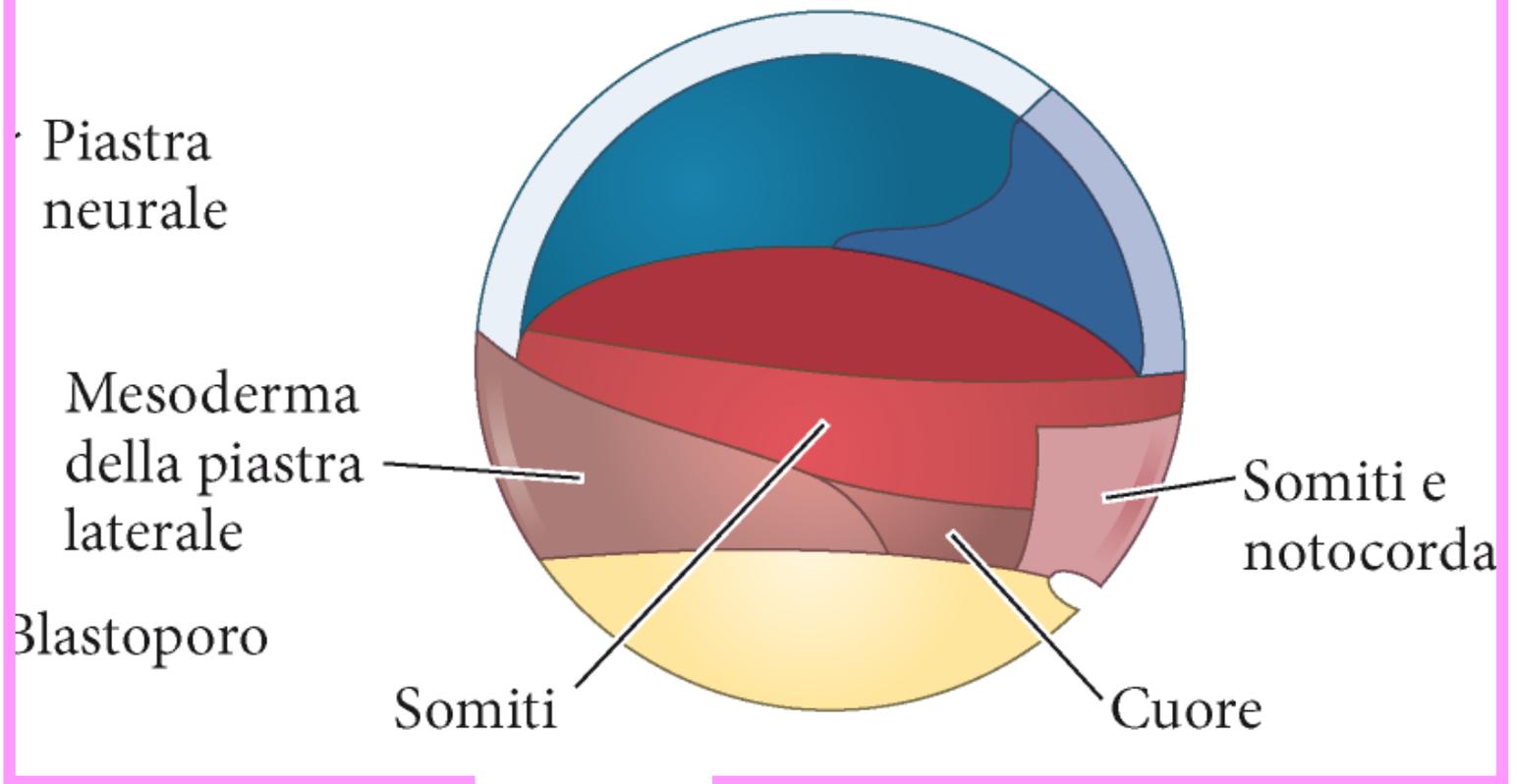




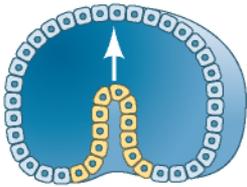
La gastrulazione

(B) Mappa interna



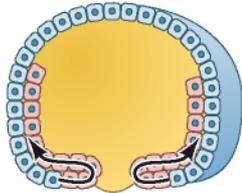
La gastrulazione coinvolge combinazioni di diversi tipi di movimenti

Invaginazione:
Ripiegamento di una lamina cellulare all'interno dell'embrione



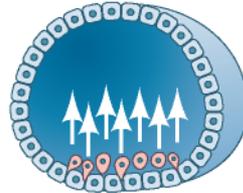
Esempio:
Endoderma del riccio di mare

Embolia (involuzione):
Introflessione e scivolamento di una lamina cellulare lungo la superficie basale di uno strato esterno di cellule



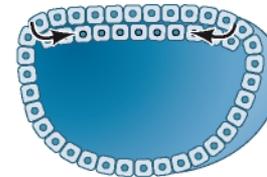
Esempio:
Mesoderma degli anfi

Ingresso:
Migrazione di singole cellule all'interno dell'embrione



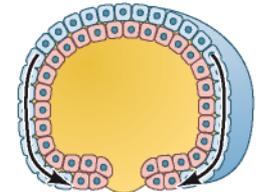
Esempio:
Mesoderma del riccio di mare, neuroblasti di *Drosophila*

Delaminazione:
Divisione di una lamina cellulare o sua migrazione a formare due lamine



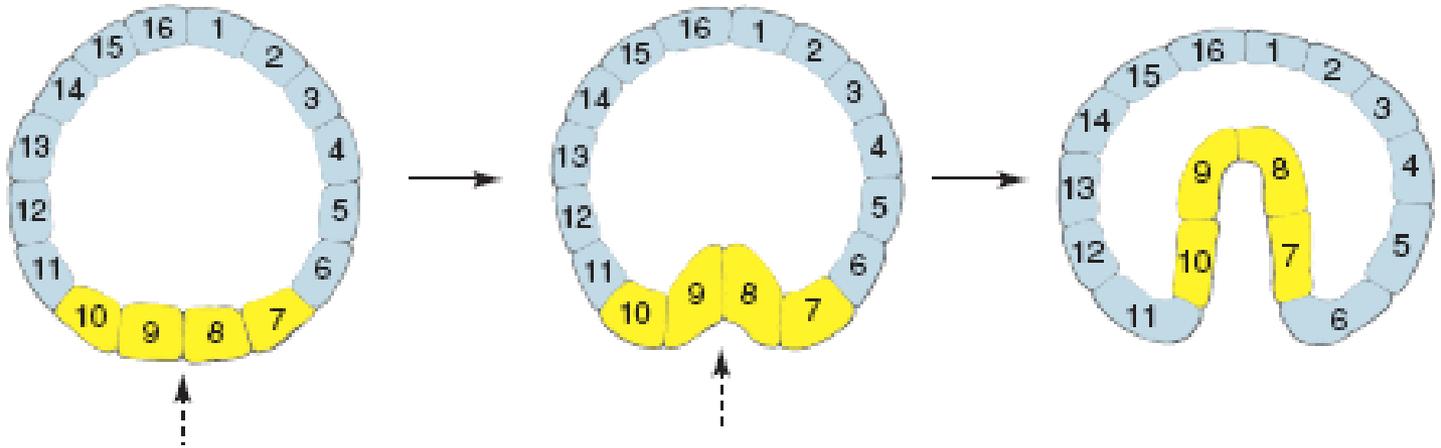
Esempio:
Formazione dell'ipoblasto nei mammiferi e negli uccelli

Epibolia:
Espansione di una lamina cellulare fino ad avvolgere la superficie di altre cellule



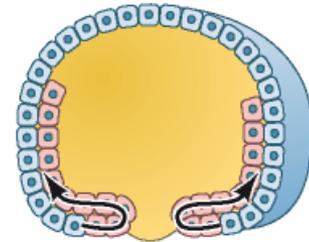
Esempio:
Formazione dell'ectoderma in anfi, riccio di mare e tunicati

Invaginazione



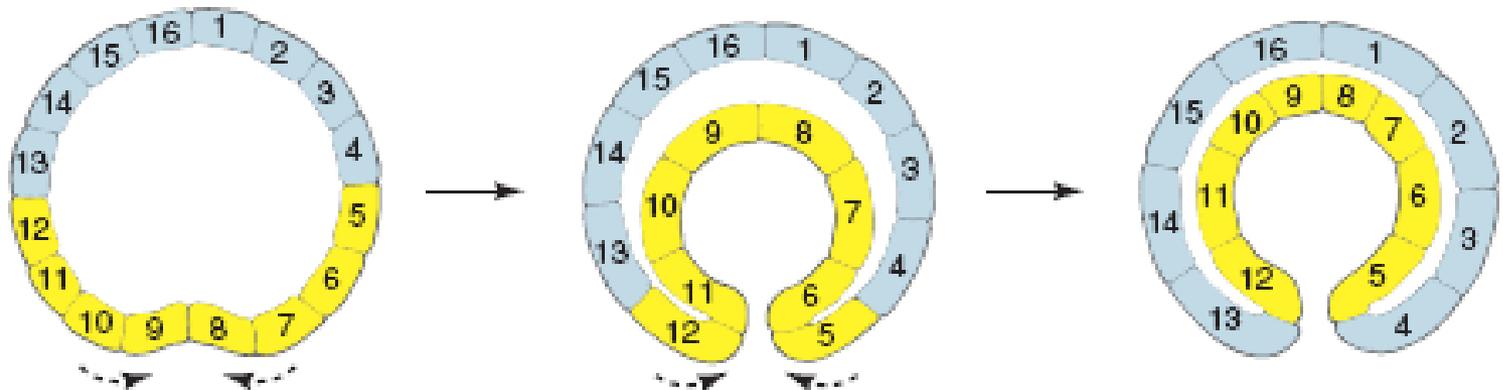
Embolia (involuzione):

Introflessione e scivolamento di una lamina cellulare lungo la superficie basale di uno strato esterno di cellule



Esempio:
Mesoderma degli anfi

Involuzione



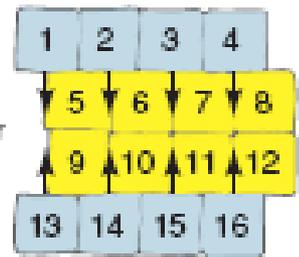
Estensione
convergente

1	2
3	4



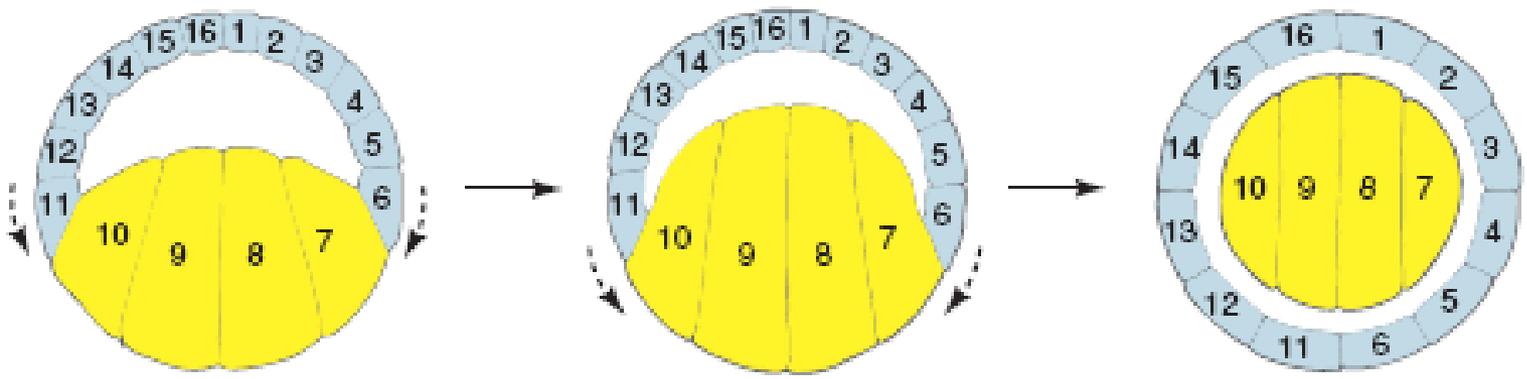
1	2
3	4

Or

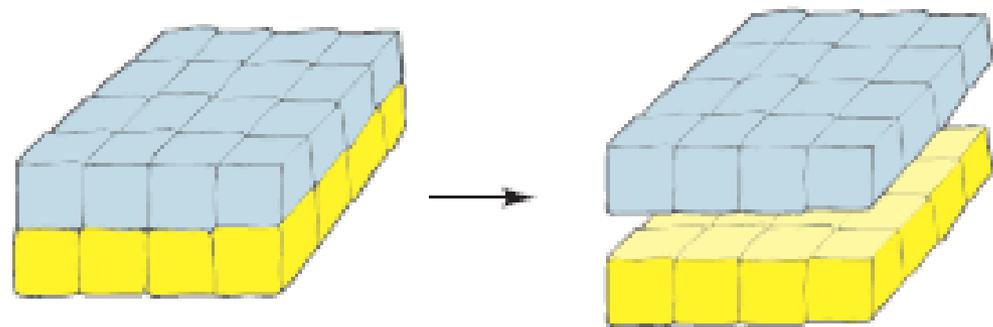


1	5	2	6	3	7	4	8
13	9	14	10	15	11	16	12

Epibolia



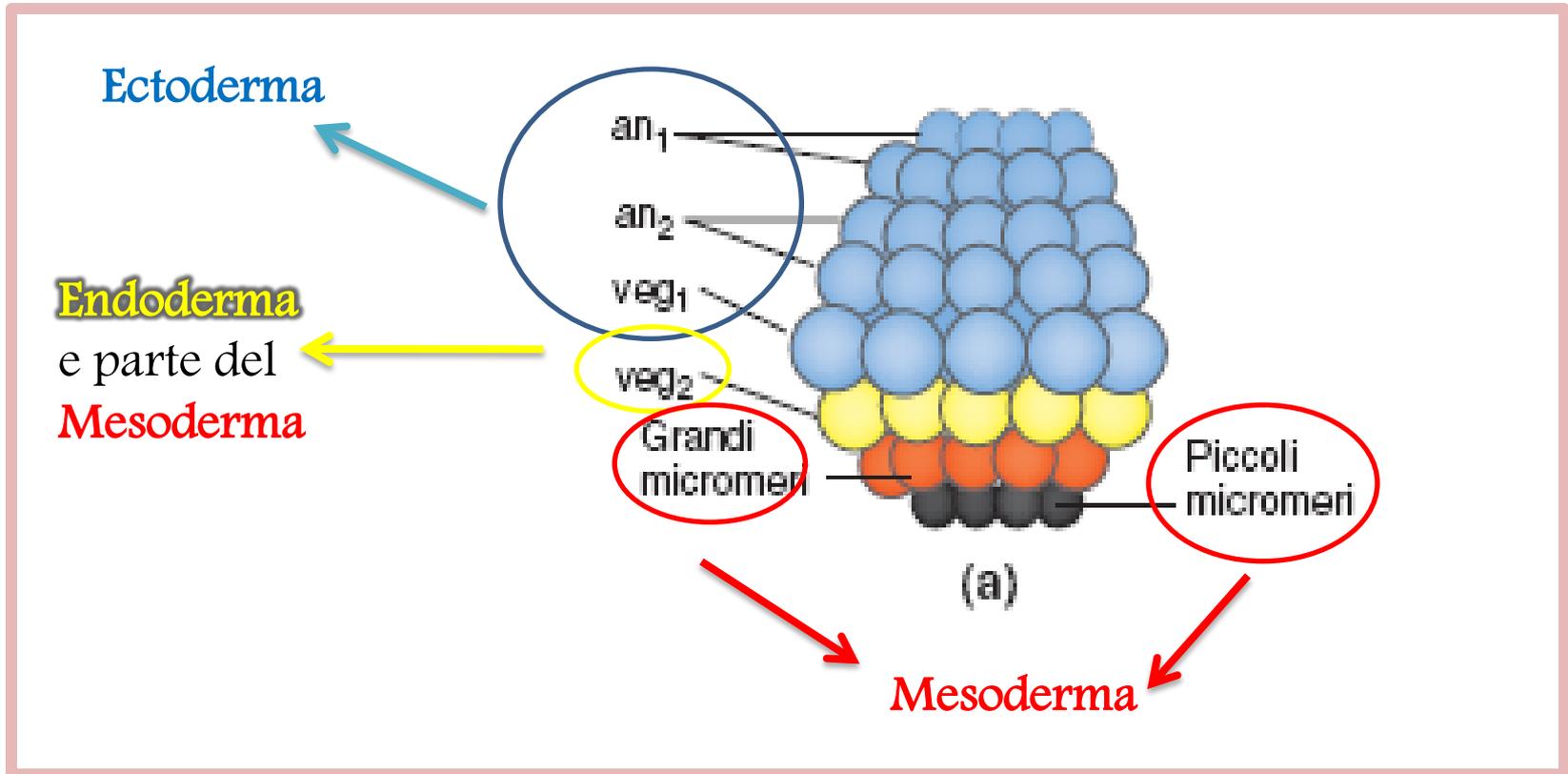
Delaminazione



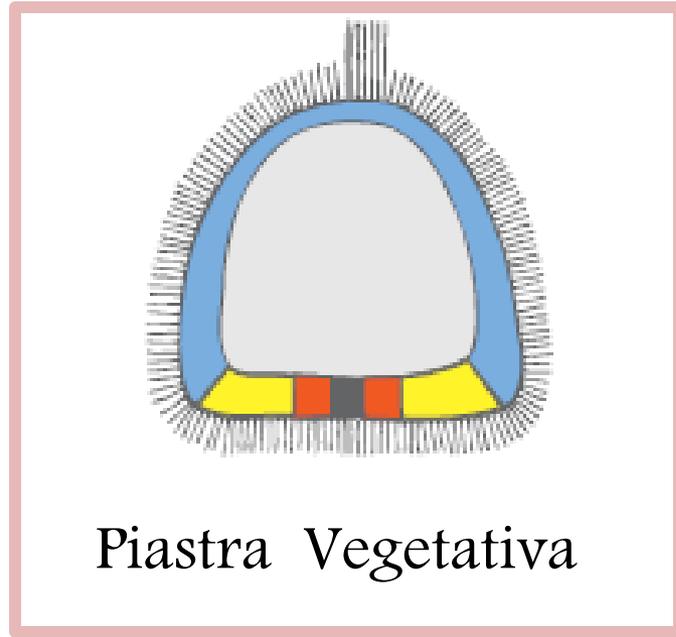
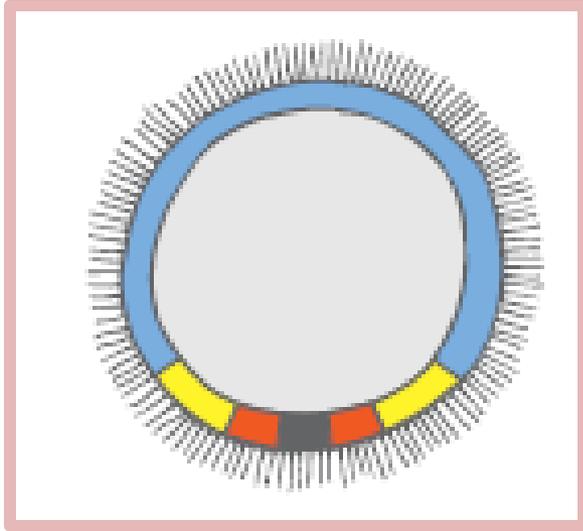
La gastrulazione nel riccio di mare



La gastrulazione nel riccio di mare



La gastrulazione nel riccio di mare

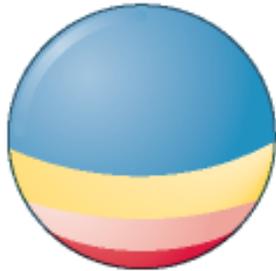


Piastra Vegetativa

La gastrulazione nel riccio di mare

(A)

Polo animale

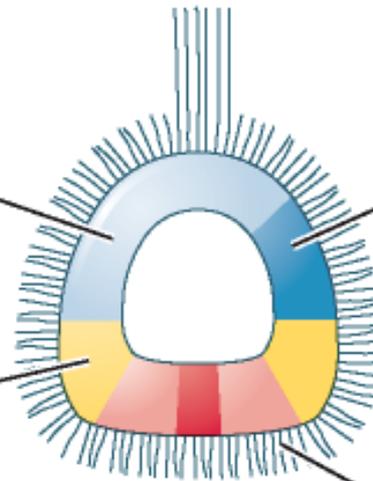


Polo vegetativo

(B)

Ectoderma

Endoderma

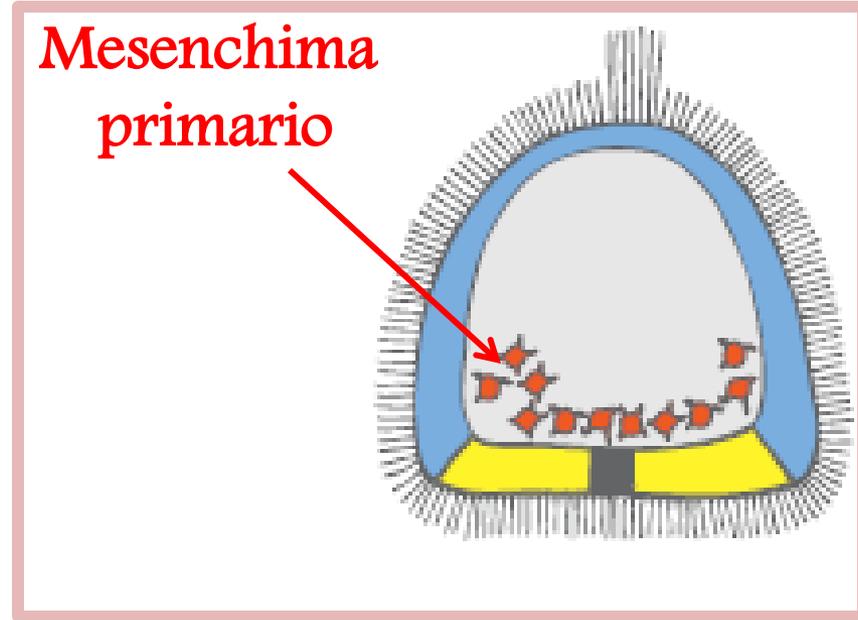
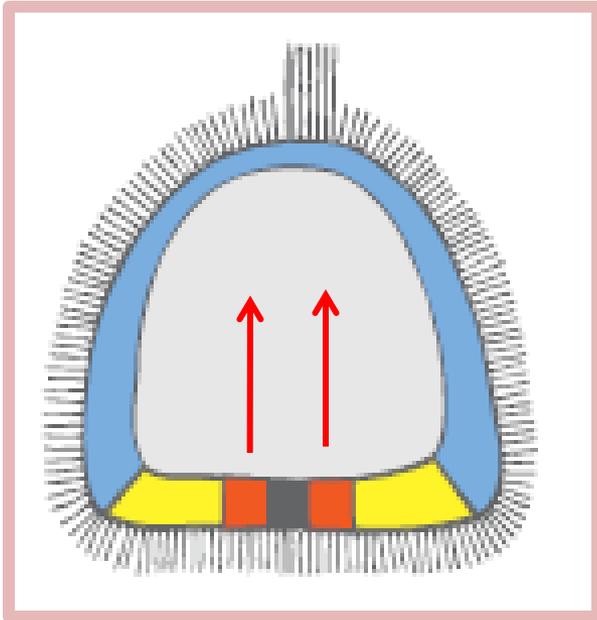


Ectoderma
orale

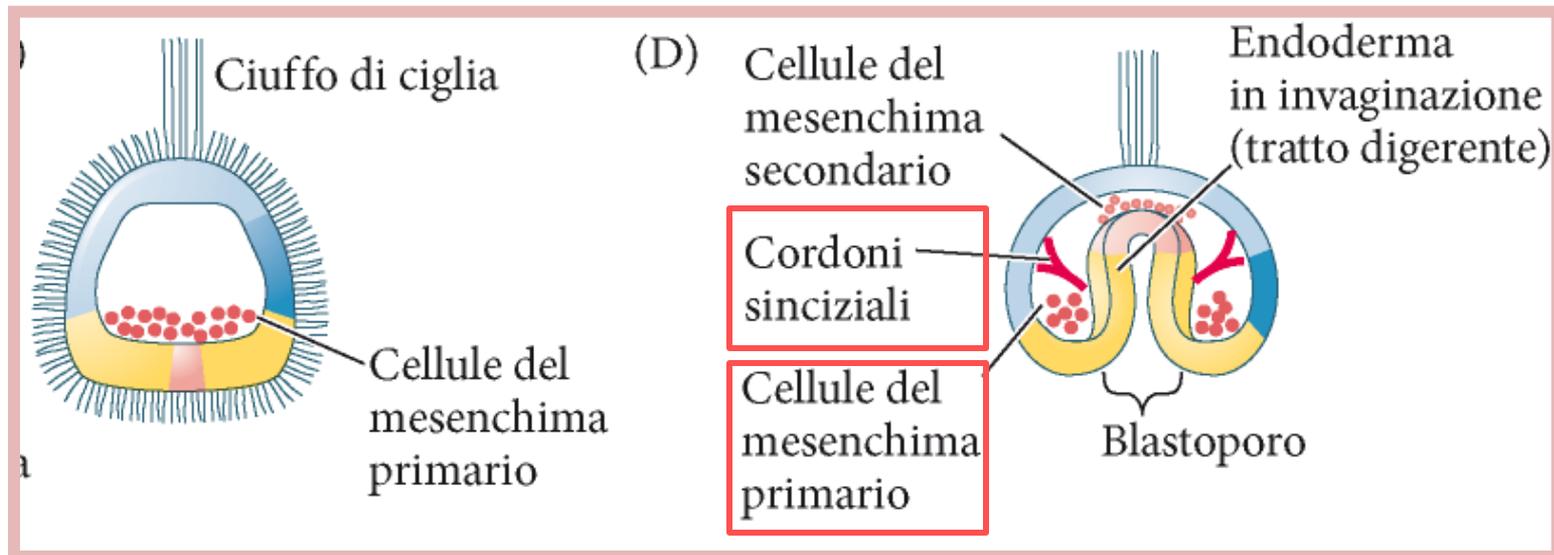
Piastra vegetativa

(C)

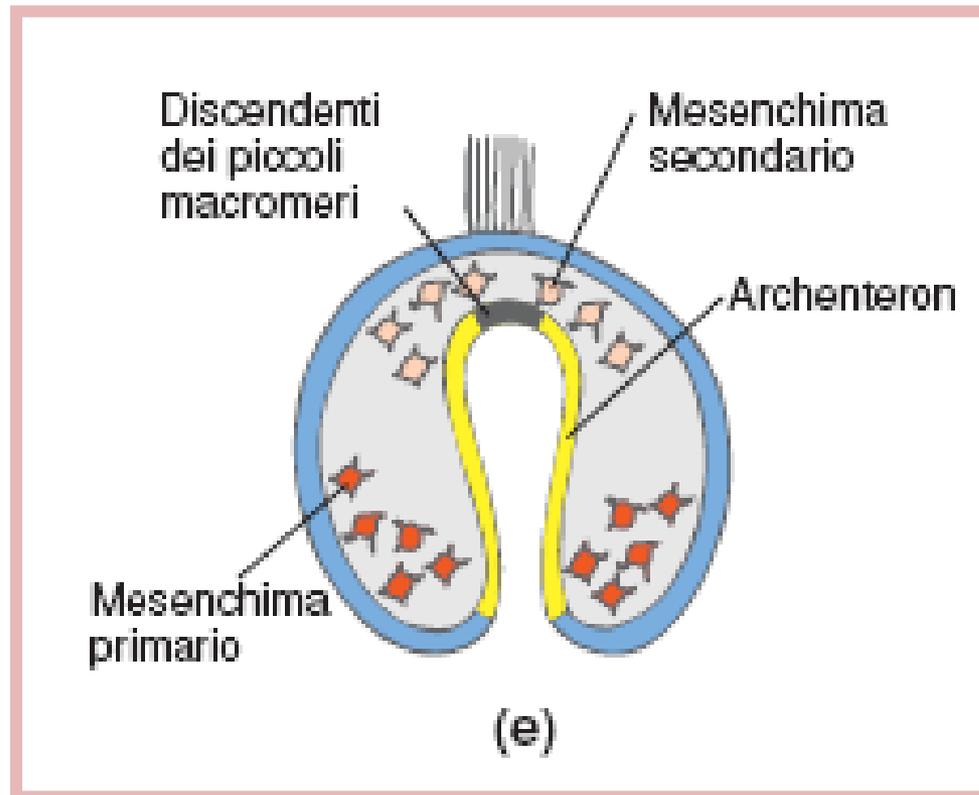
La gastrulazione nel riccio di mare: ingresso del mesenchima scheletogeno

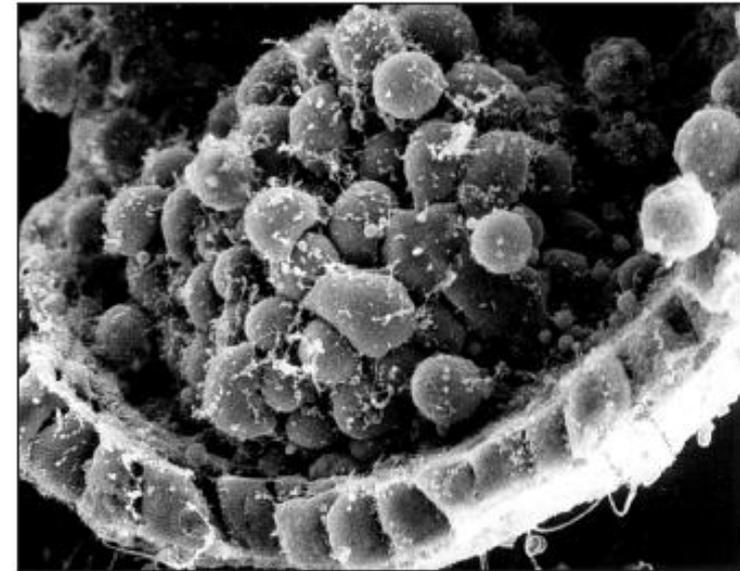
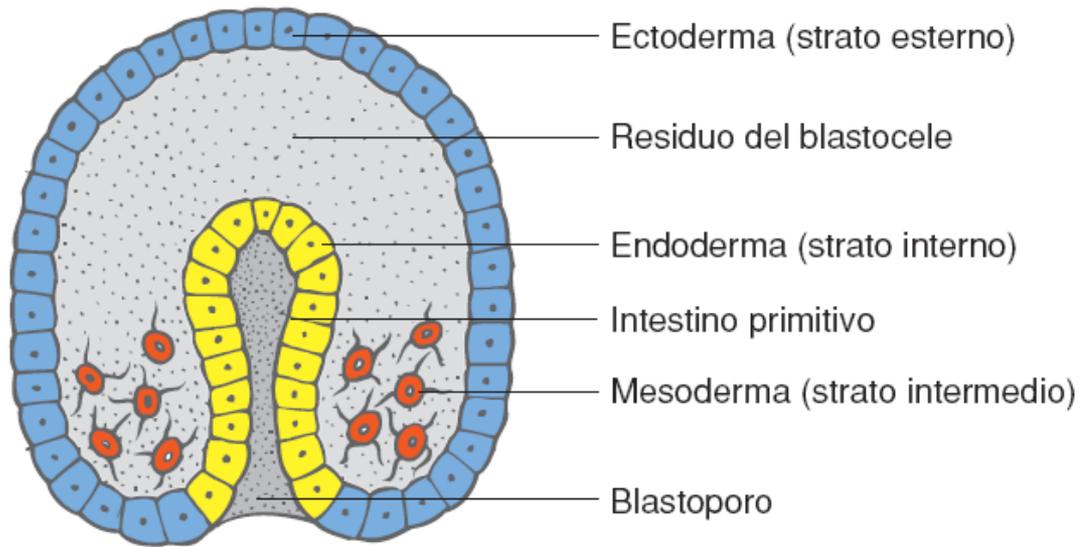


La gastrulazione nel riccio di mare: ingresso del mesenchima scheletogeno

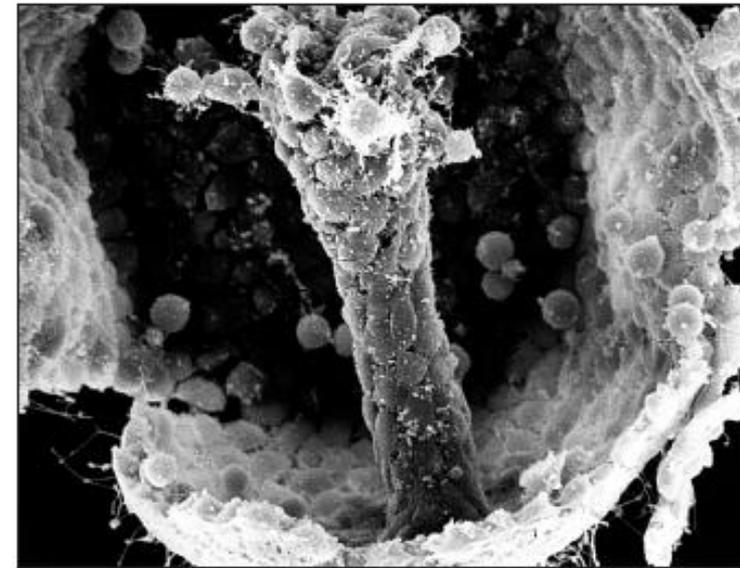


La gastrulazione nel riccio di mare



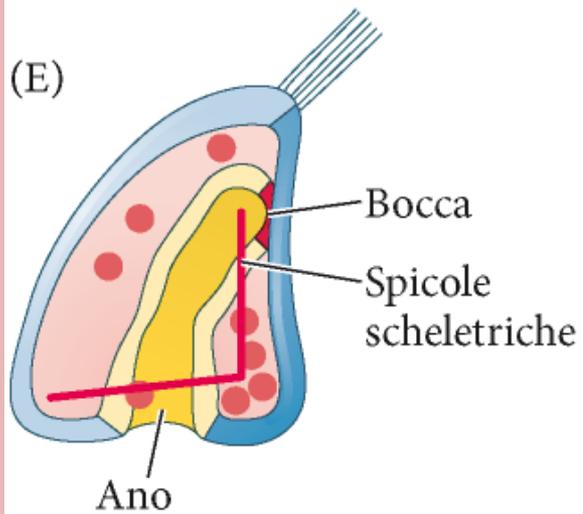


(a)

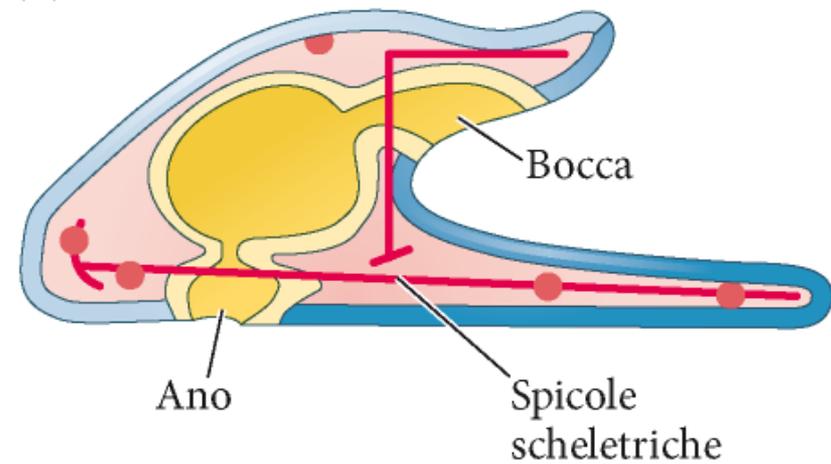


(b)

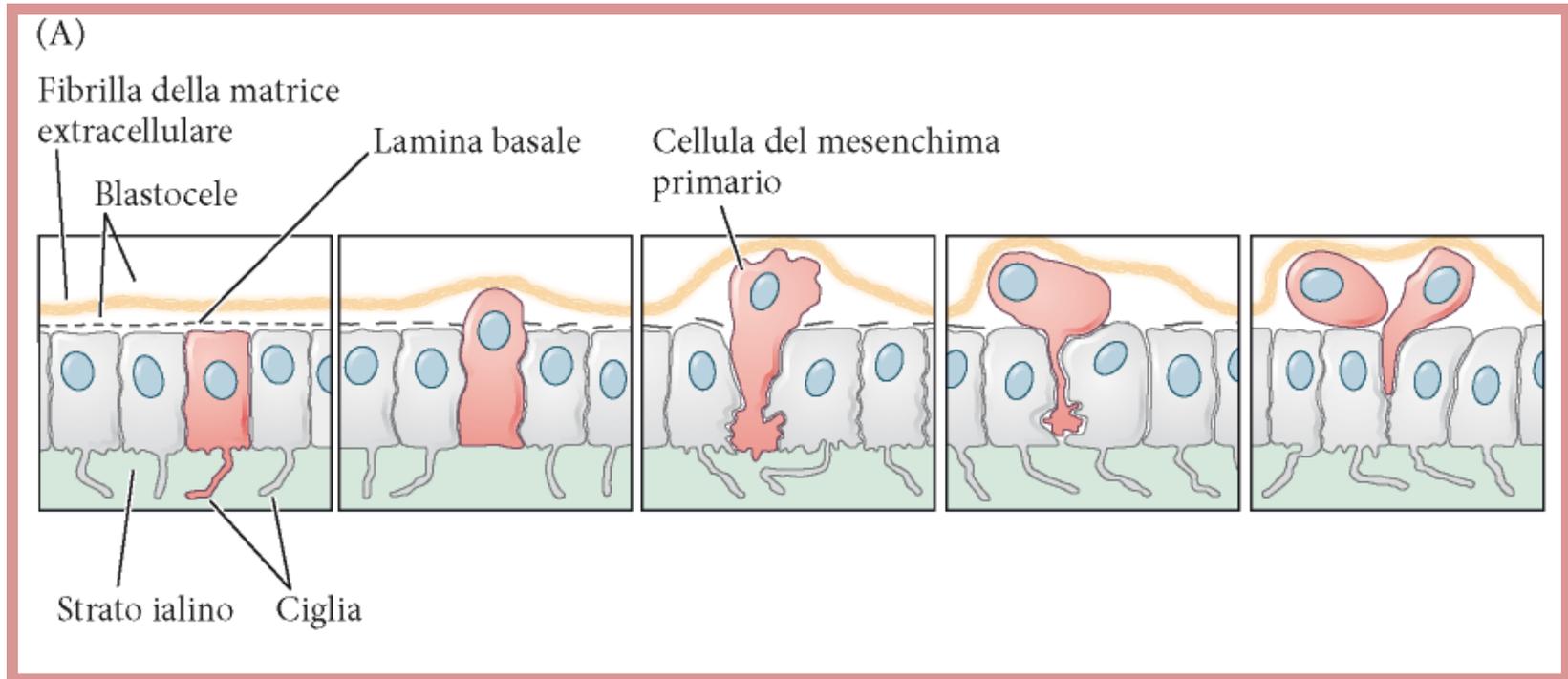
(E)



(F)

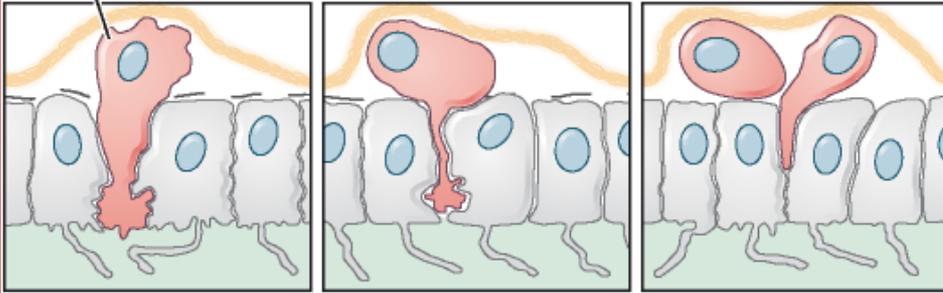


La gastrulazione nel riccio di mare: ingresso dei discendenti dei micromeri nel blastocele

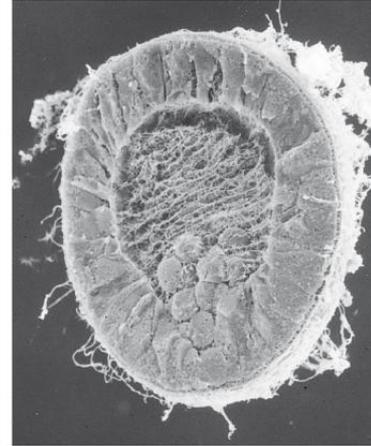


La gastrulazione nel riccio di mare: ingresso dei discendenti dei micromeri nel blastocele

Cellula del mesenchima
primario



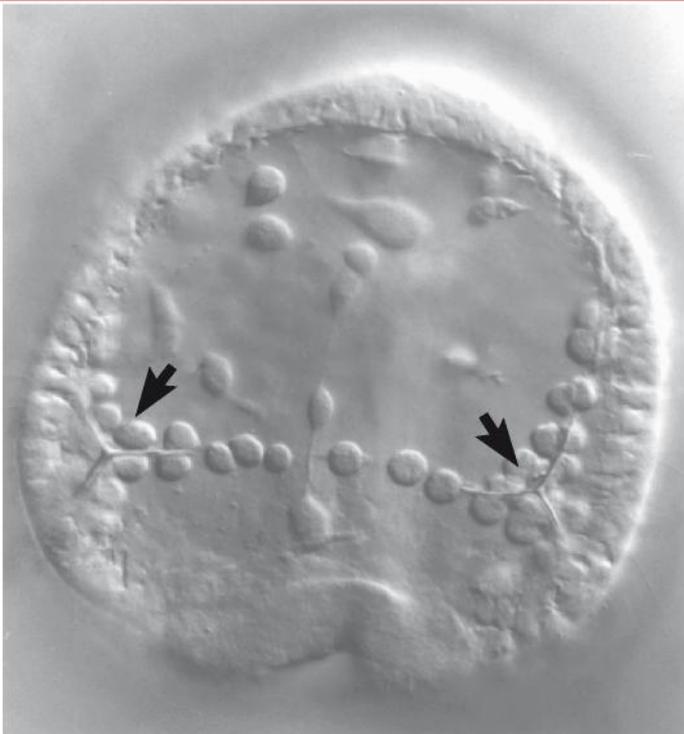
(B)



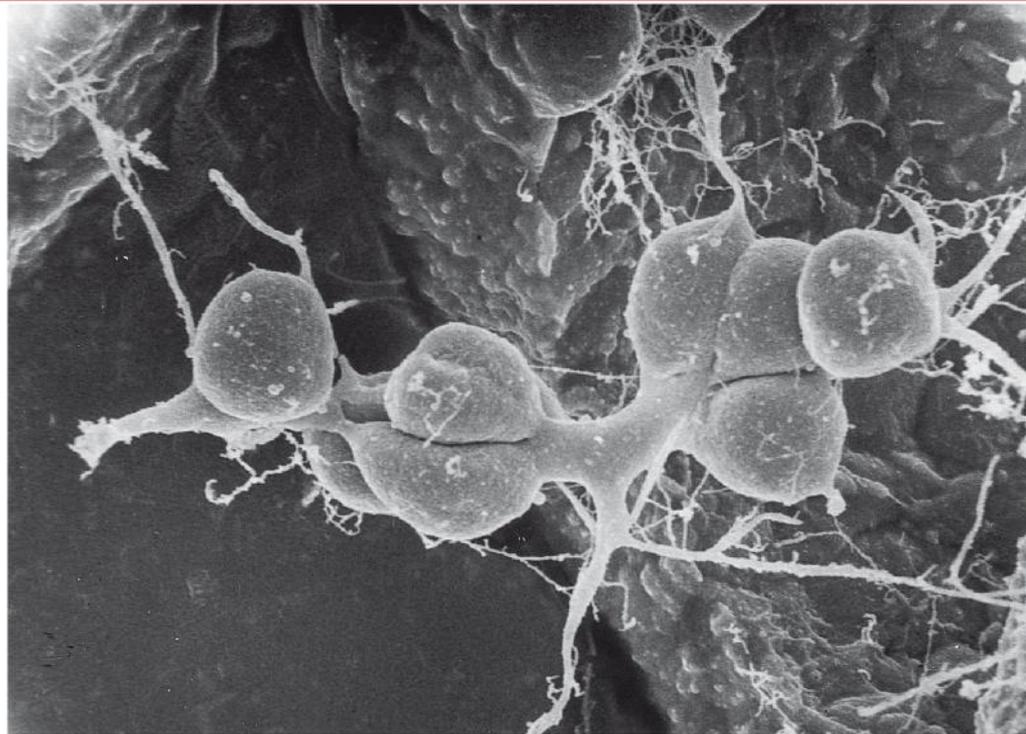
(C)

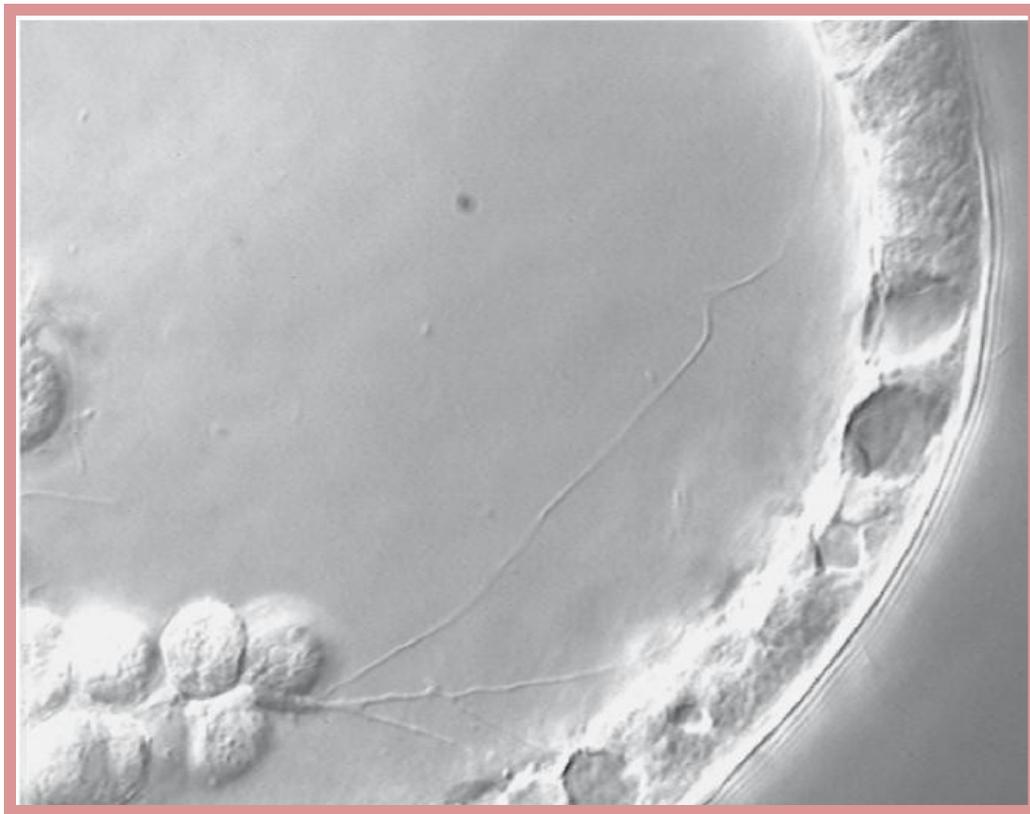


(A)

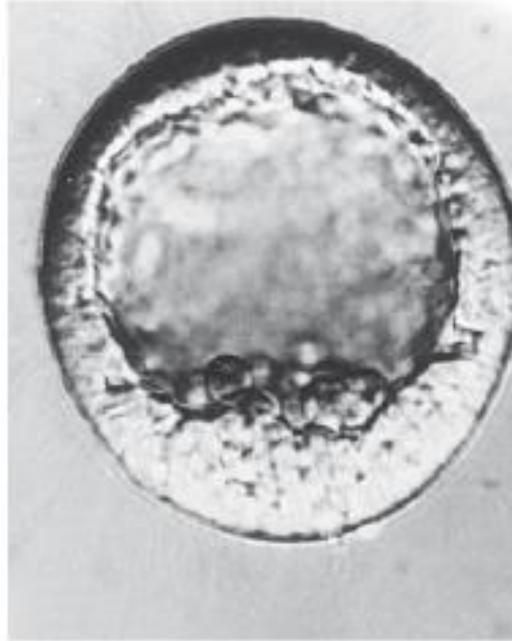


(B)

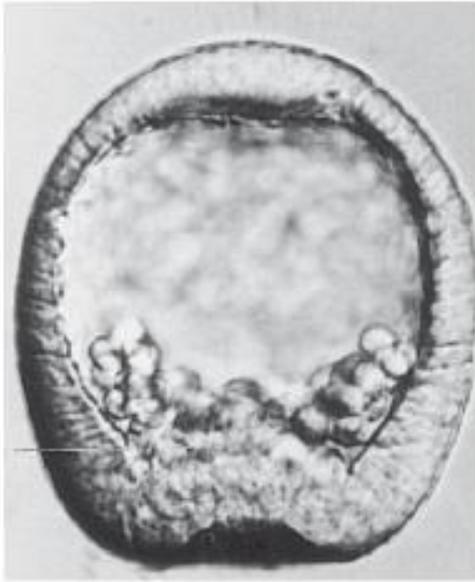




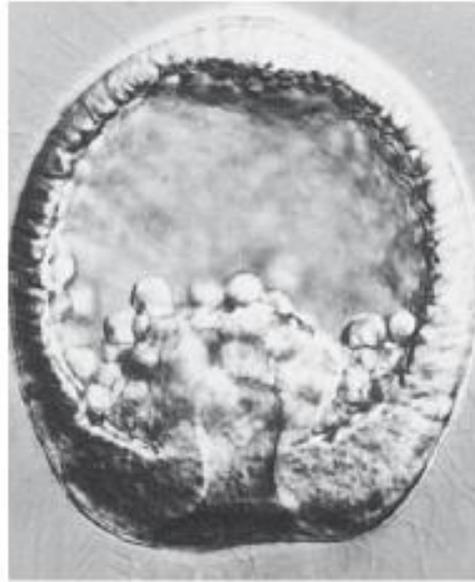
L'invaginazione dell'archenteron



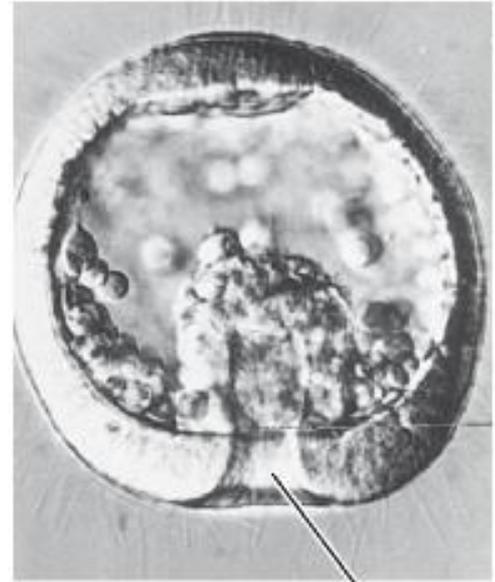
9 ore



10,5 ore

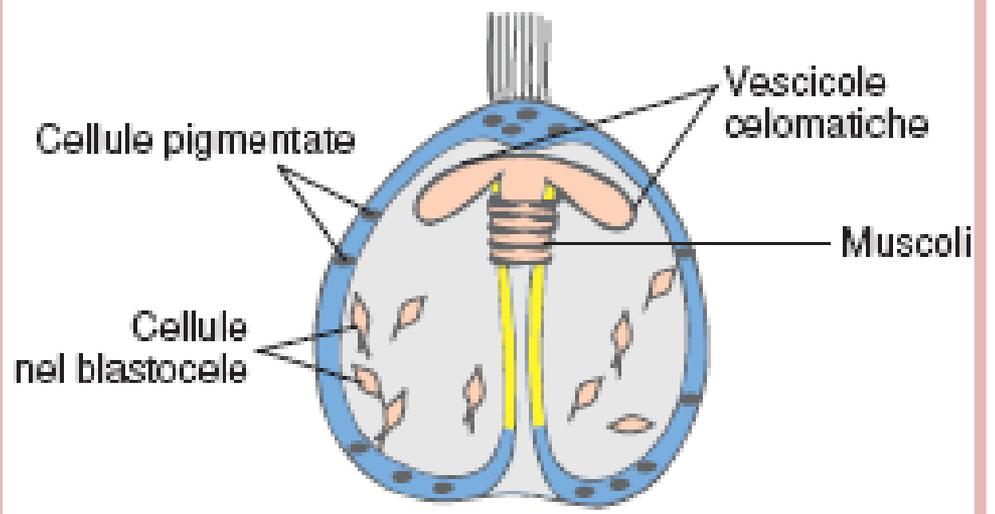
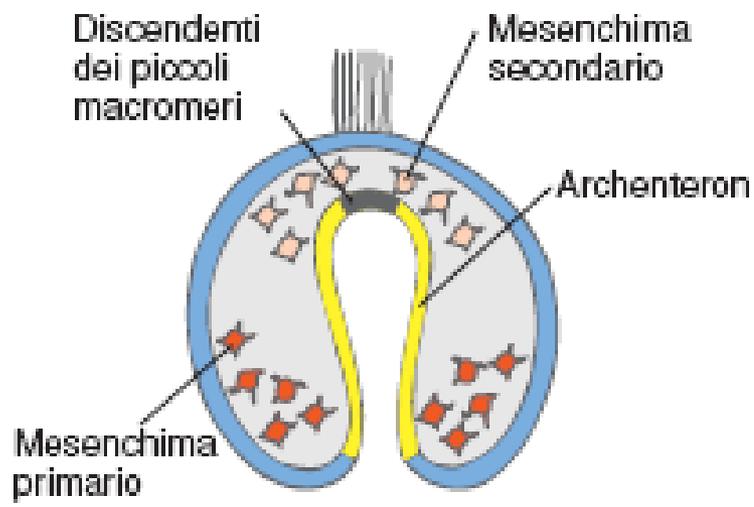


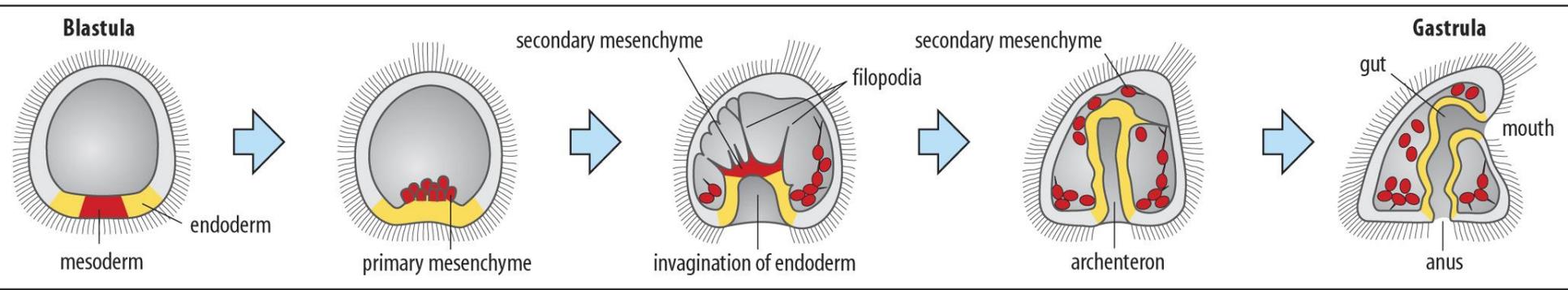
11 ore



11,5 ore

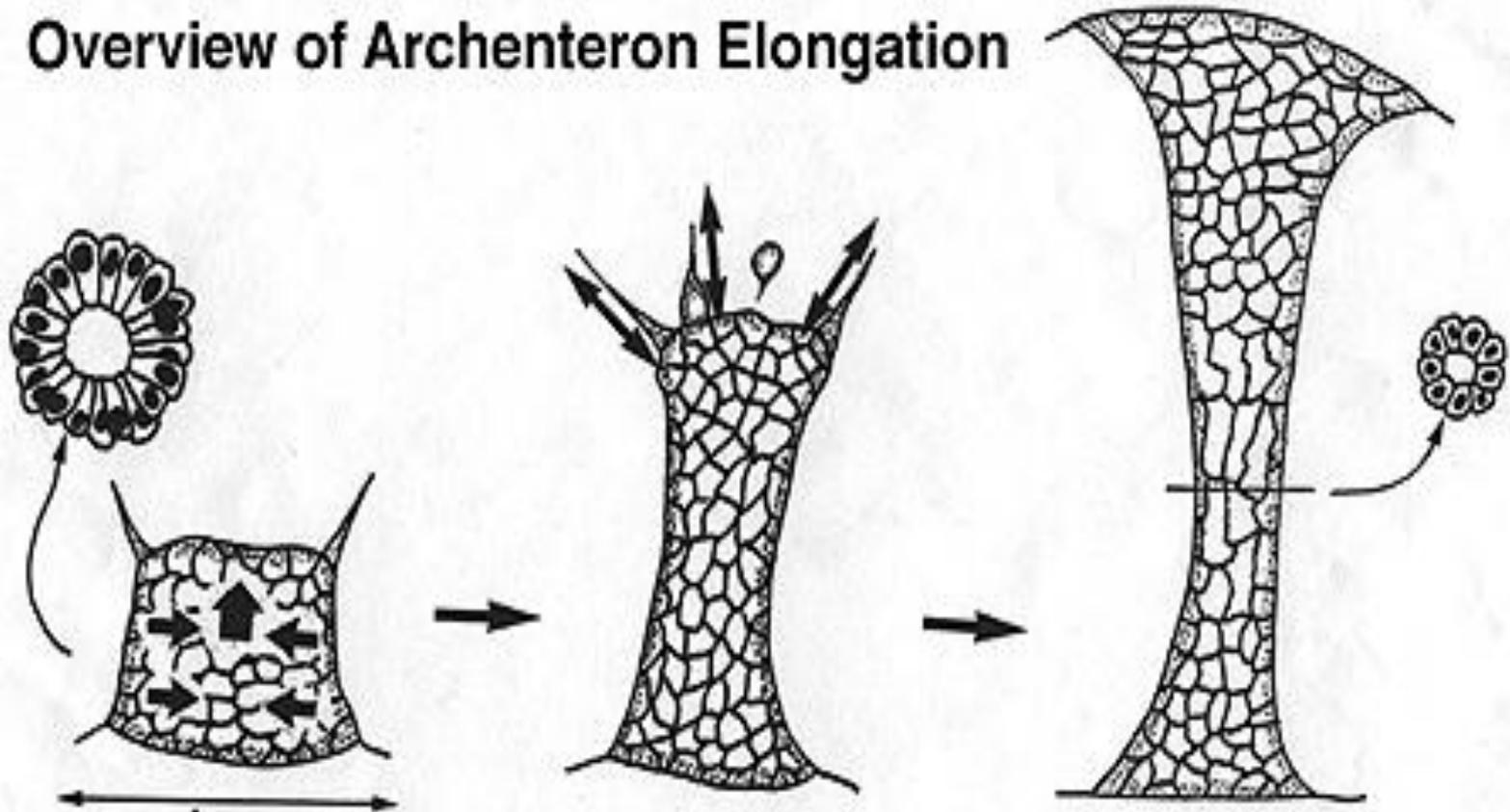
Blastoporo





L'allungamento dell'archenteron

Overview of Archenteron Elongation



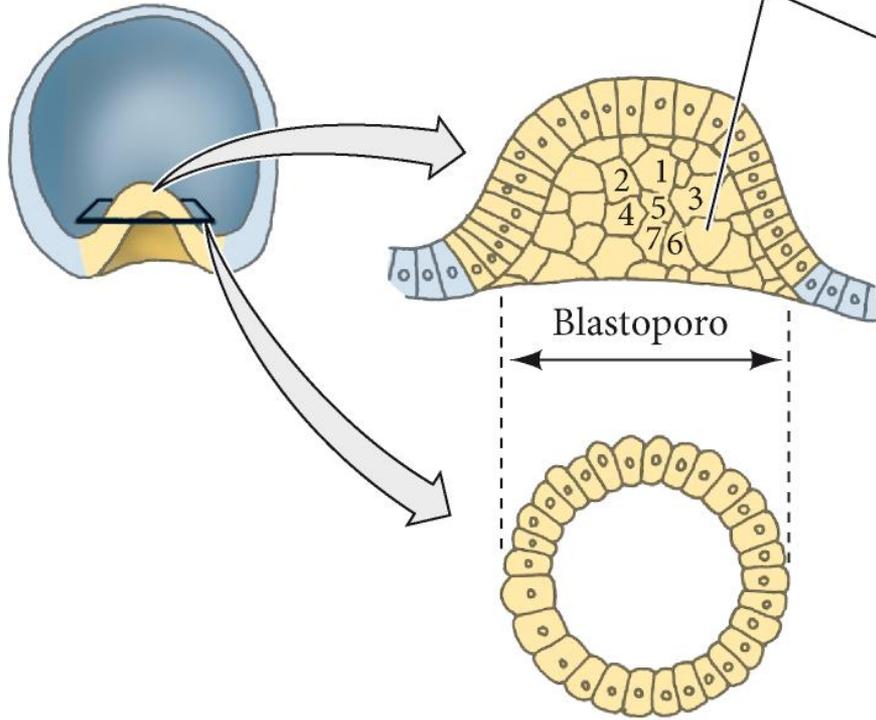
L'allungamento dell'archenteron



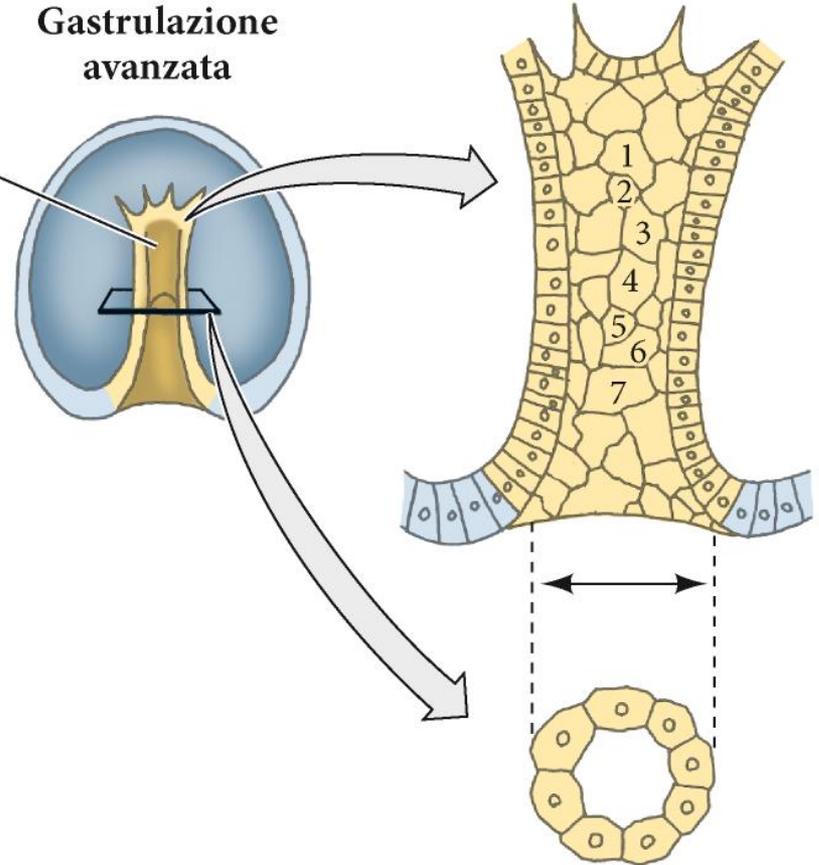
12 ore

L'allungamento dell'archenteron

Gastrulazione iniziale



Gastrulazione avanzata



L'allungamento dell'archenteron



12 ore



13 ore

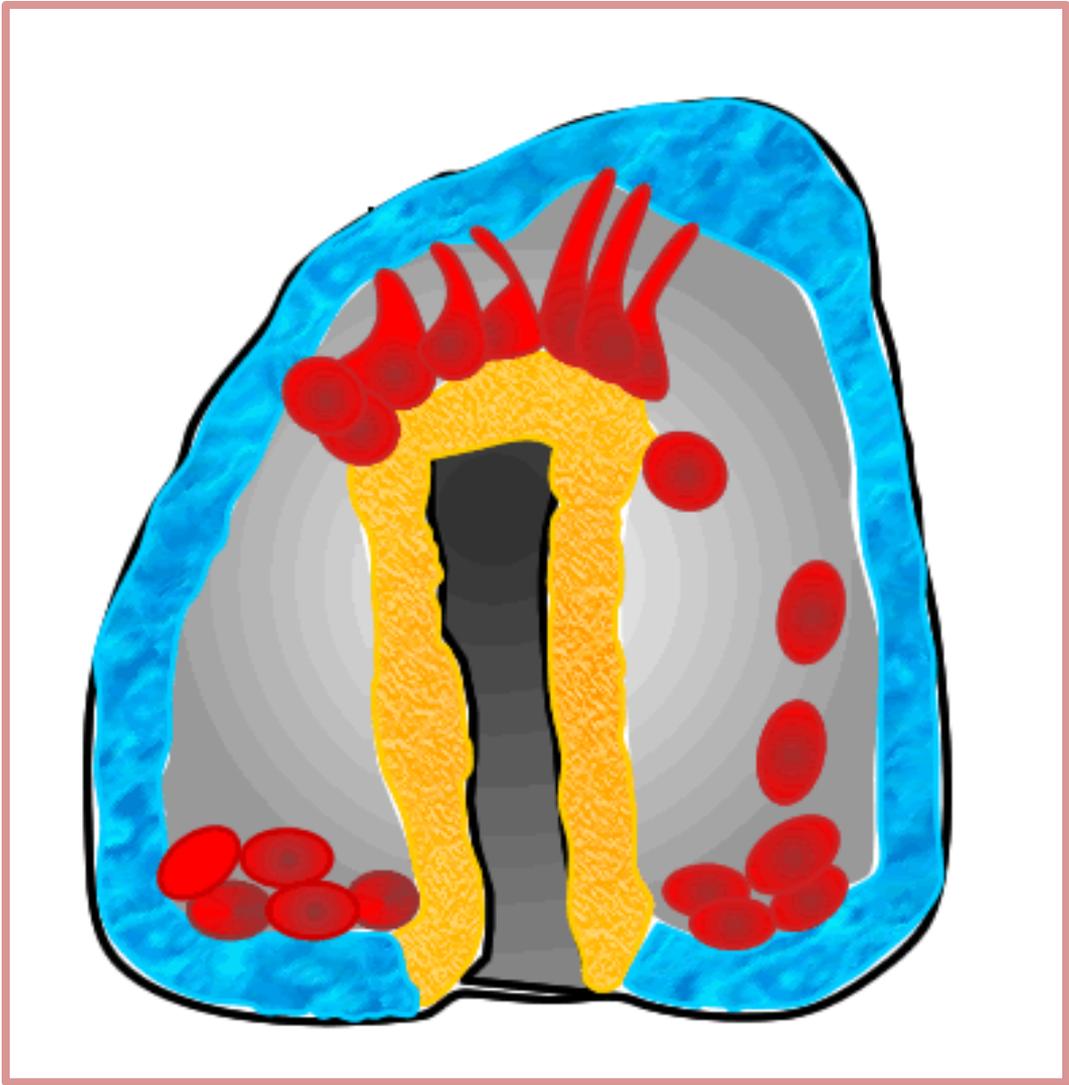
L'allungamento dell'archenteron

(A)



(B)

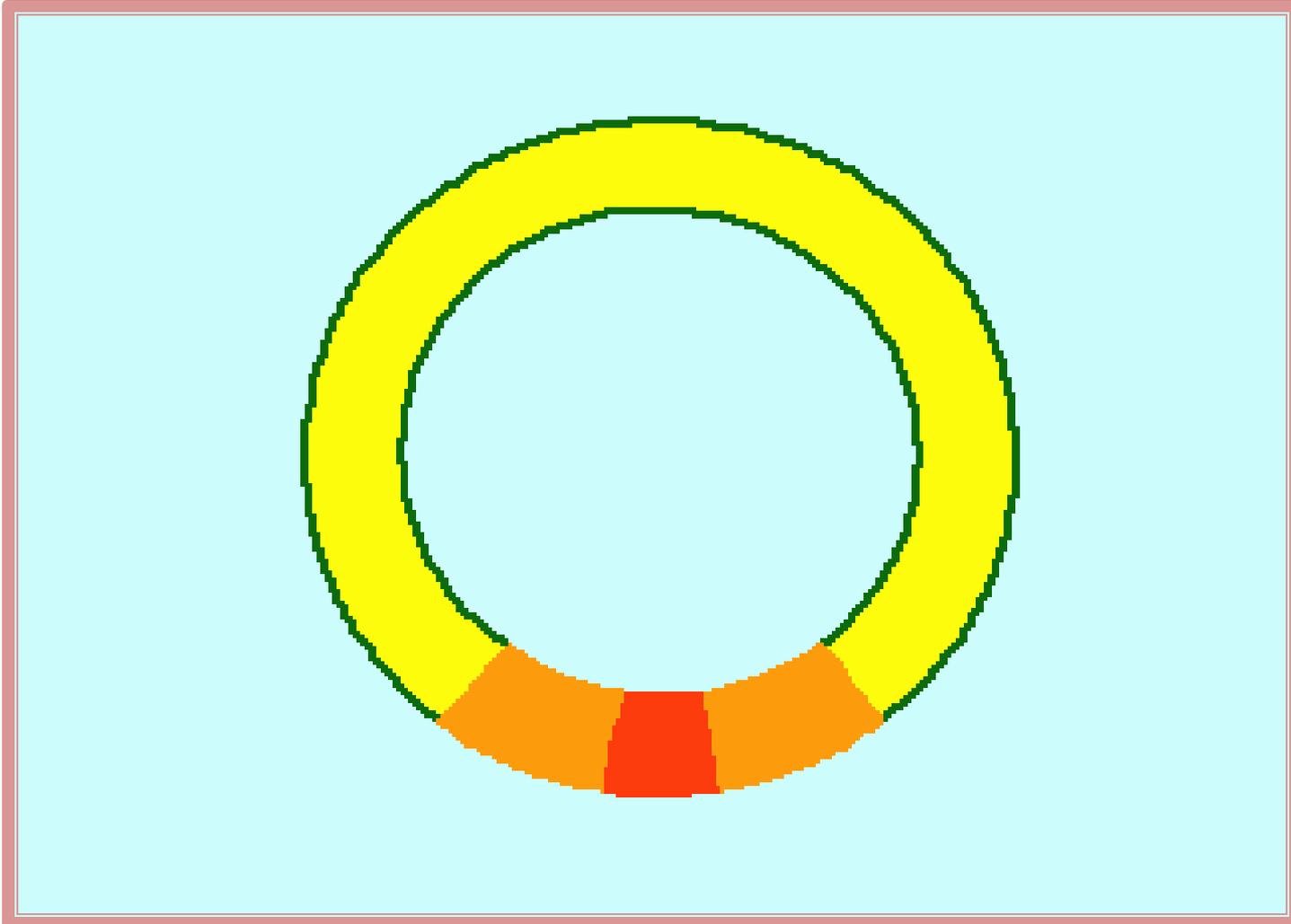






I filopodi del mesenchima secondario possono aderire su qualunque punto della parete del blastocele o esiste un bersaglio specifico nell'emisfero animale?

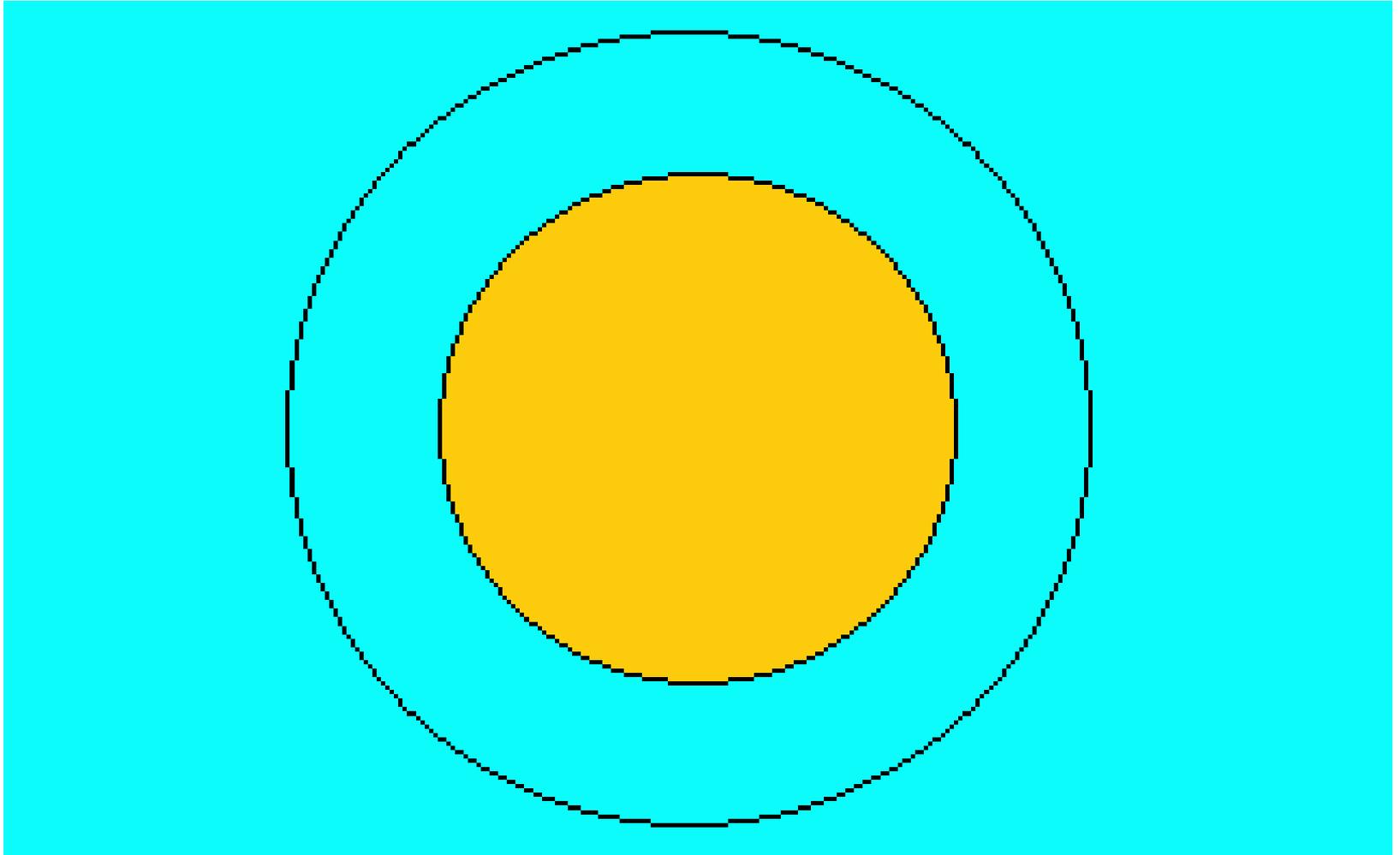
La gastrulazione nel riccio di mare



CROSS SECTIONAL VIEW: Yellow is **ectoderm**, orange is **endoderm**, red is **primary mesenchyme cells and skeleton**, orange "dots" are **secondary mesenchyme cells**. Process from "blastula" to "pluteus" takes about 48 hours.

Note: Anus is formed before the mouth.





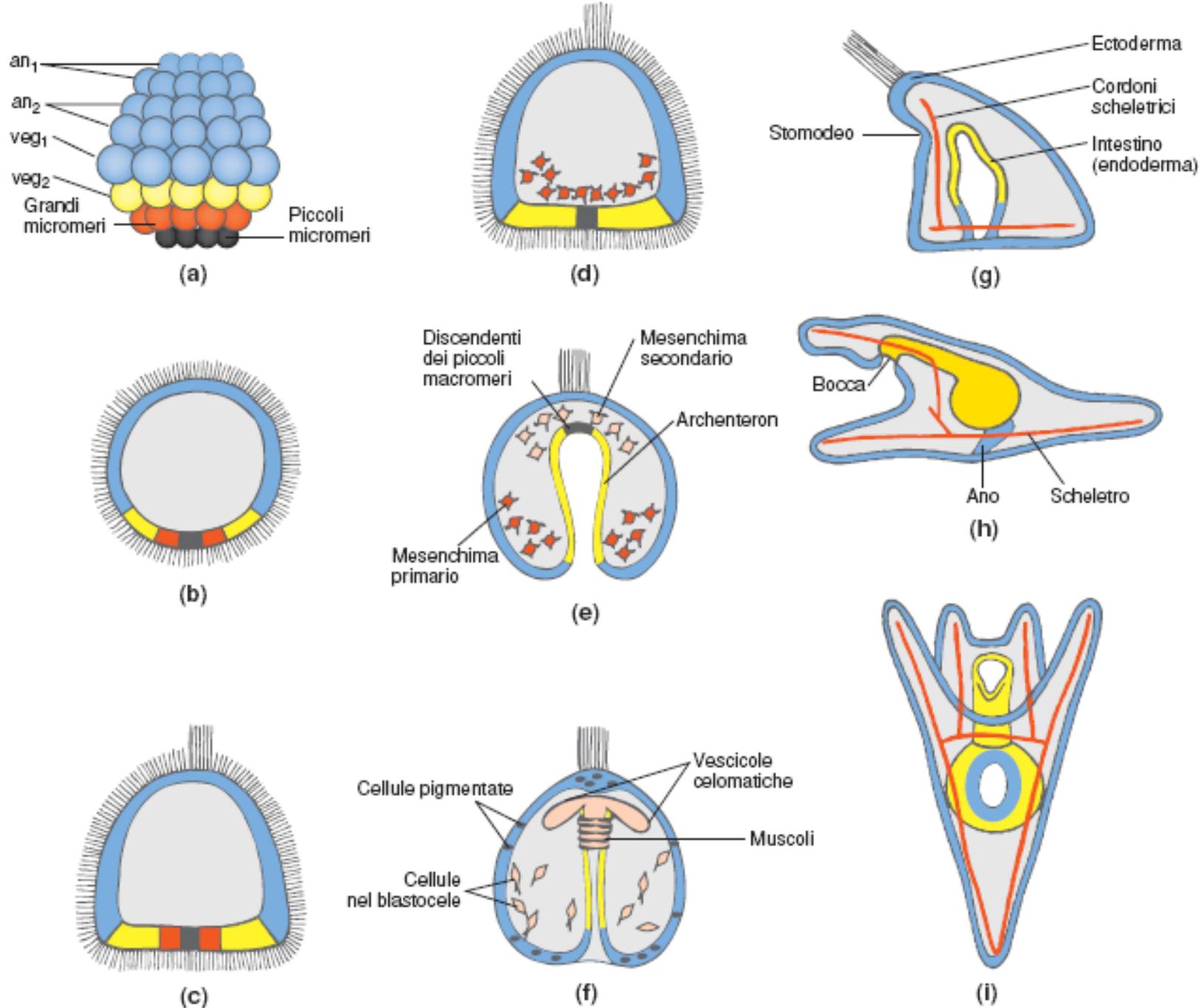
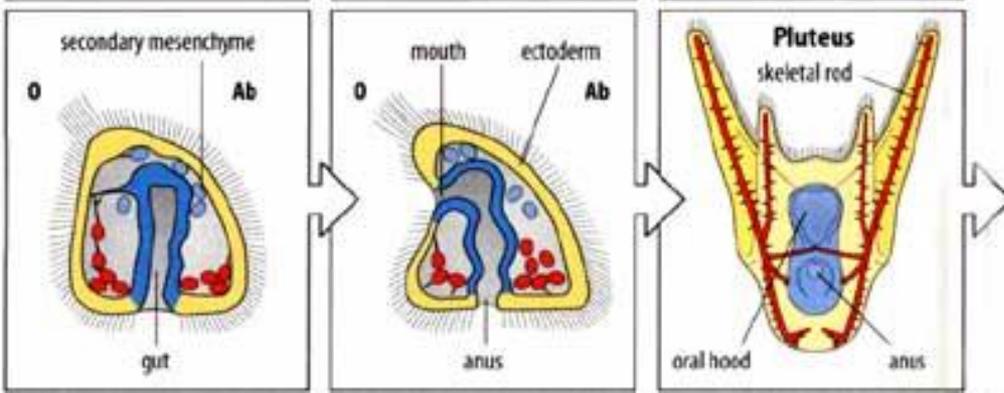
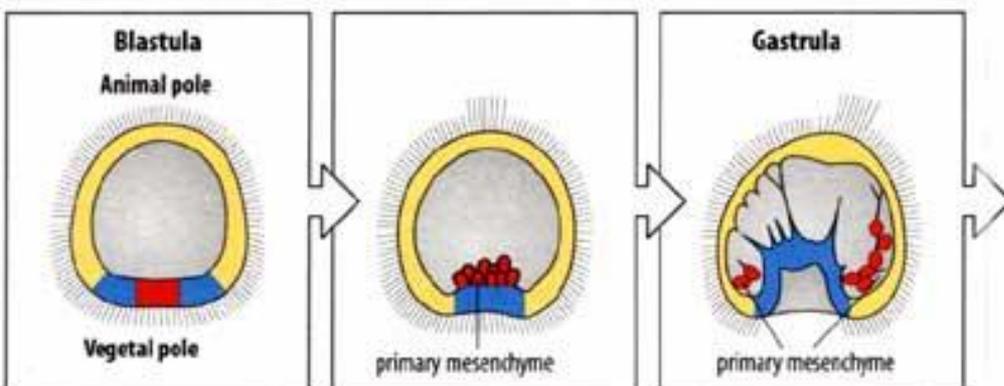
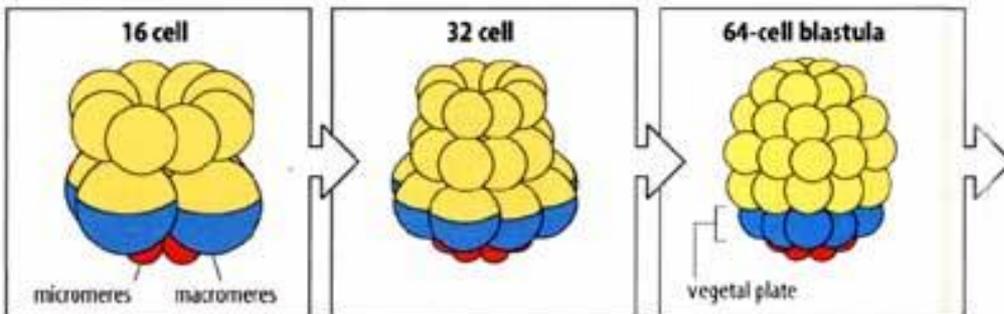
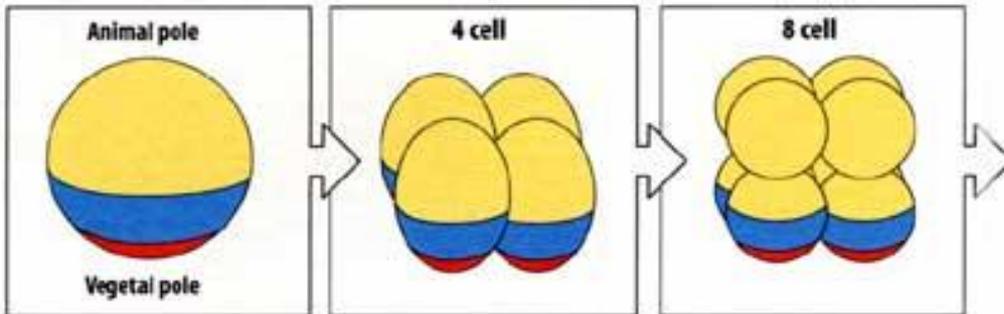
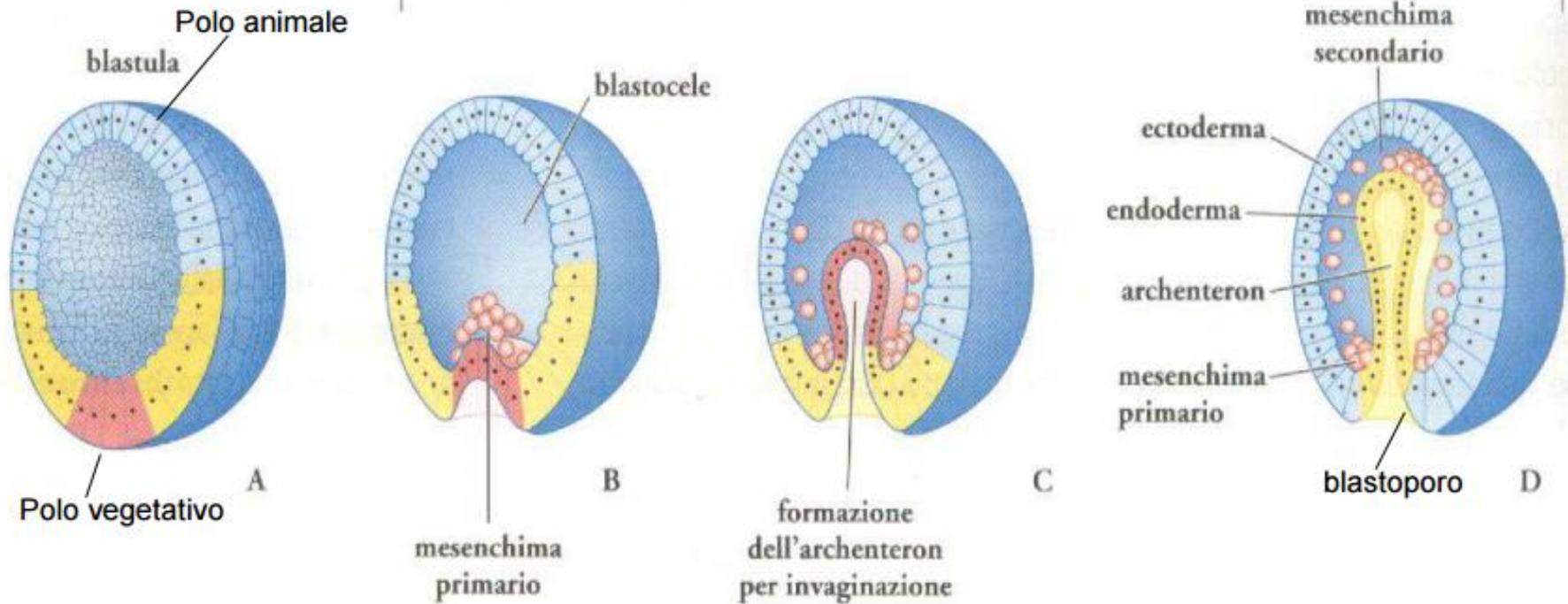
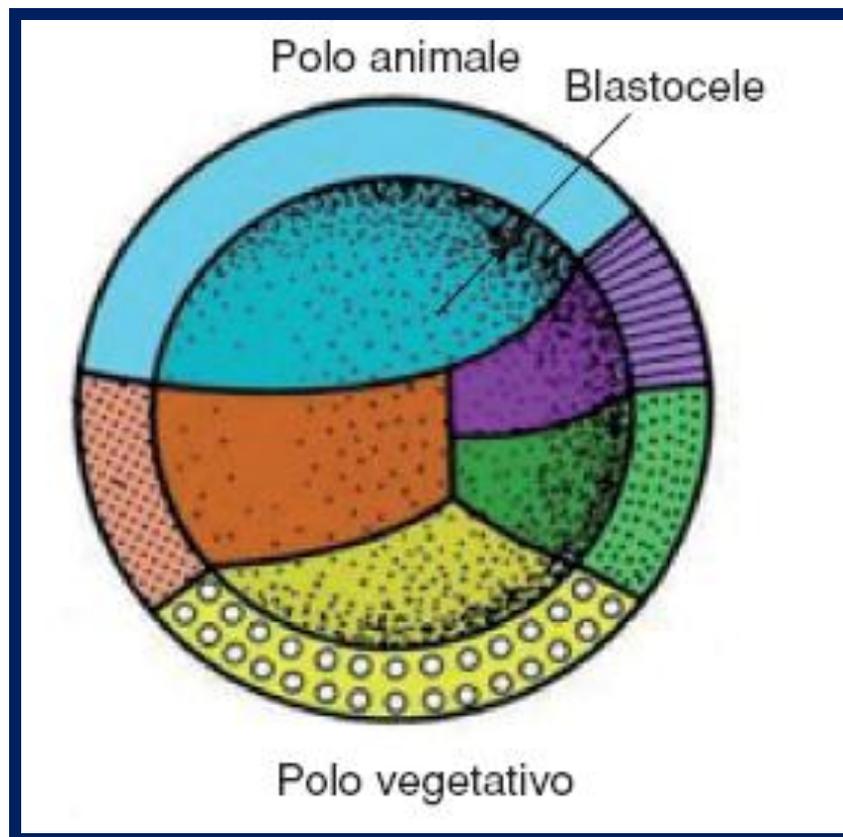


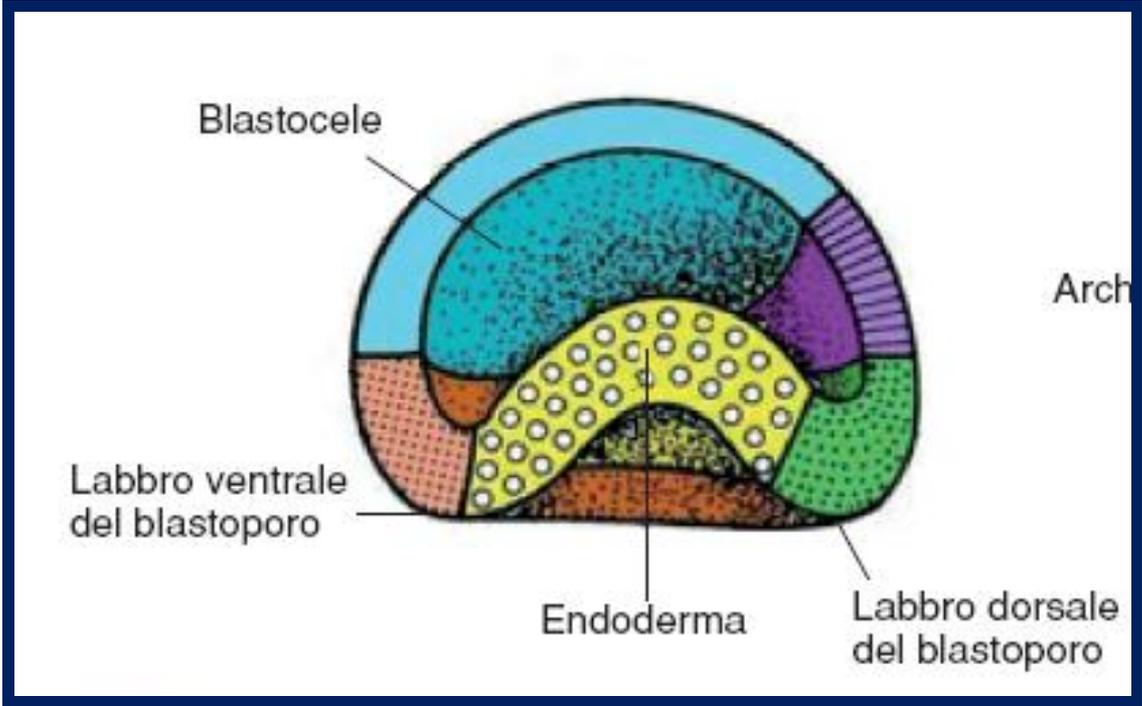
Figura 10.5 Gastrulazione nel riccio di mare. (a) La blastula iniziale è formata da 60 cellule. Al polo animale i pri

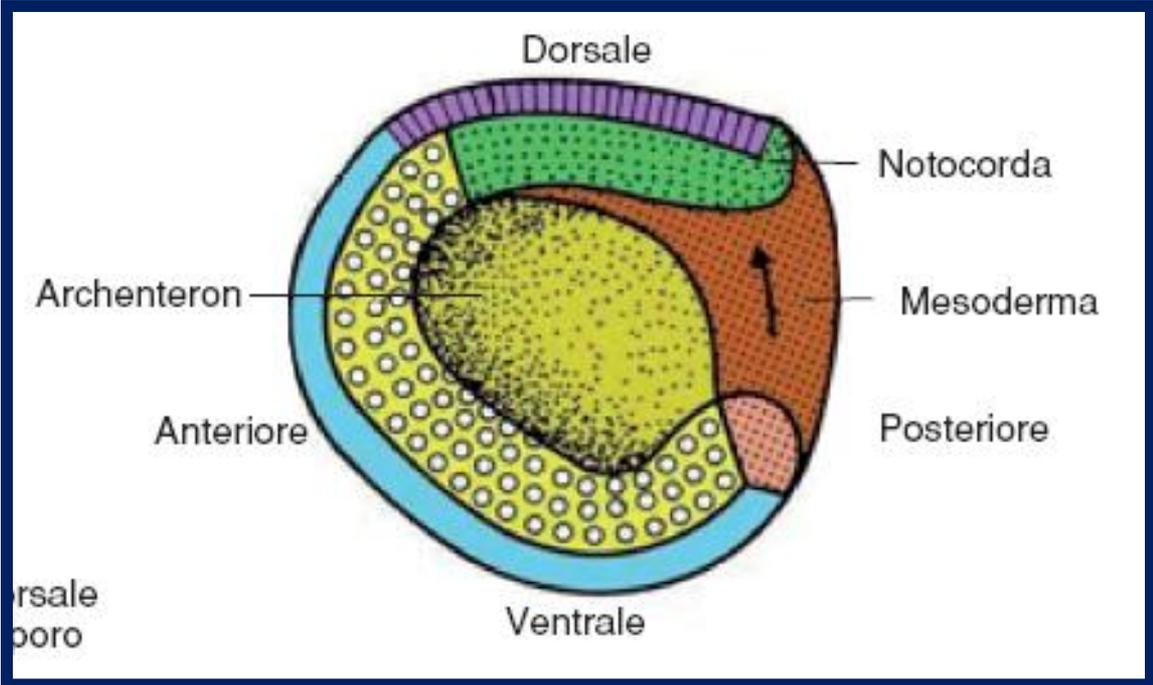


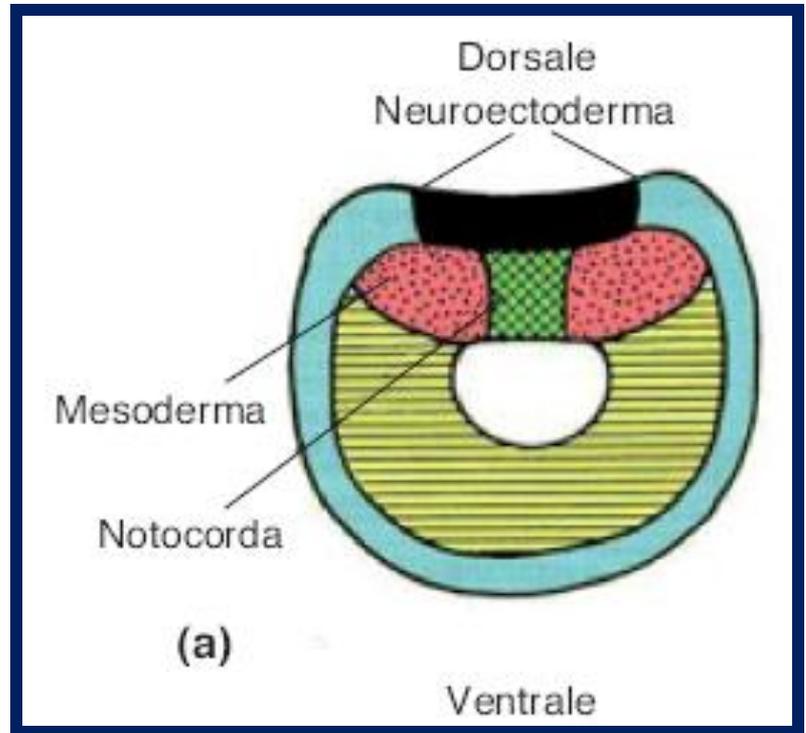
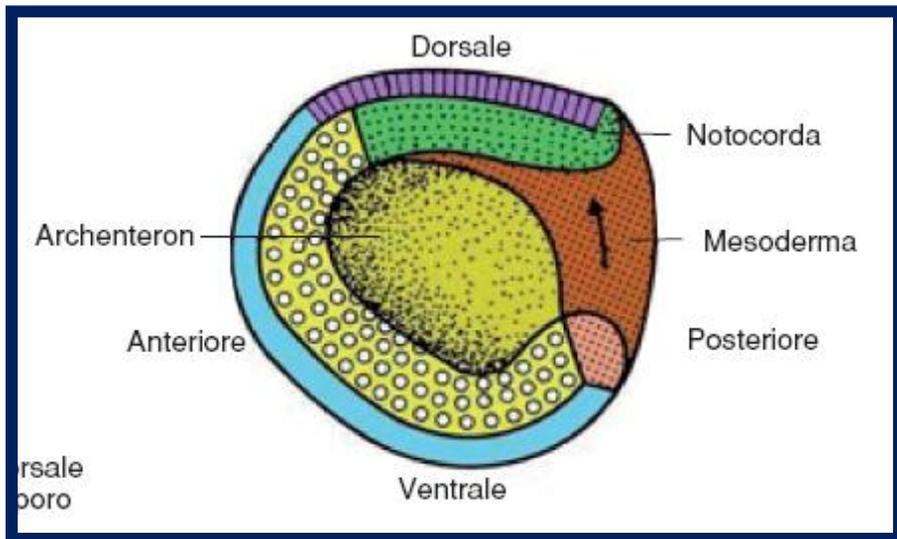
Gastrulazione anfioso



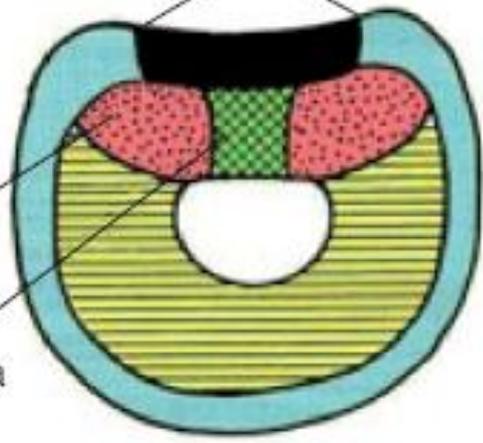








Dorsale
Neuroectoderma

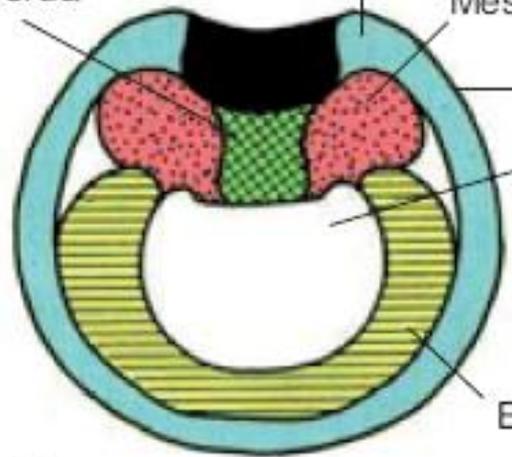


Mesoderma
Notocorda

(a)

Ventrale

Notocorda Ectoderma Mesoderma



Notocorda

Mesoderma

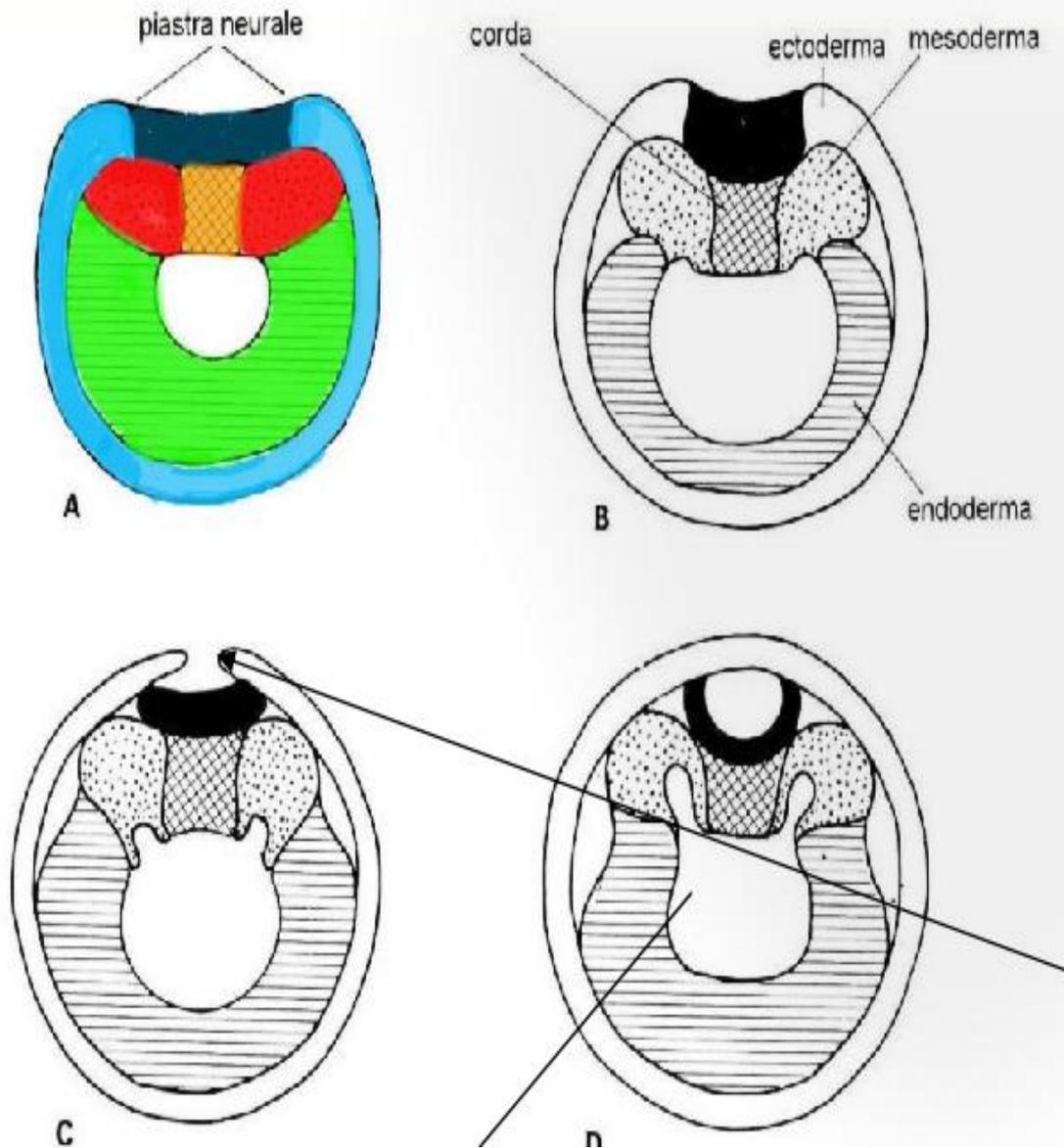
Piastra neurale

Archenteron

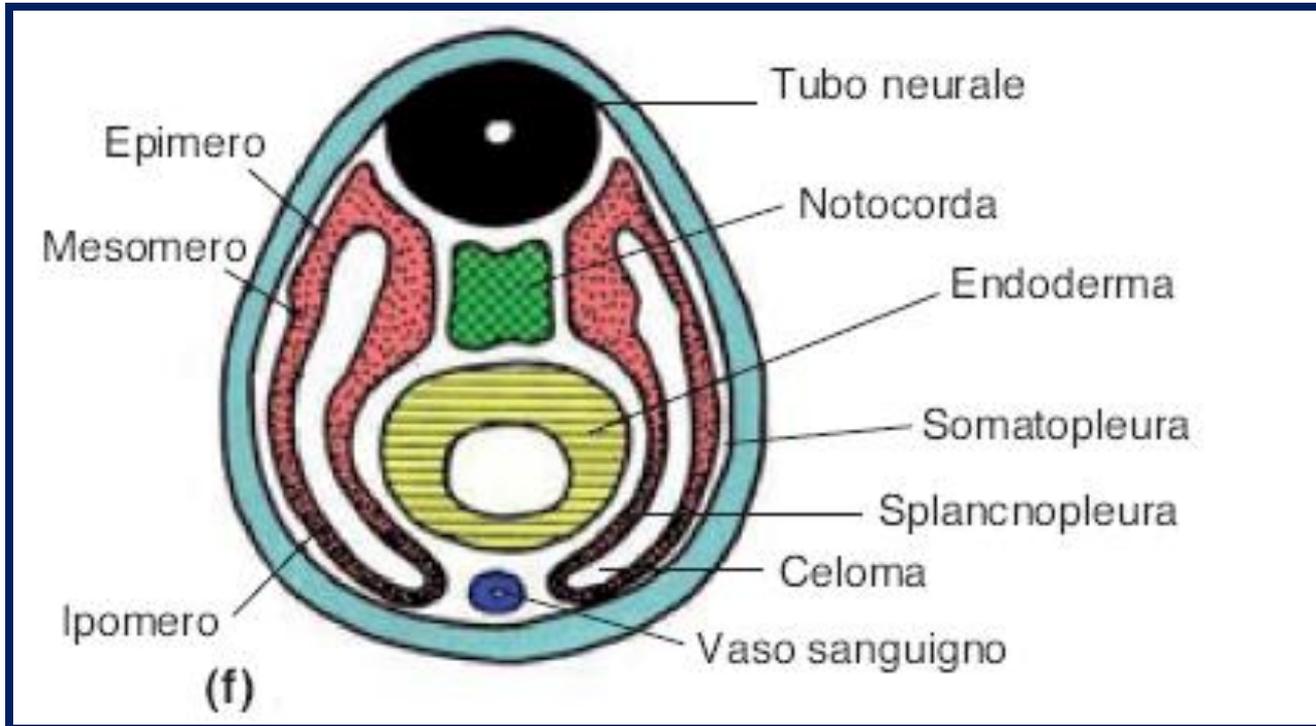
Endoderma

(b)

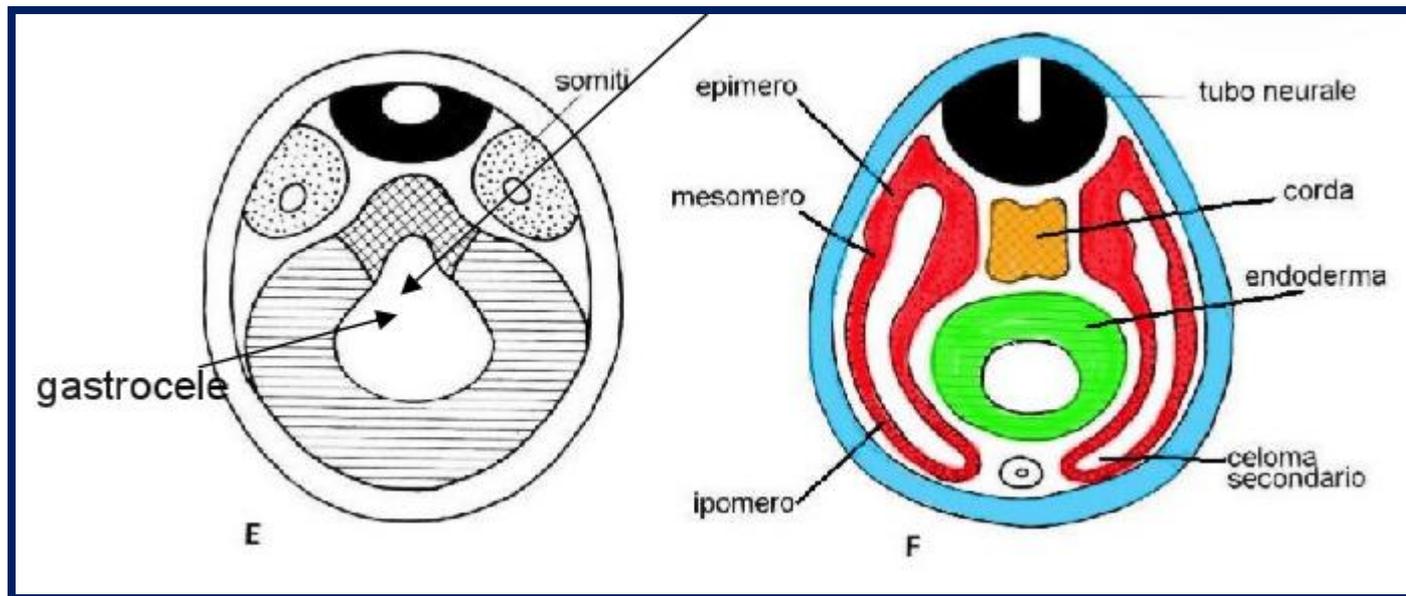
Neurulazione anfiosso



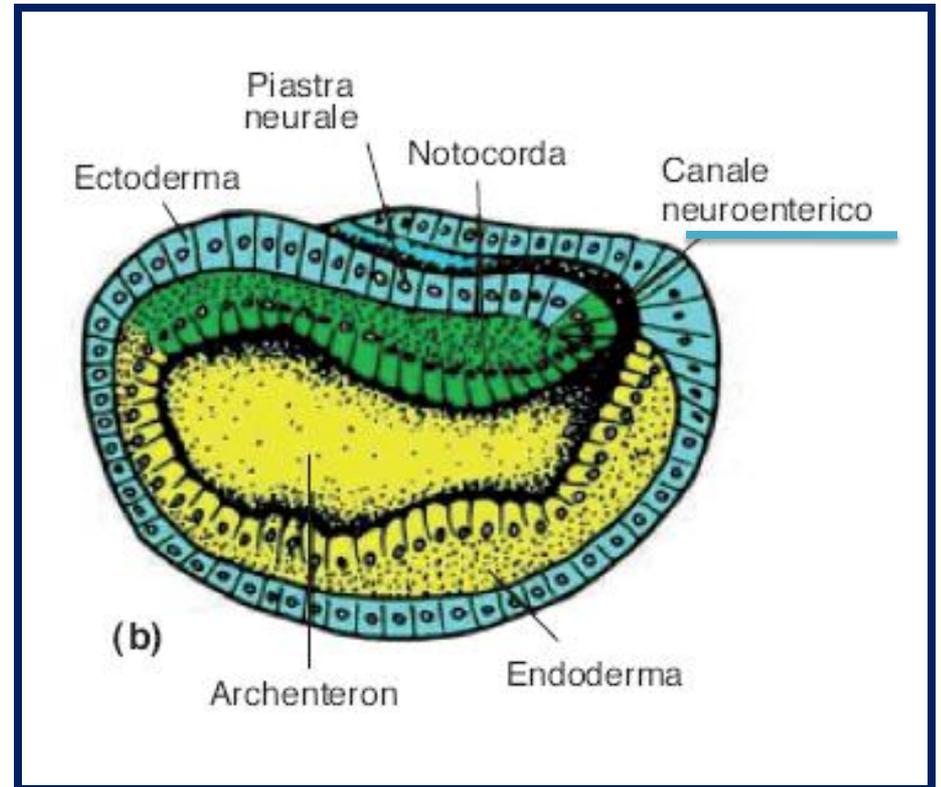
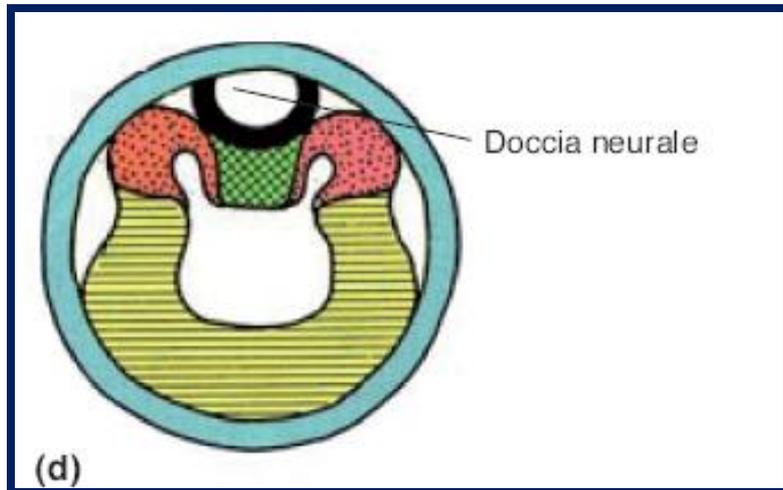
Neurulazione anfiosso



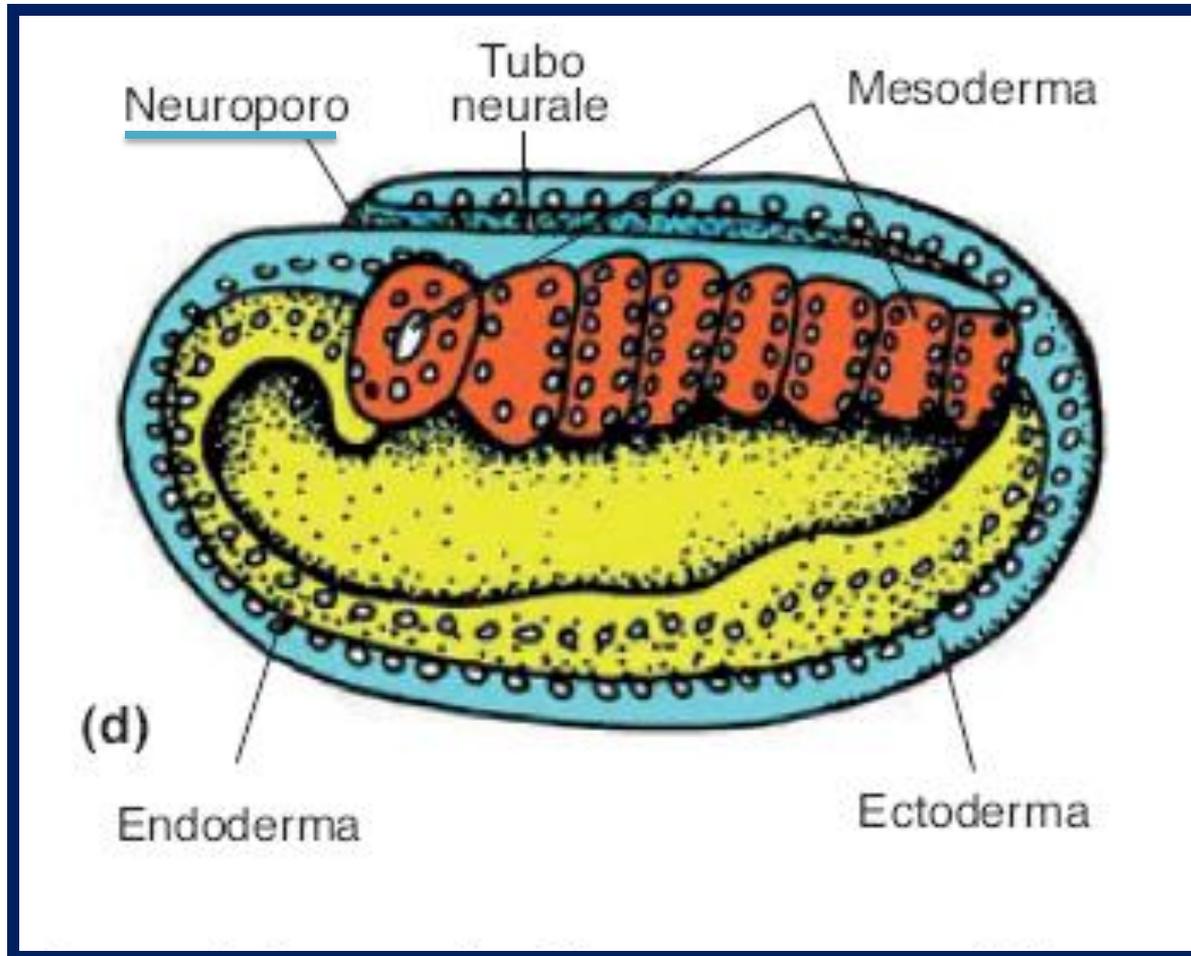
Neurulazione anfiosso



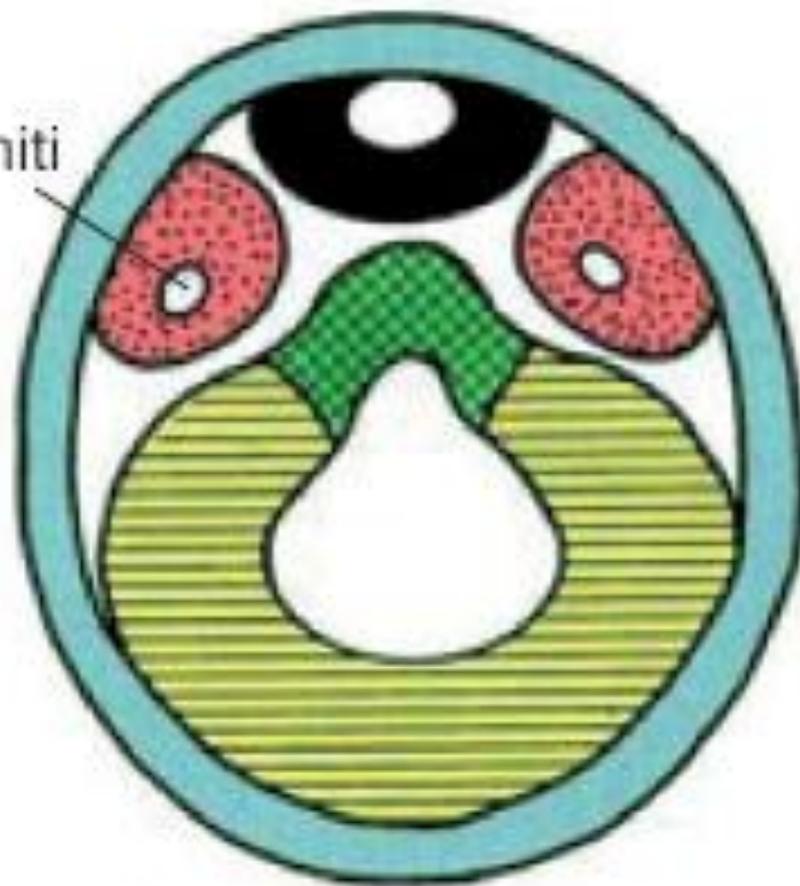
Neurulazione anfiosso



Neurulazione anfiosso



Somiti



(e)

