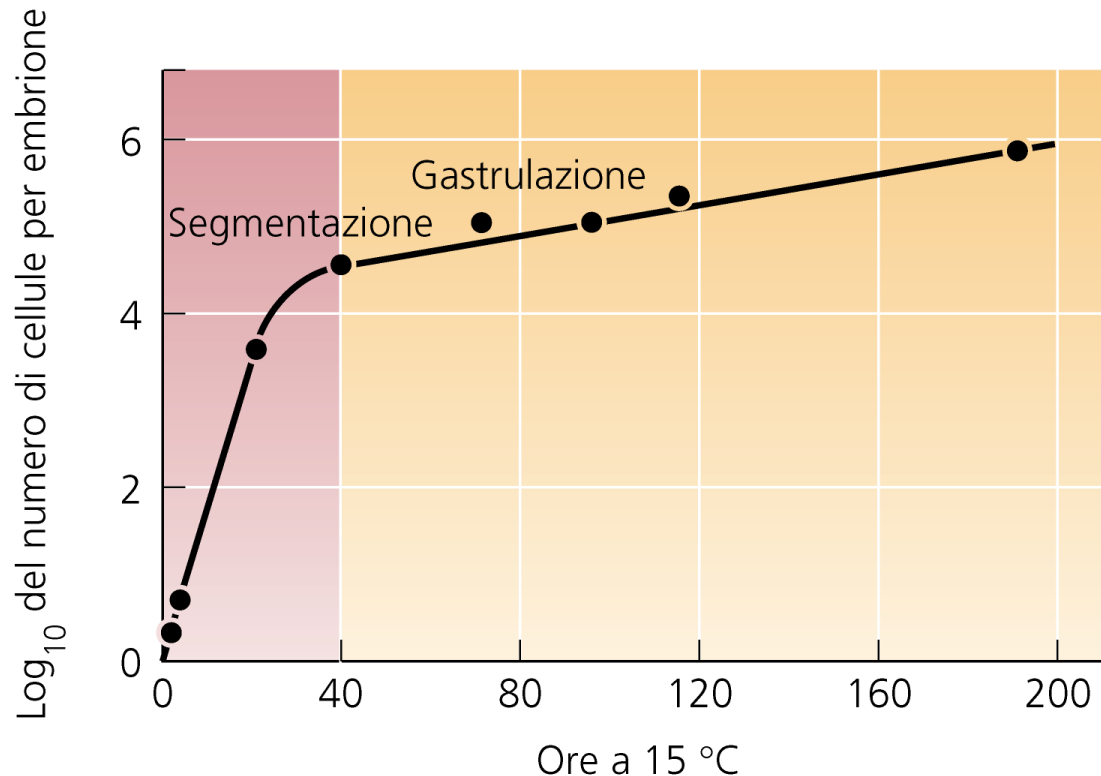


(B)



CARATTERISTICHE DELLA SEGMENTAZIONE

- Pluricellularita'
- Segregazione di determinanti citoplasmatici
- E' caratterizzata da divisioni veloci e sincrone
- Il ciclo è bifasico M → S

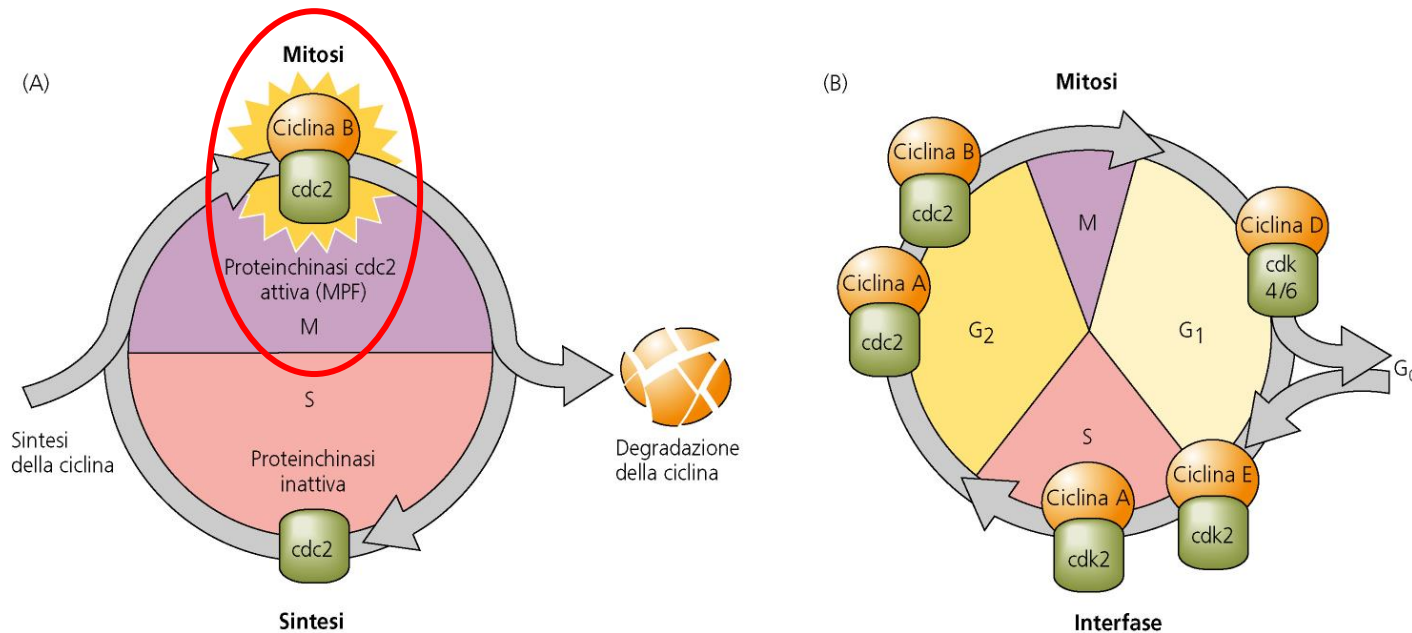


1) La ciclina B si accumula in fase S e si degrada dopo l'entrata in M

2) Il ciclo bifasico utilizza ciclina materna (mRNA) e proteine regolatrici materne

3) Quando si esauriscono le molecole materne si ha l'attivazione del genoma zigotico, il ciclo rallenta e si normalizza (G1 e G2)

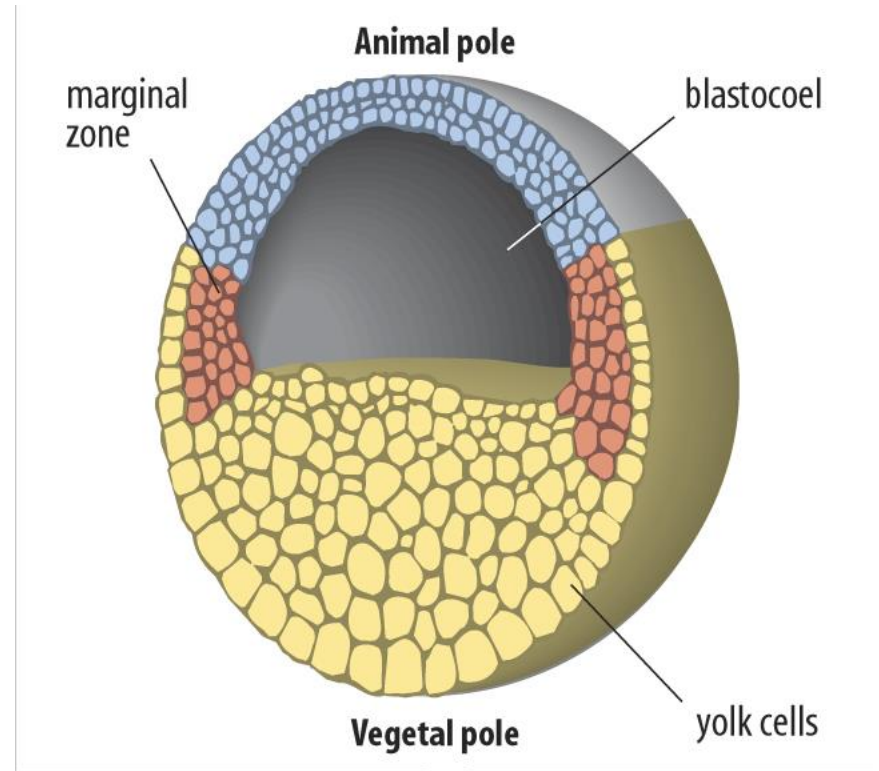
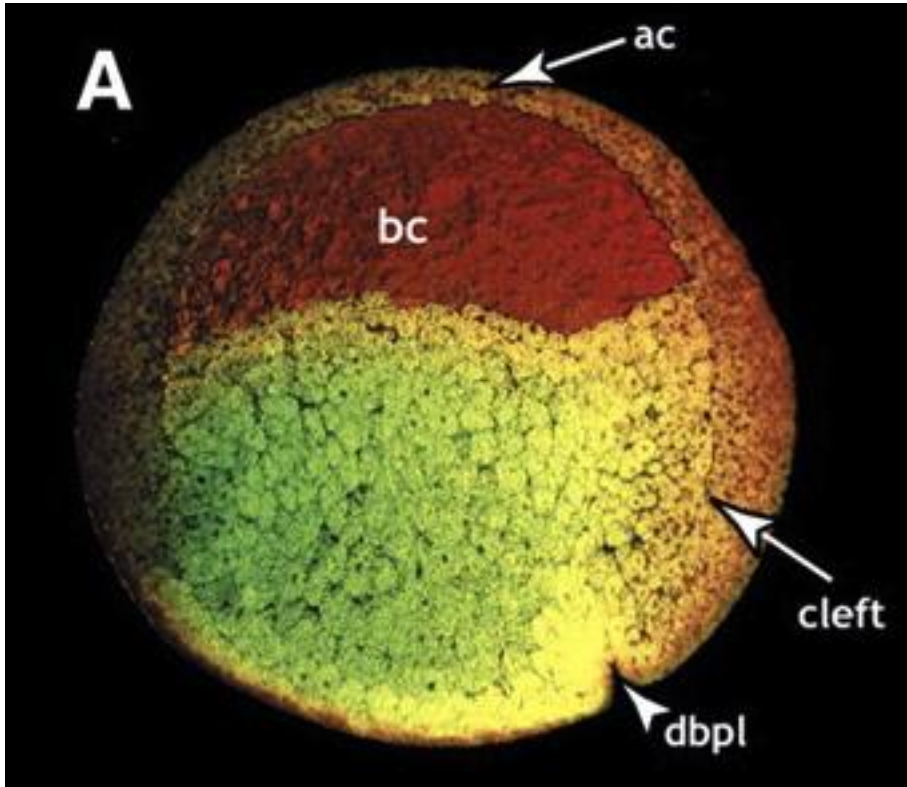
TRANSIZIONE DI MEDIOLASTULA: Xenopus dopo la 12° divisione



MAPPA DEI TERRITORI PRESUNTIVI

Blastula pluristratificata:
nella zona equatoriale (*zona marginale*)
la mappa è diversa se la si osserva
dall'esterno o dall'interno

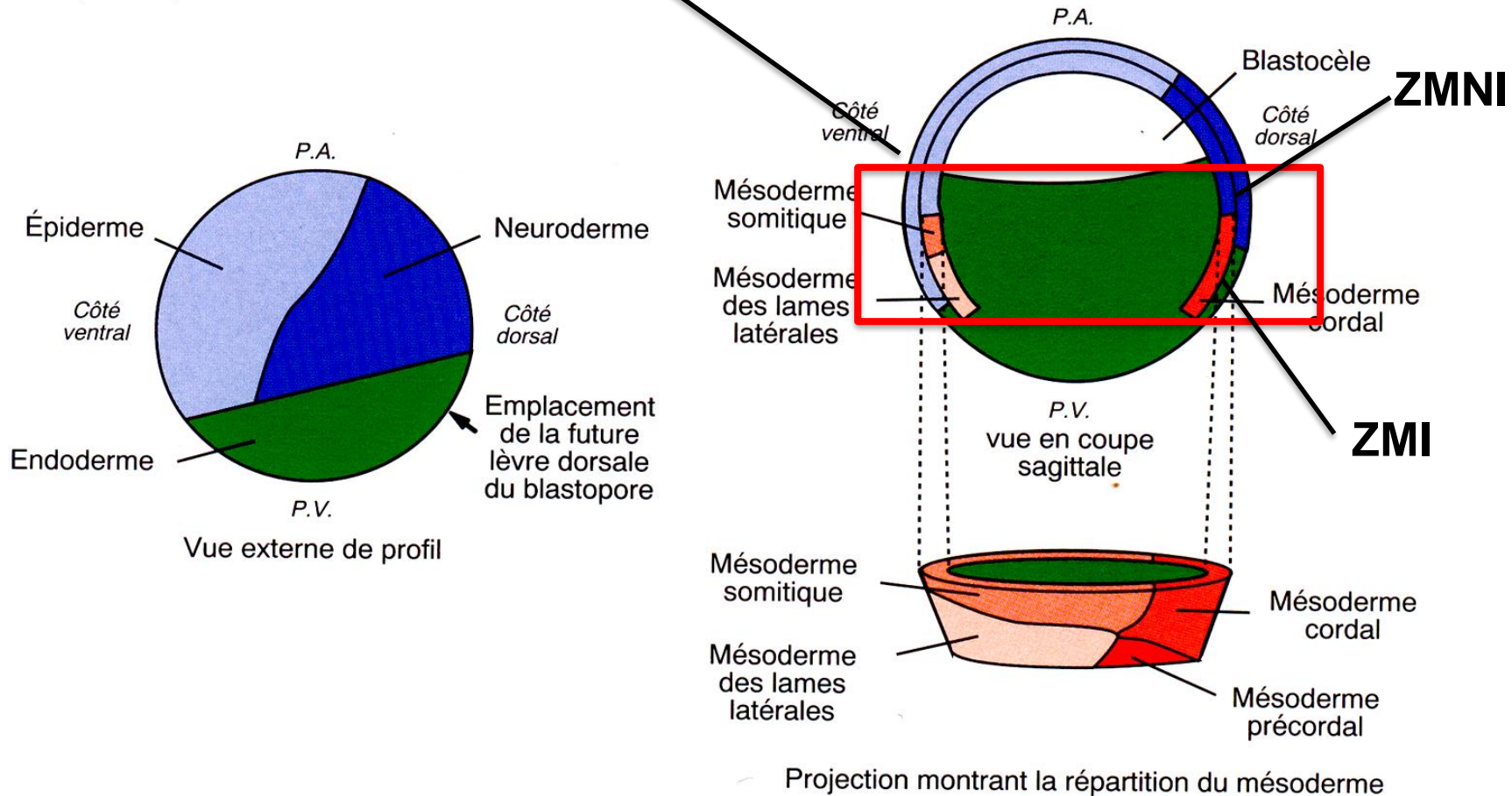
- Ectoderma
- Mesoderma
- Endoderma



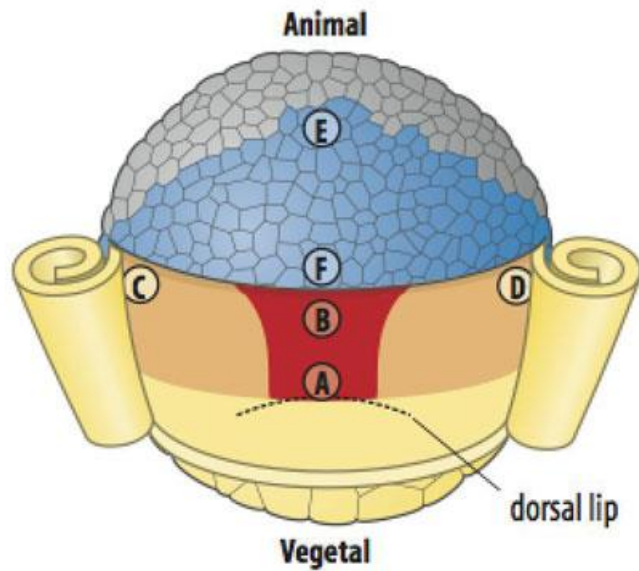
Mappa dei territori presuntivi negli *Anuri*

ZONA MARGINALE

a) Xénope

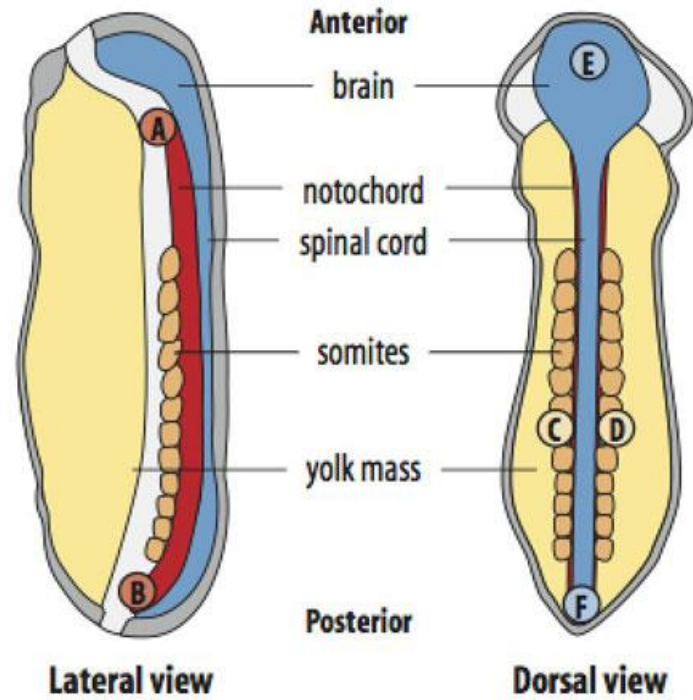


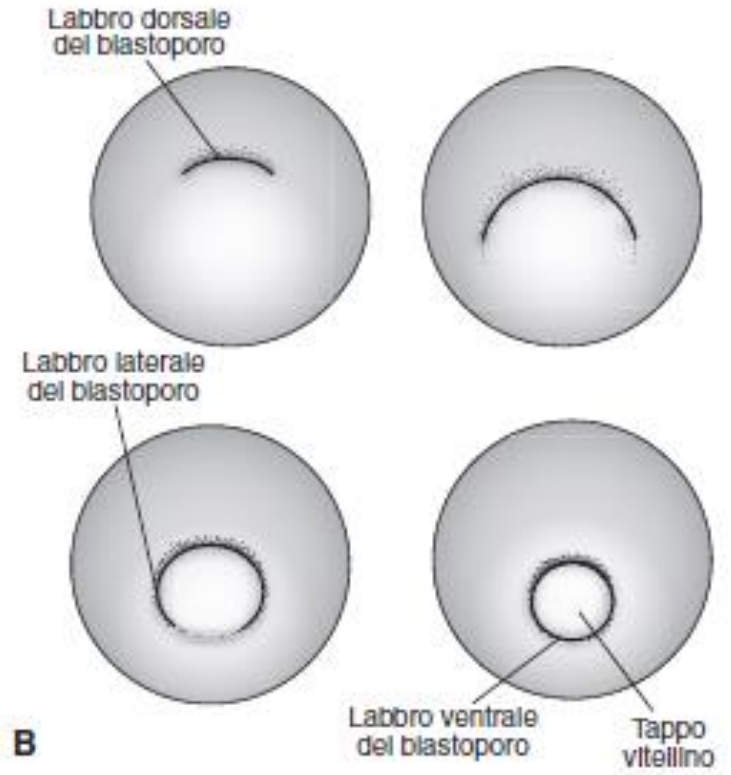
Fate map of late blastula of *Xenopus*



- neural ectoderm
- endoderm
- mesoderm
- mesoderm (notochord)

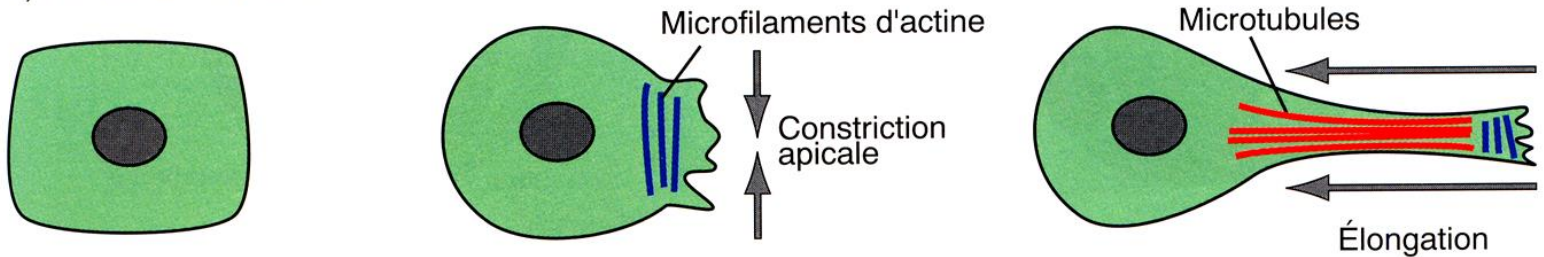
Sections of tailbud-stage *Xenopus*



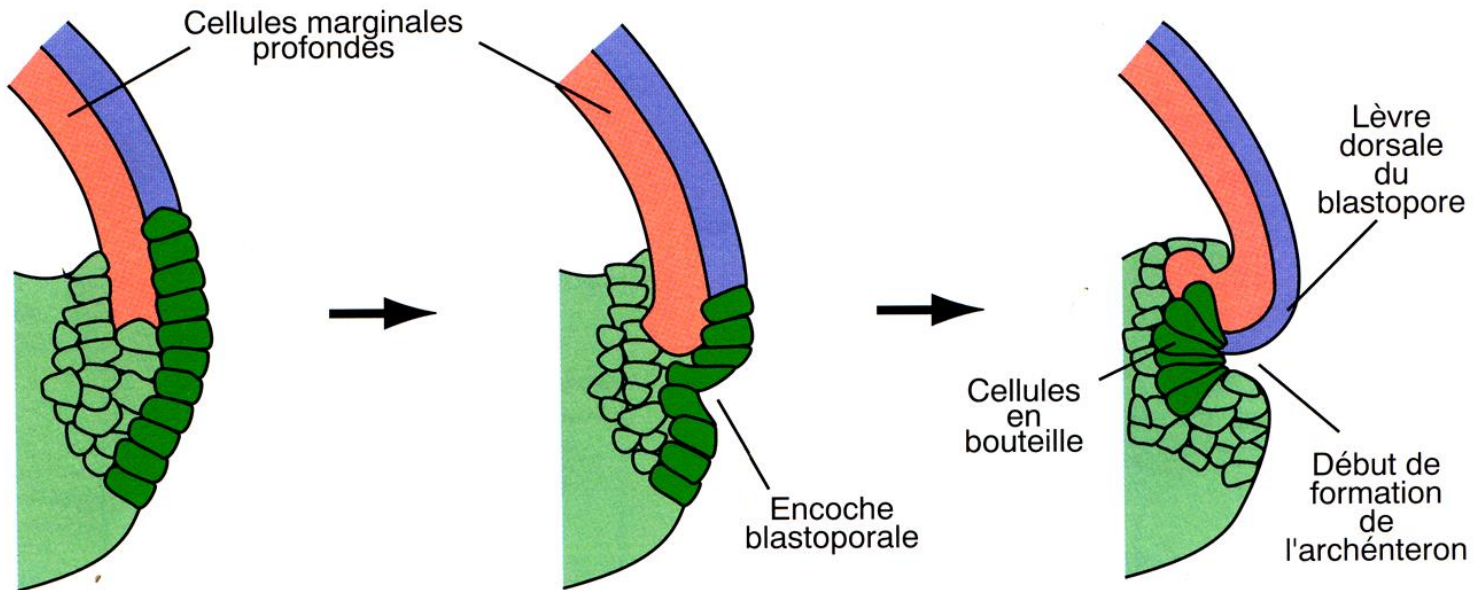


IL LABRO DEL BLASTOPORO SI ORIGINA CON LA FORMAZIONE DELLE CELLULE A FIASCO E L'INVAGINAZIONE DELLE CELLULE ENDODERMICHE SUPERFICIALI

b) Formation des cellules en bouteille



c) Schémas de la formation de l'archentéron



**LA GASTRULAZIONE
PROSEGUE MEDIANTE
MOVIMENTI DI INVOLUZIONE
DEL MESODERMA CHE
SCORRE AL DI SOTTO
DELL'ECTODERMA**

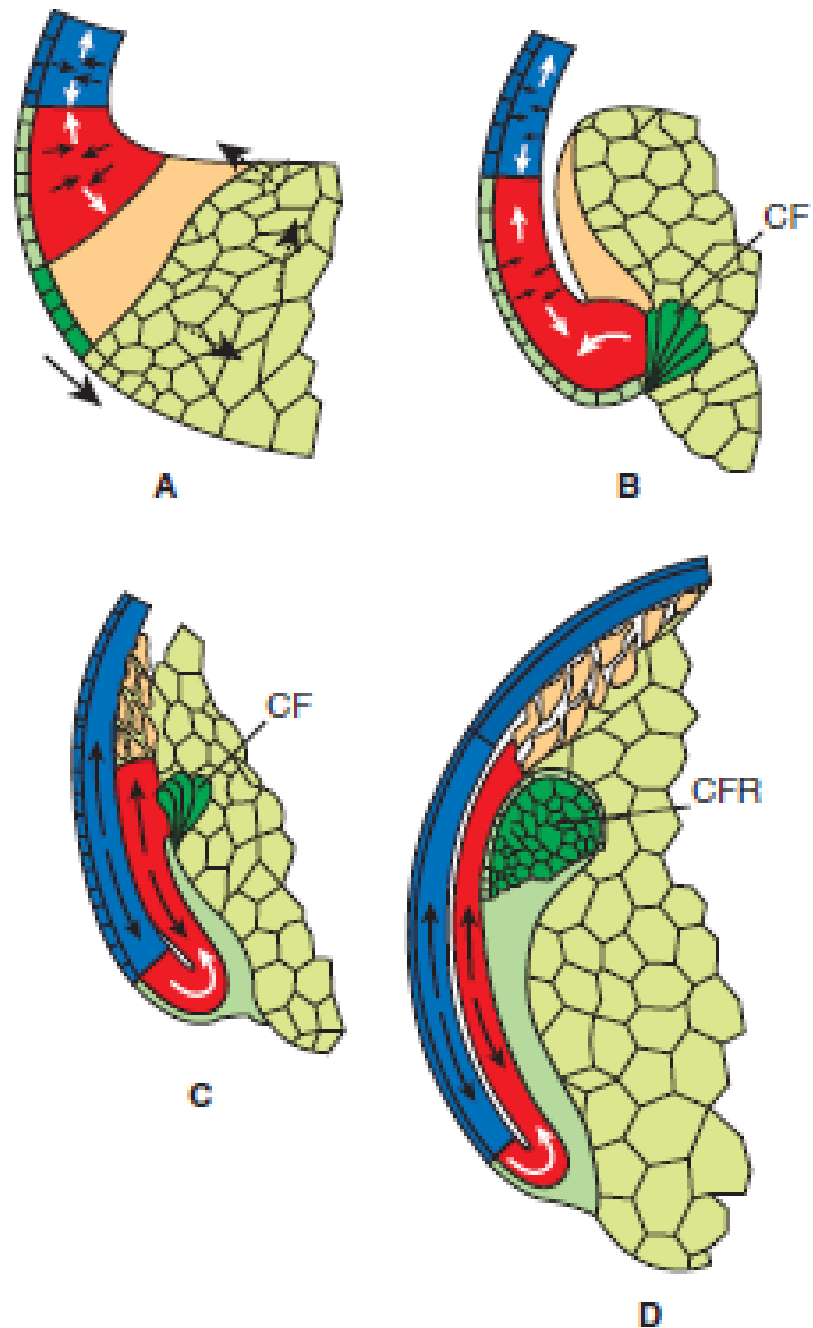
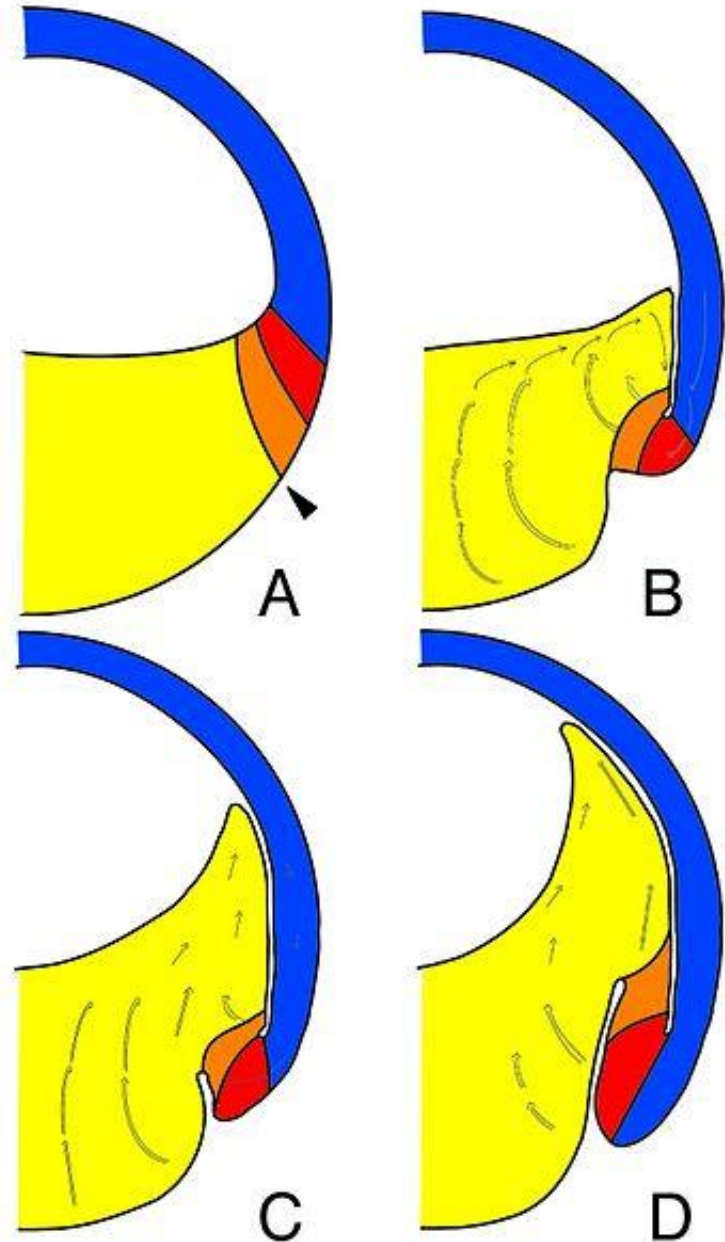
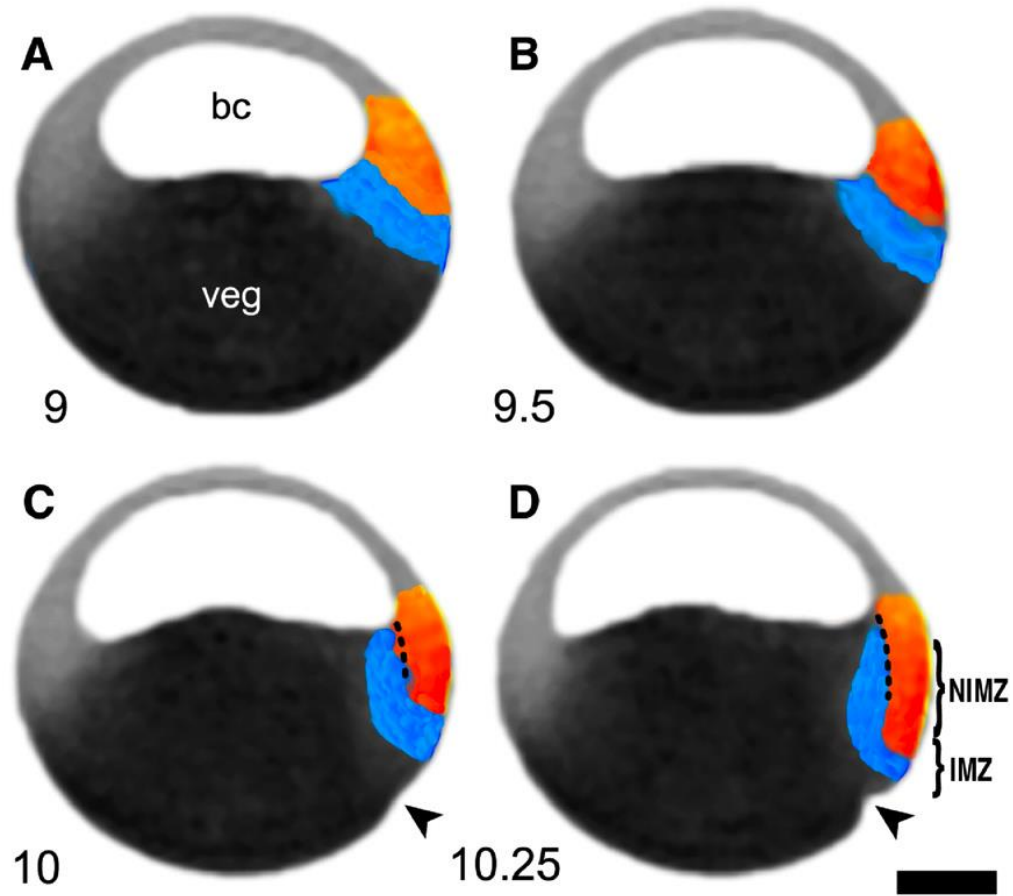
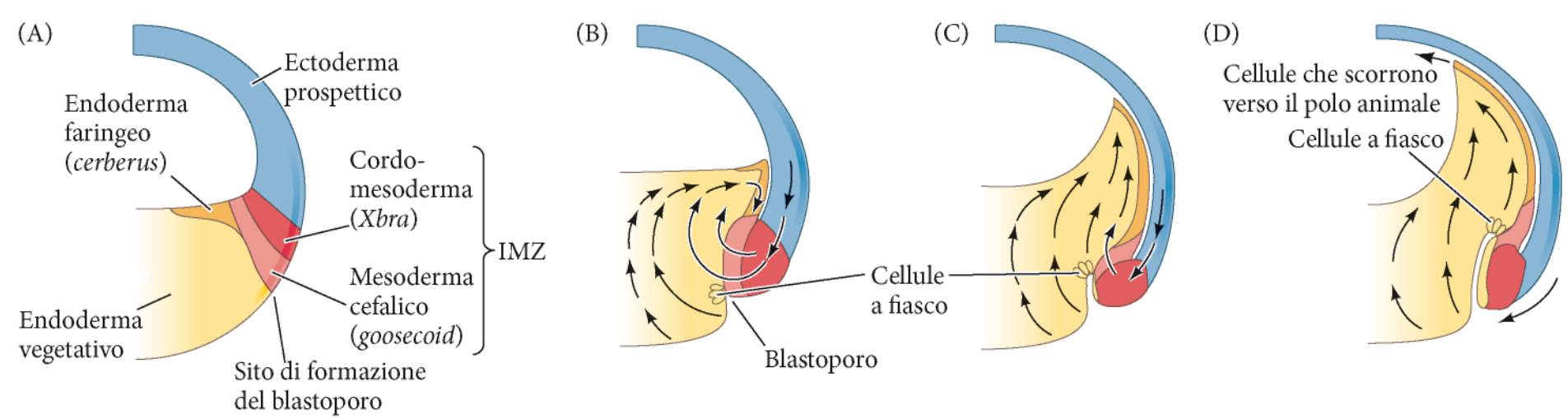


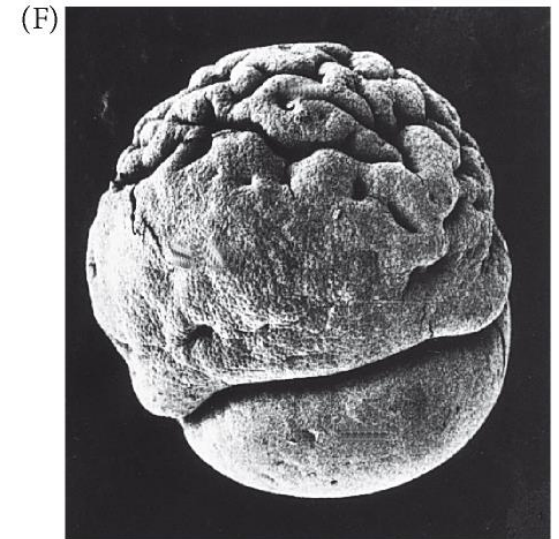
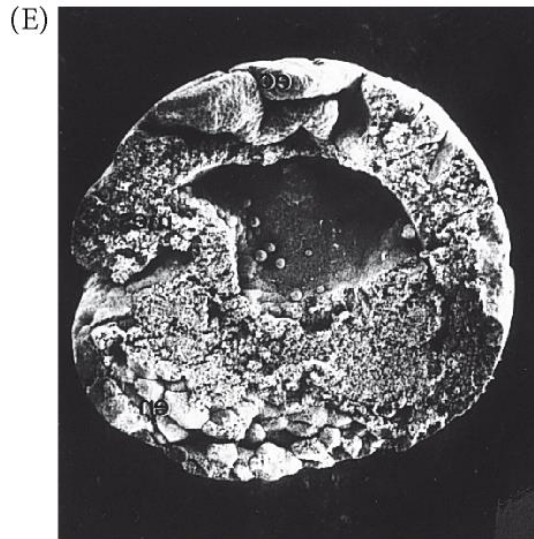
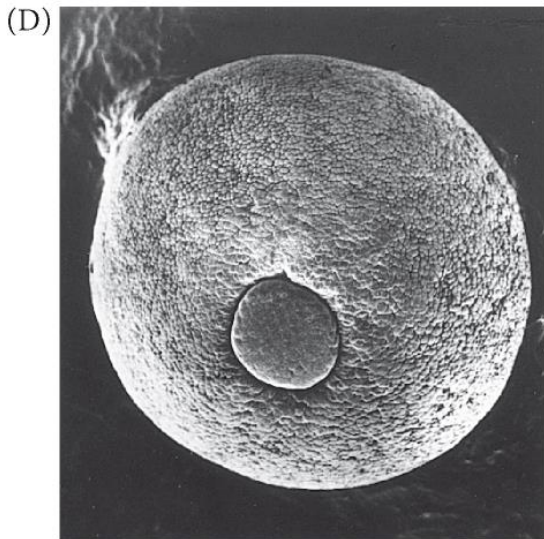
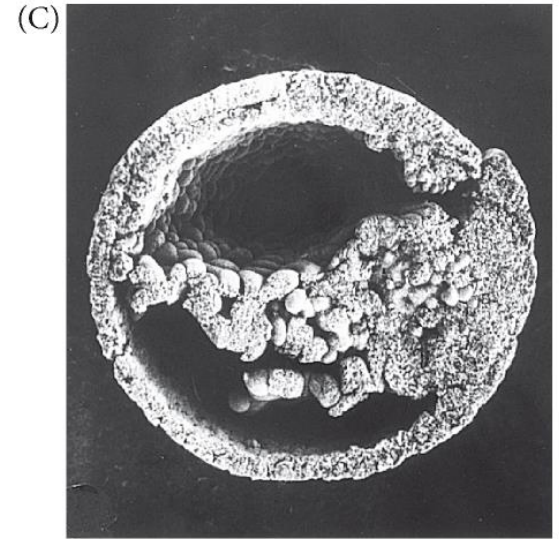
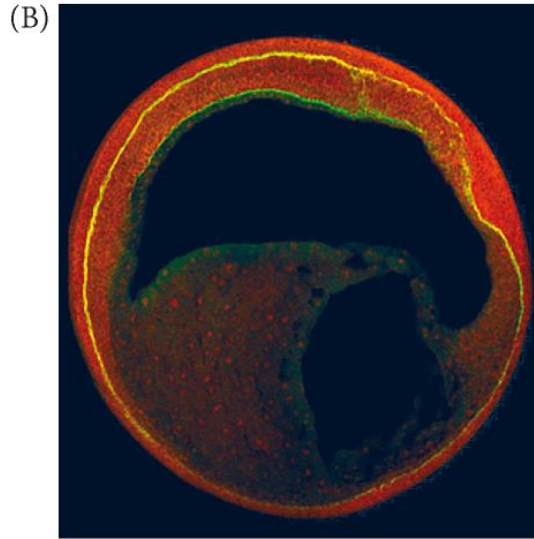
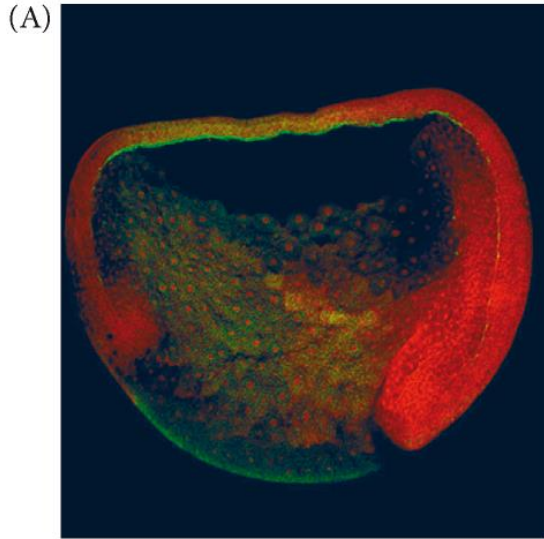
Figura 7

**L'INVOLUZIONE DEL MESODERMA
E' PROMOSSA DA MOVIMENTI DI
ROTAZIONE DELLA MASSA
VEGETATIVA PROFONDA ED
EPIBOLIA DELLA ZONA
MARGINALE SUPERFICIALE**



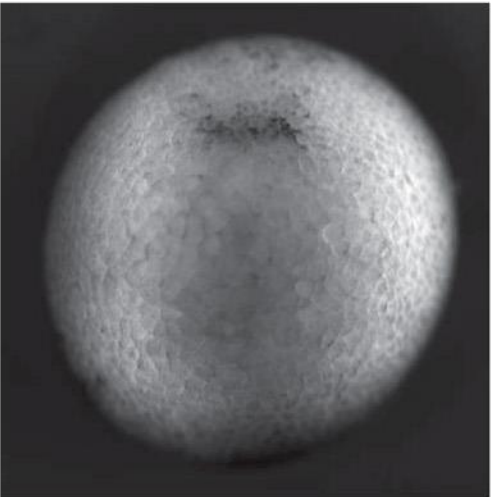


I MOVIMENTI DI INVOLUZIONE SONO MEDIATI DA INTERAZIONI DI INTEGRINE SULLA MEMBRANA DELLE CELLULE MESODERMICHE CON LA MATRICE EXTRA-CELLULARE PRODOTTA DALLE CELLULE DEL TETTO DEL BLASTOCELE

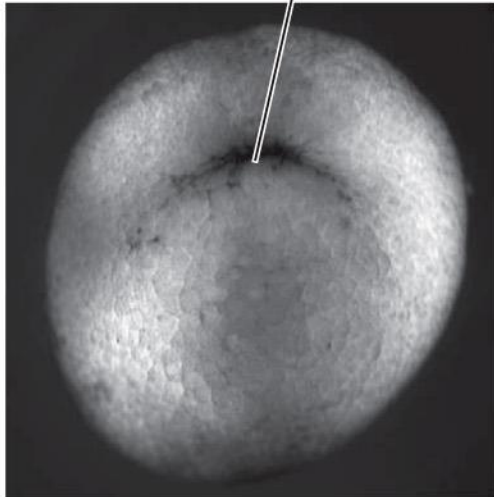


I MOVIMENTI DI GASTRULAZIONE SI ESTENDONO PROGRESSIVAMENTE IN DIREZIONE DORSO-VENTRALE

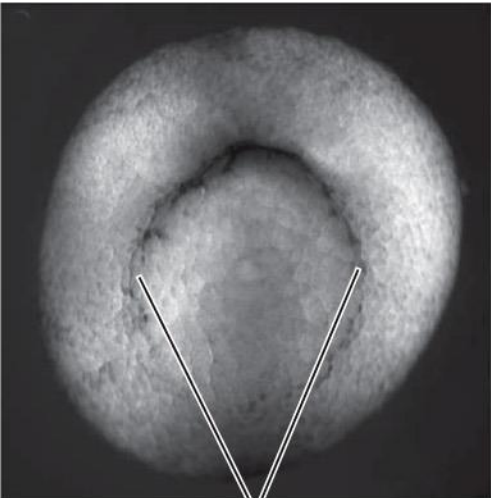
(A)



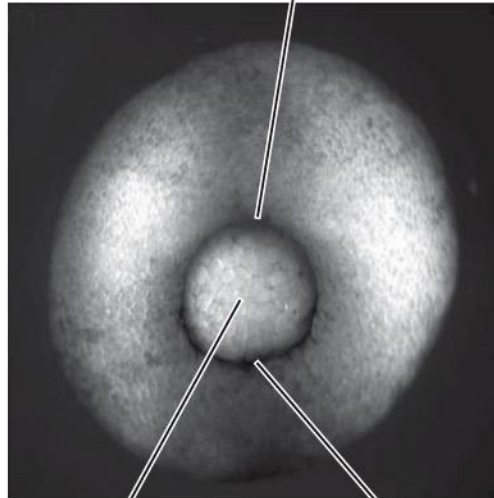
(B)



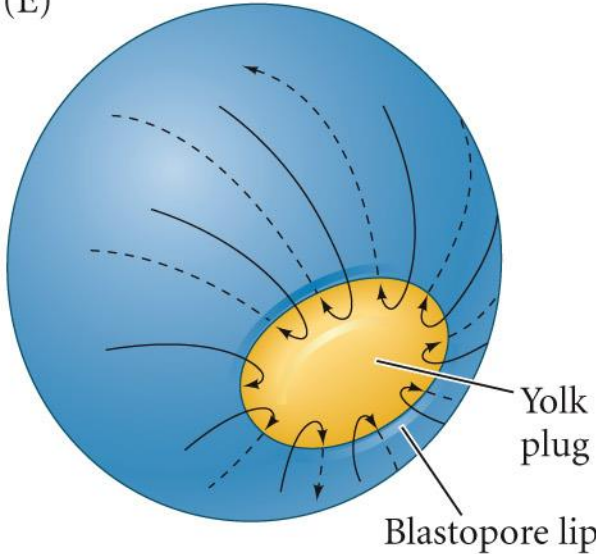
(C)



(D)



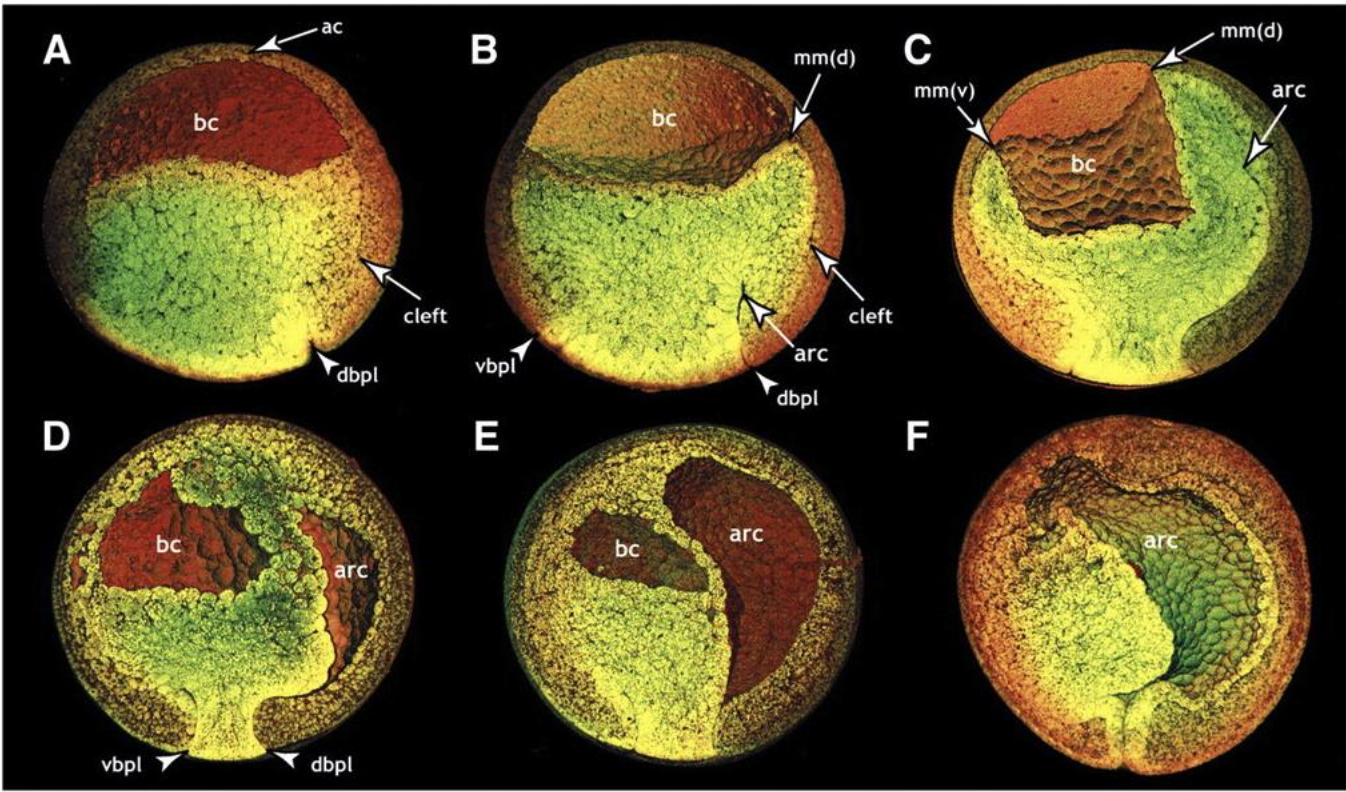
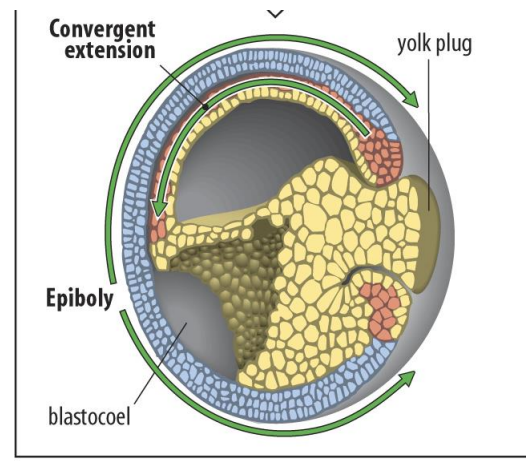
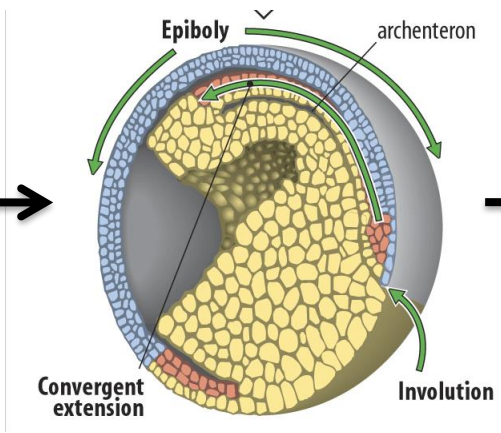
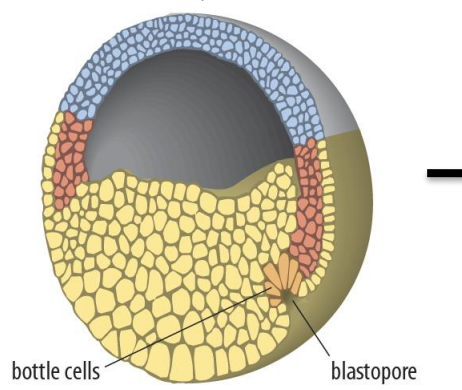
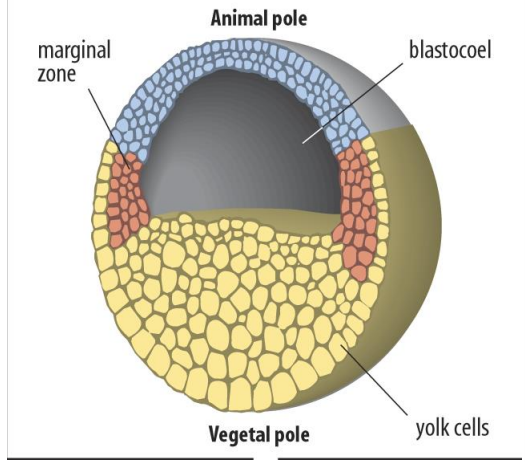
(E)



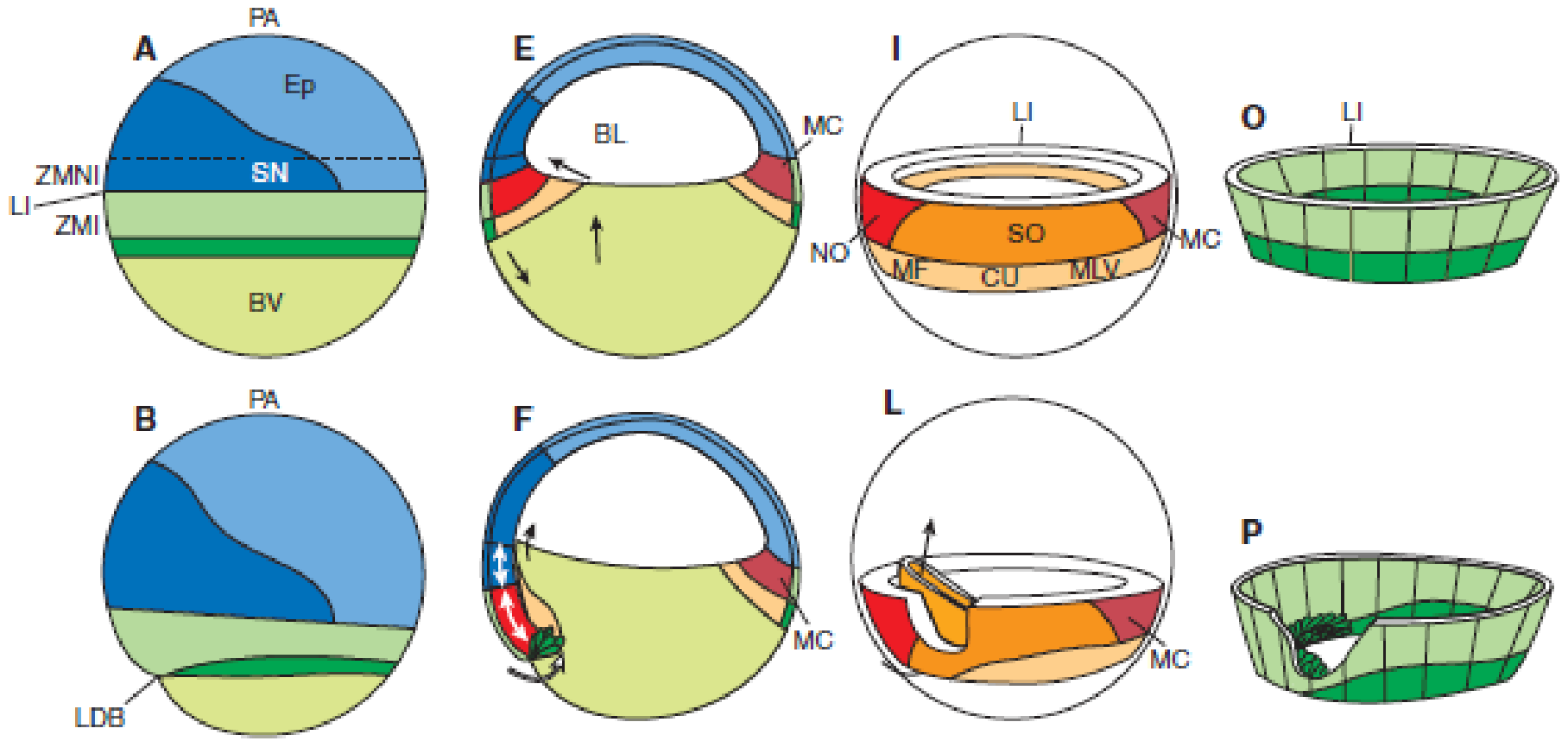
Bilateral lips

Yolk plug Ventral lip

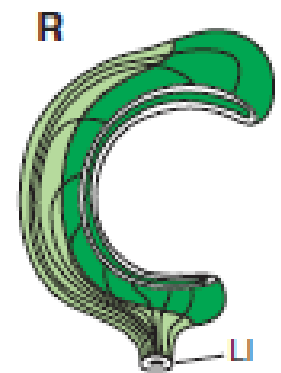
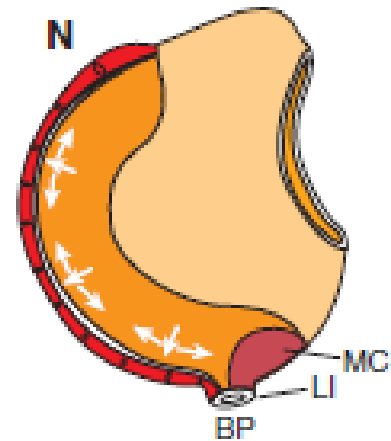
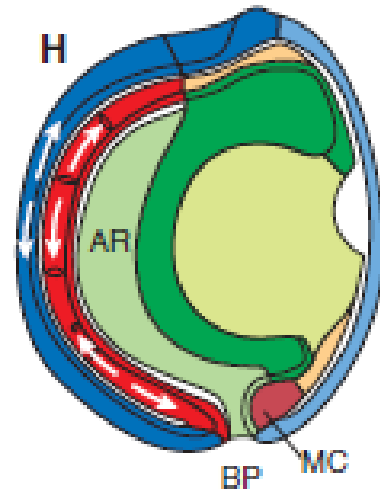
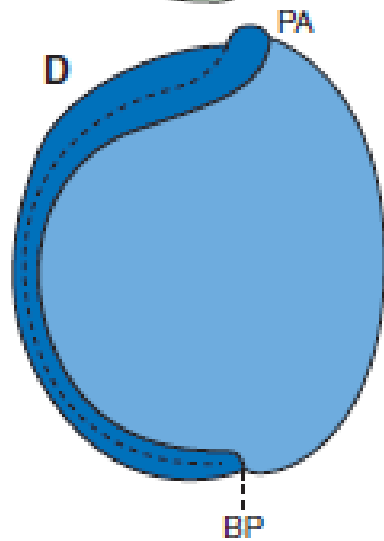
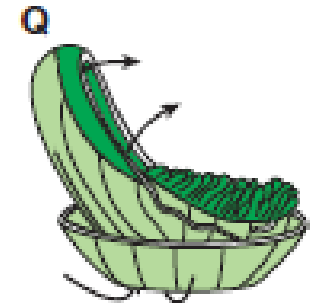
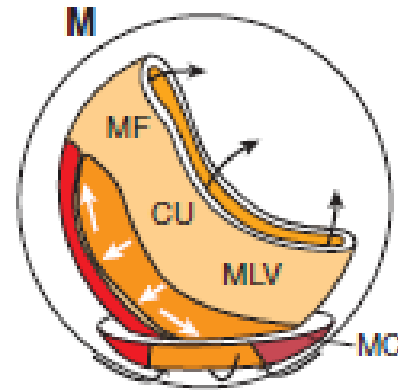
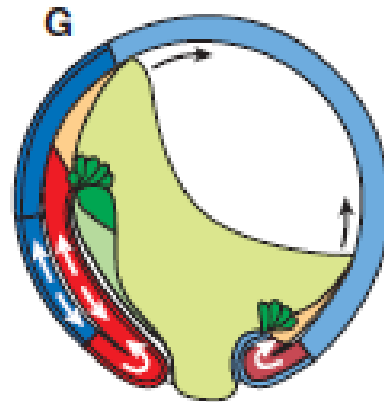
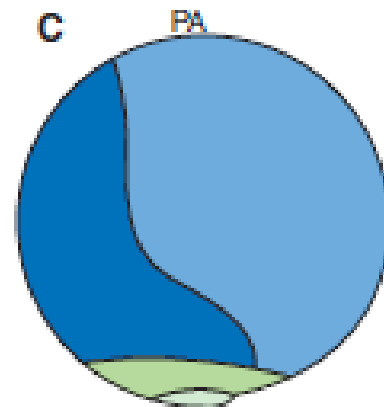
Yolk plug
Blastopore lip



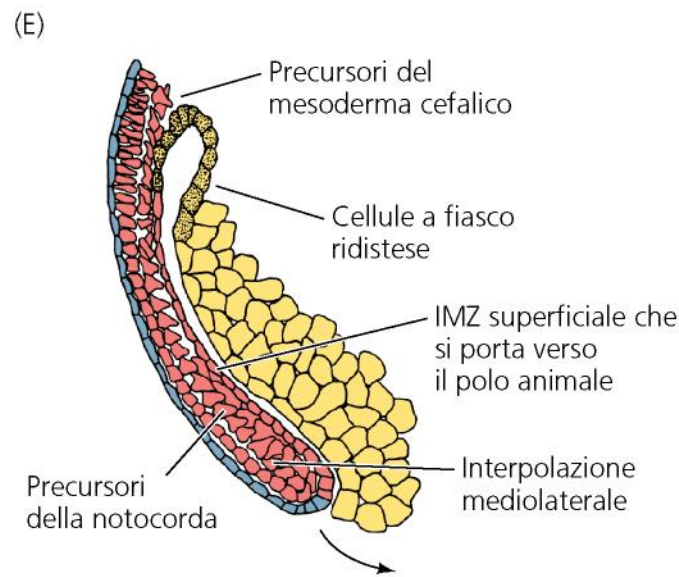
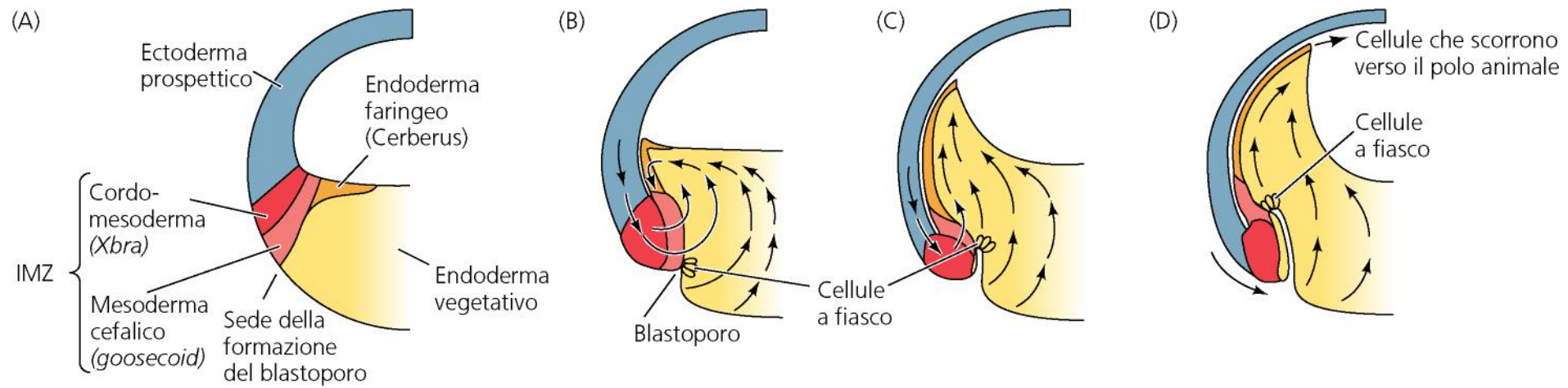
GASTRULA PRECOCE



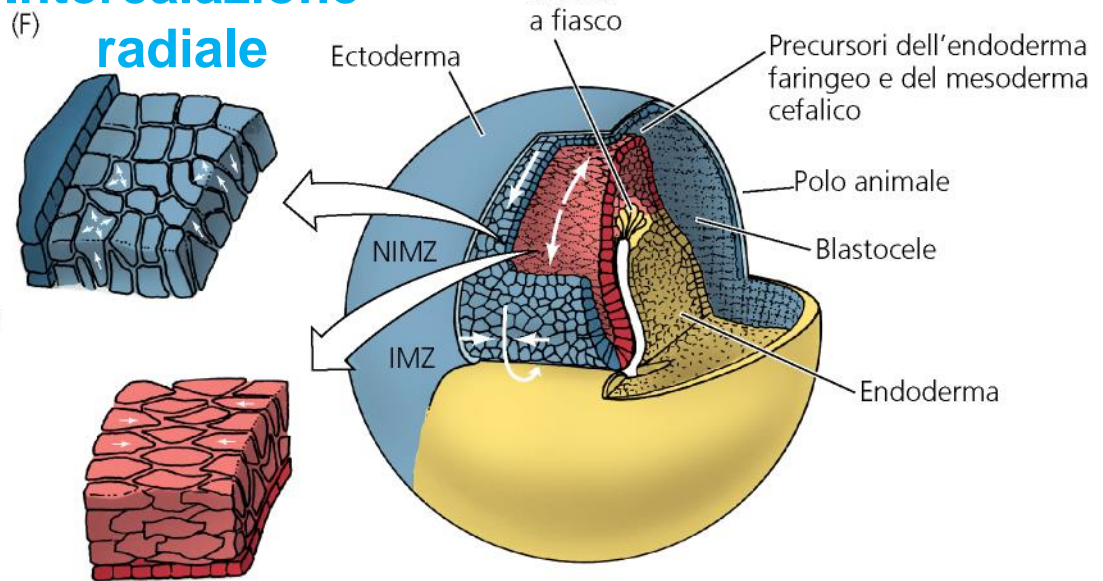
GASTRULA TARDIVA







Intercalazione radiale



Intercalazione medio-laterale

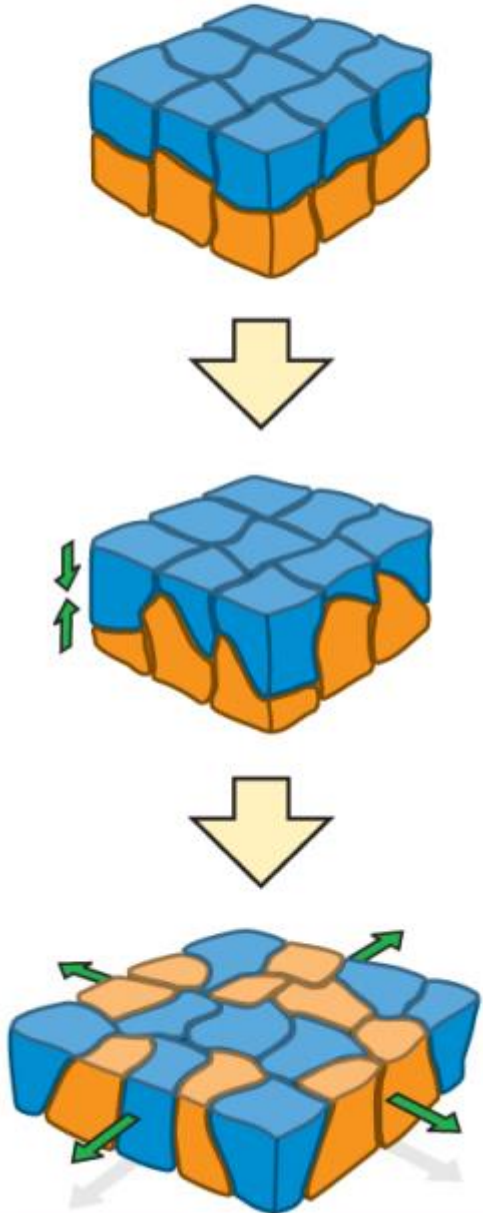
Invaginazione

Involuzione

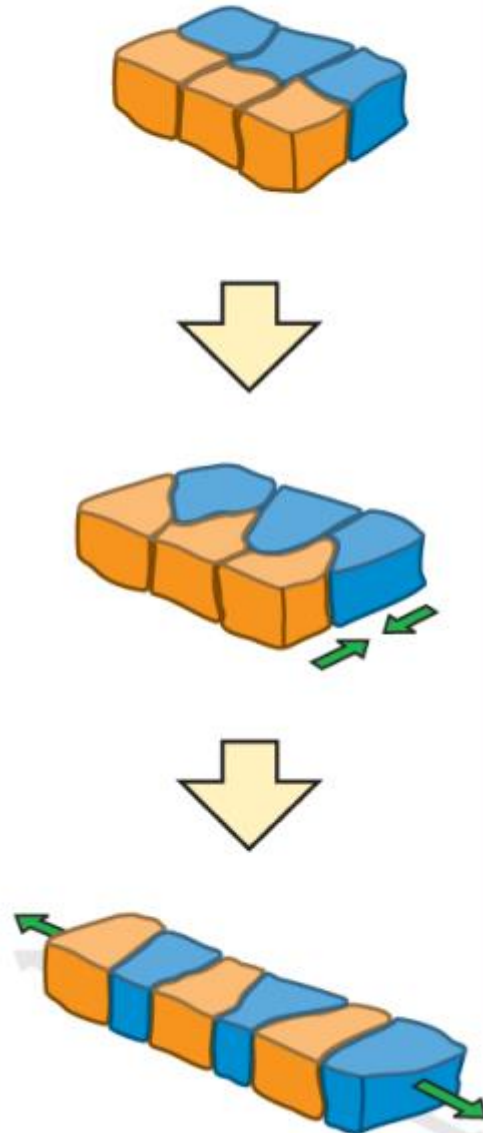
Epibolia

Epibolia
dell'ectoderma

**Radial
intercalation**

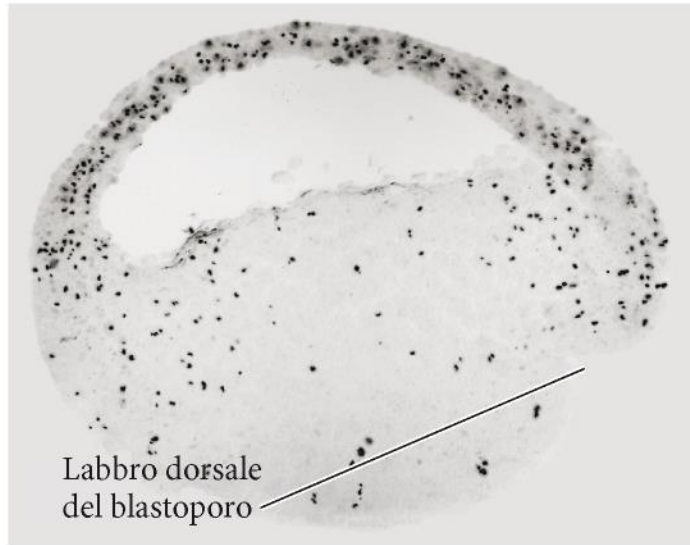


**Medio-lateral
intercalation**

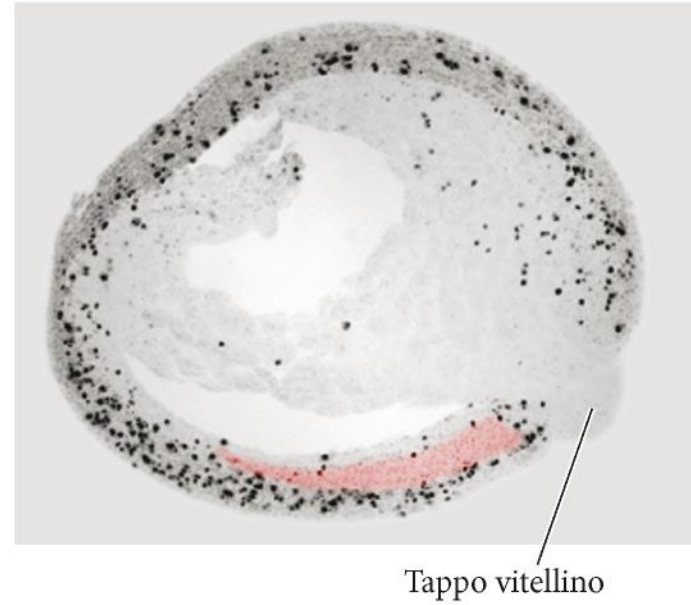


**Estensione
convergente**
della notocorda,
dell'archenteron
e del tubo
neurale

(A)



(B)



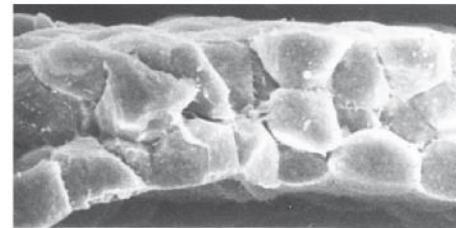
(C)



8



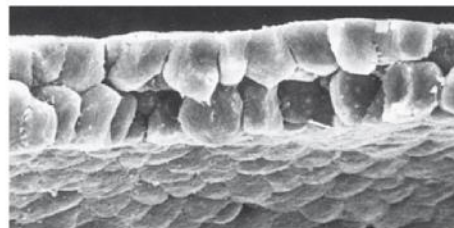
9



10

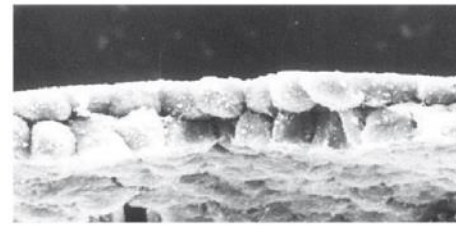
Stadio

10,5

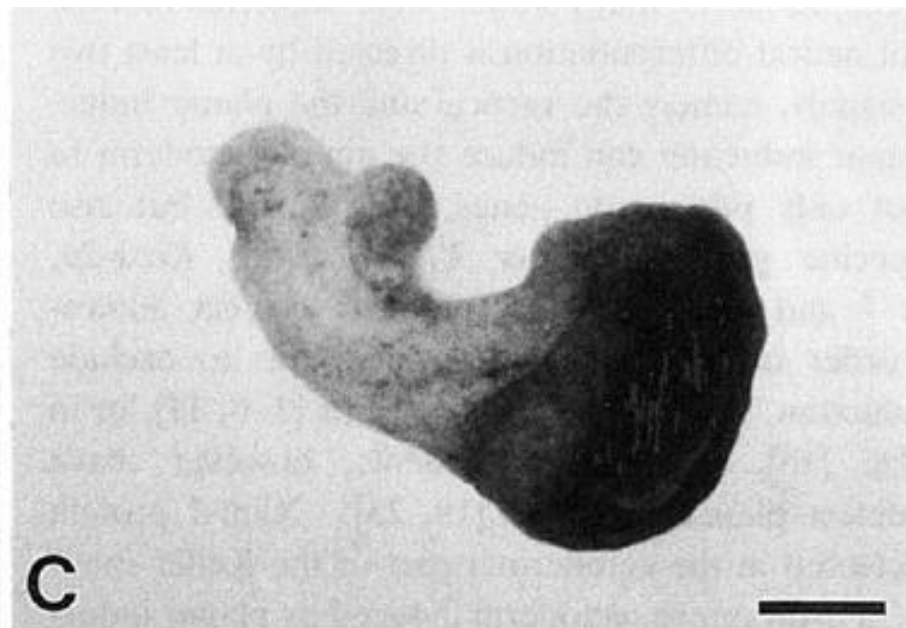
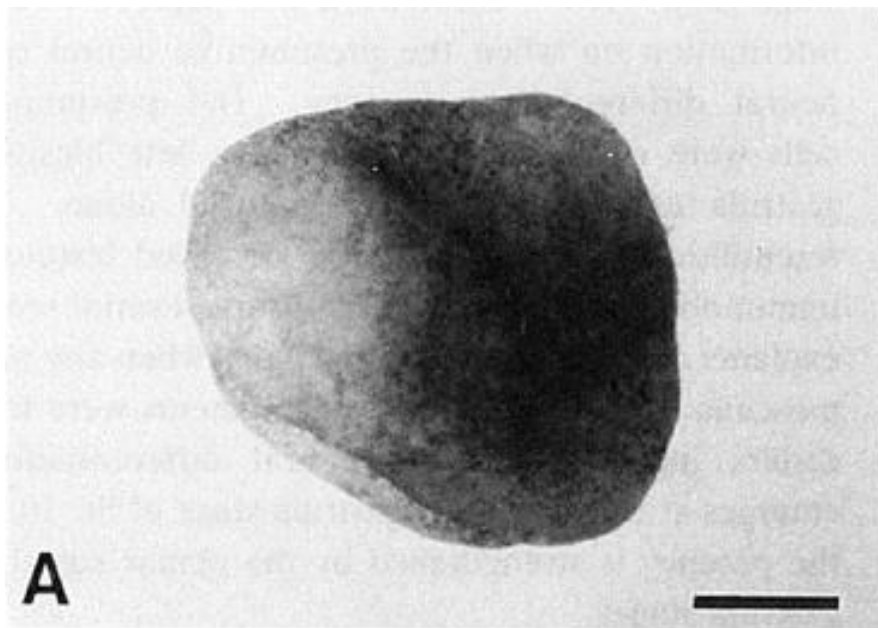
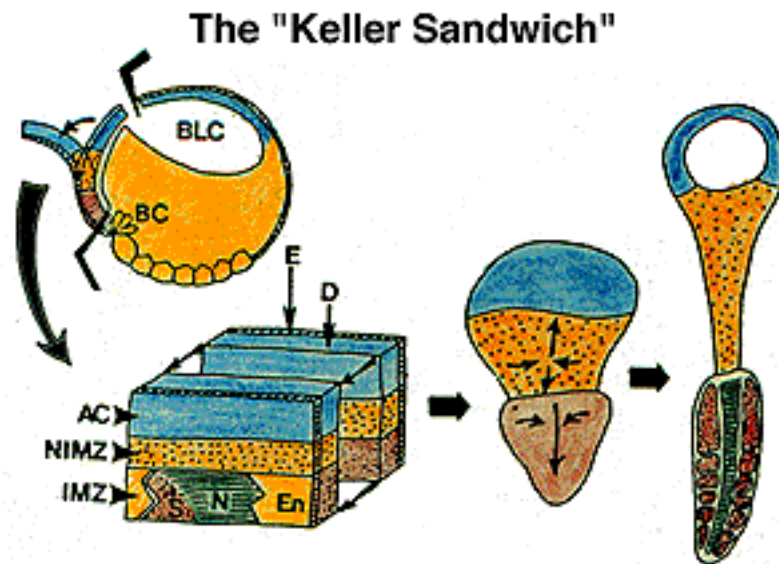
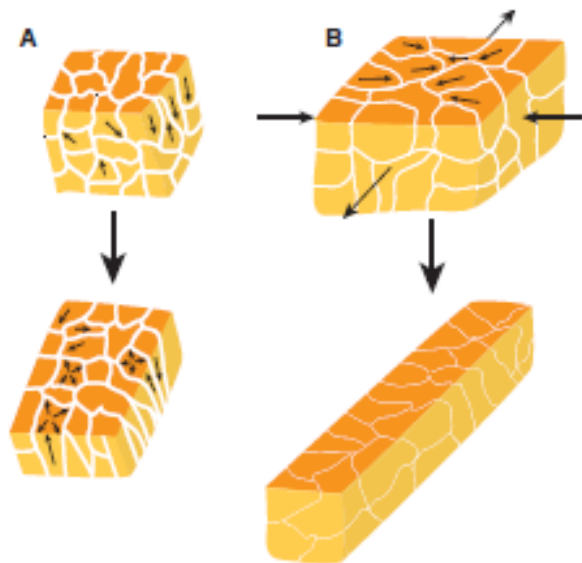


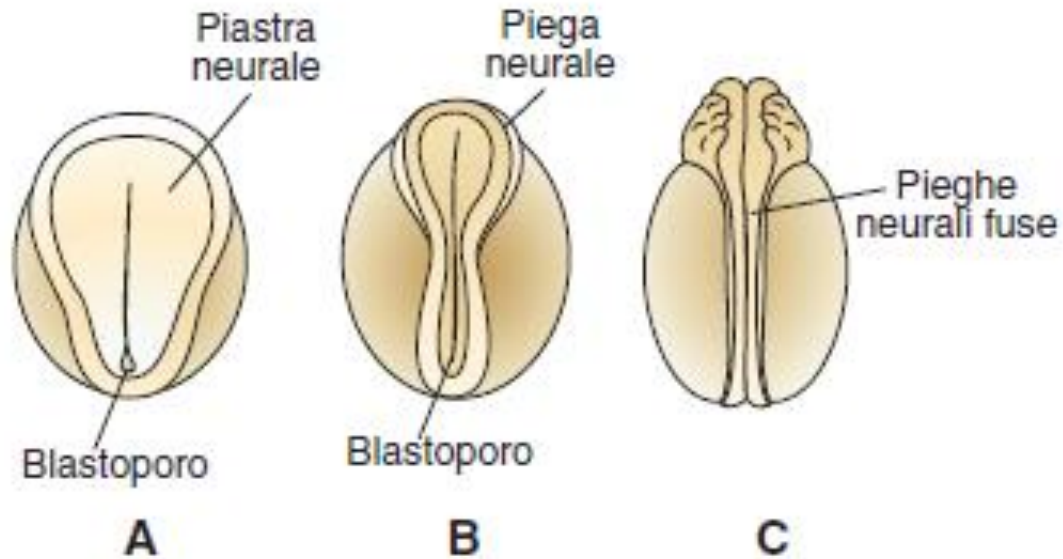
11

11,5

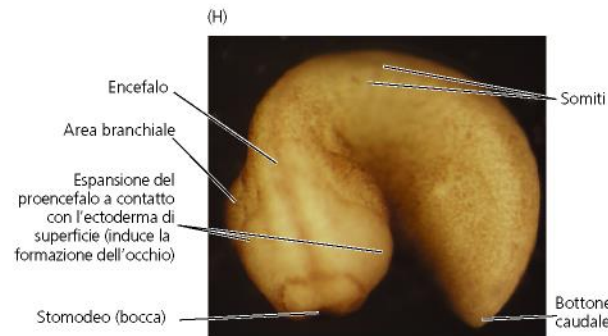
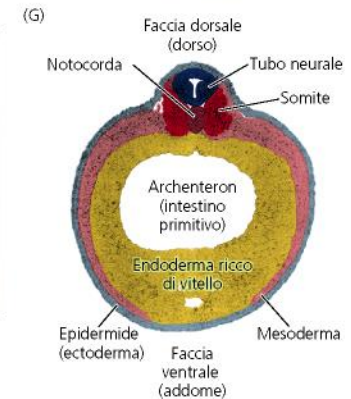
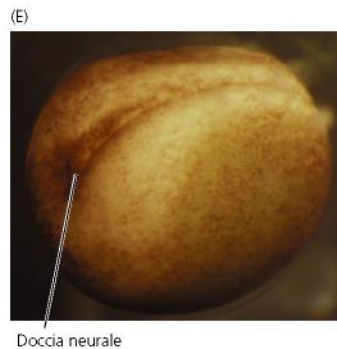


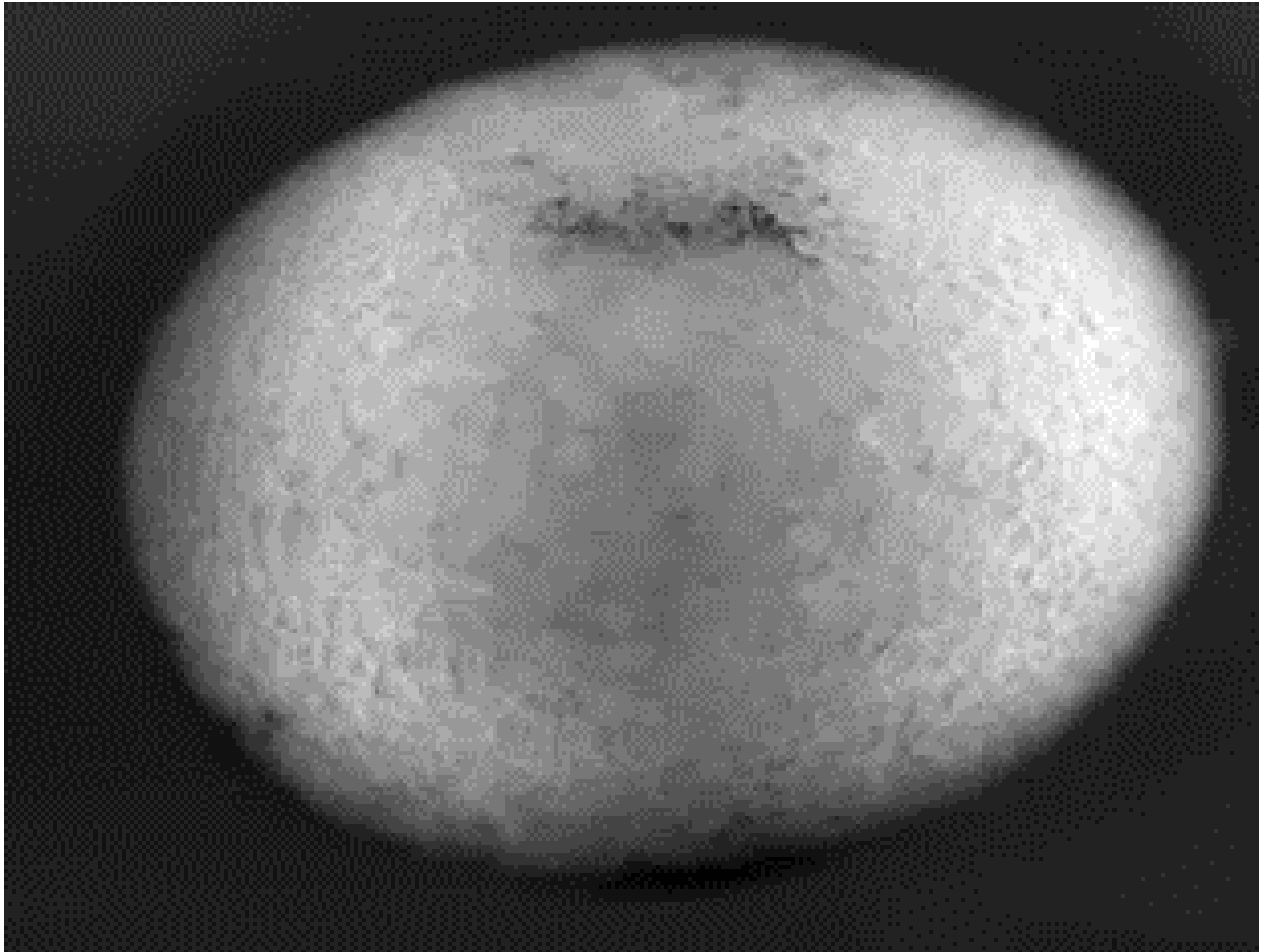
I MOVIMENTI DI ESTENSIONE CONVERGENTE GIOCANO UN RUOLO CHIAVE NELLA GASTRULAZIONE





I MOVIMENTI DI NEURULAZIONE CONDUCONO ALLA FORMAZIONE DEL TUBO NEURALE





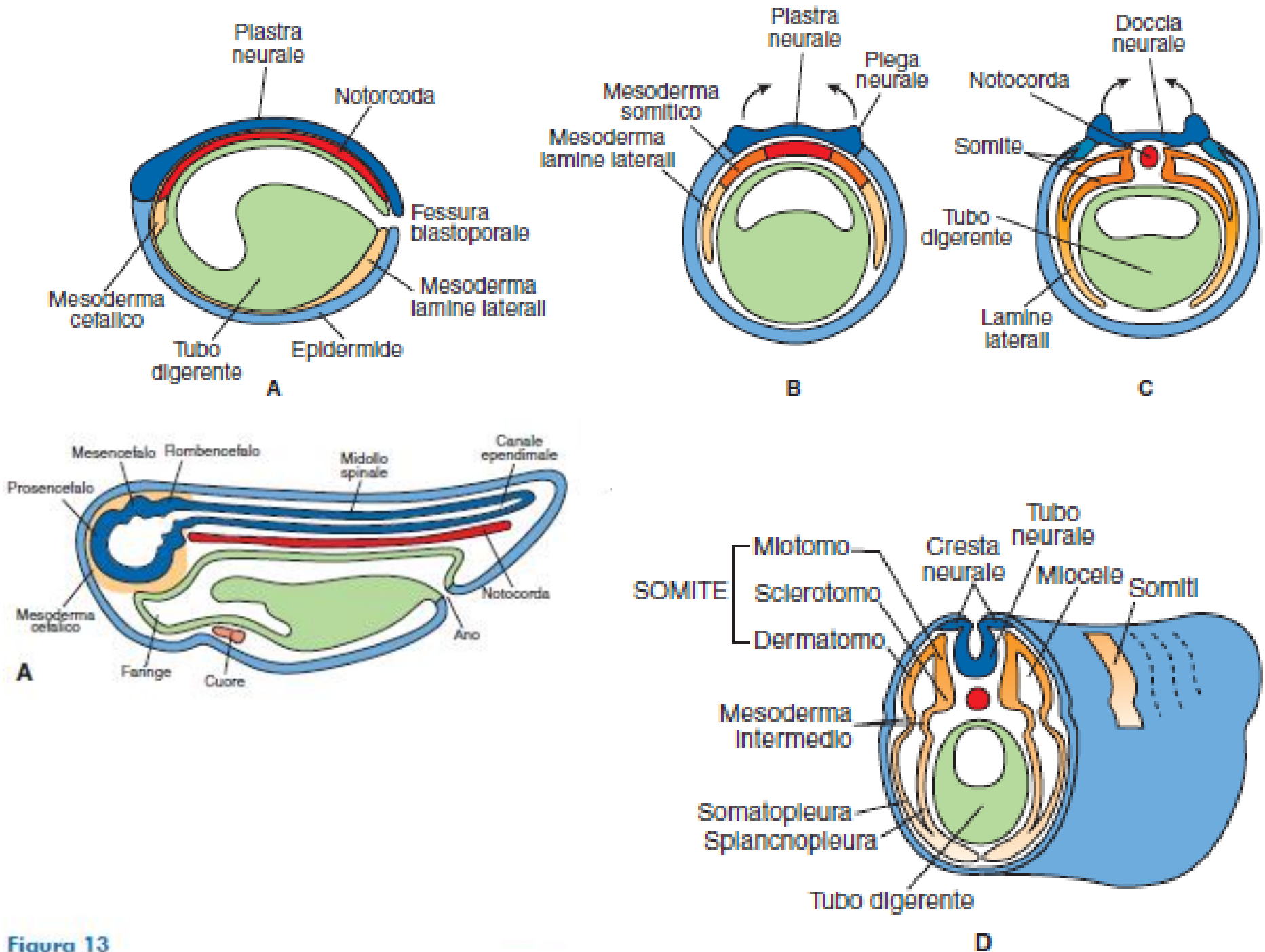
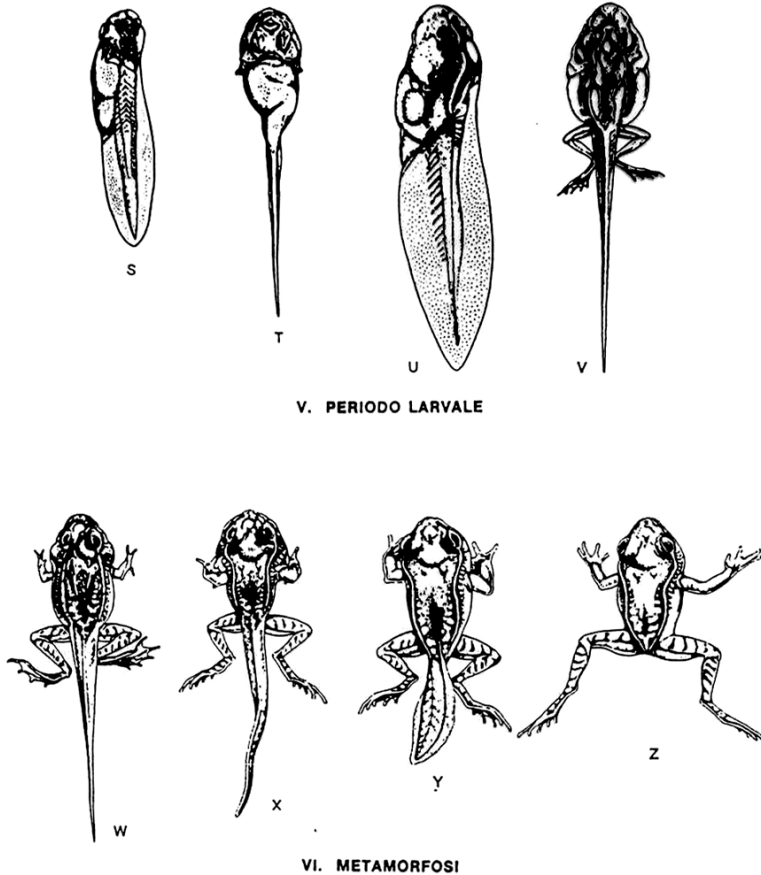


Figura 13

Metamorfosi

Pre-metamorfosi: accrescimento girino, Presenza di branchie, progressivo sviluppo arti posteriori.

Metamorfosi: arti anteriori, regressione pinna caudale e coda, modificazione tubo digerente, sviluppo polmoni.



Sviluppo della rana (continuazione). V - Periodo larvale. S, stadio a branchie esterne (visione laterale). T, formazione degli opercoli (visione ventrale). U, girino (visione laterale sinistra con lo spiracolo). V, girino (visione dorsale). VI - Metamorfosi. W, apparizione degli arti anteriori. X e Y, regressione della coda. Z, fine della metamorfosi

Controllo ormonale:
ipofisi- ormone tireotropo
Tiroide- ormone tiroxina