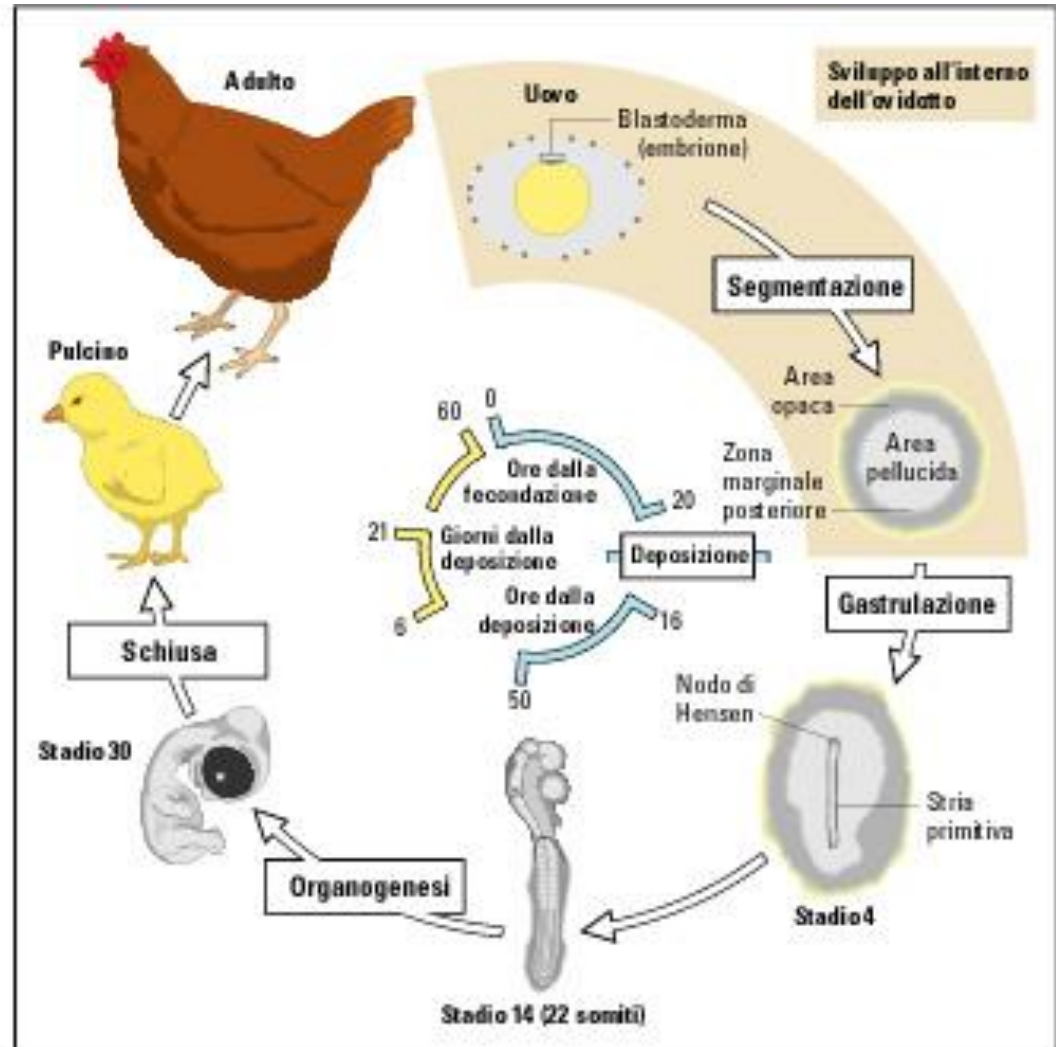
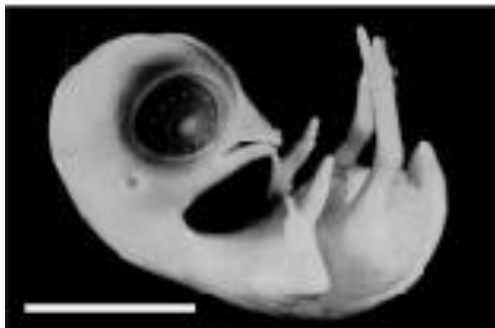


# Sviluppo Uccelli

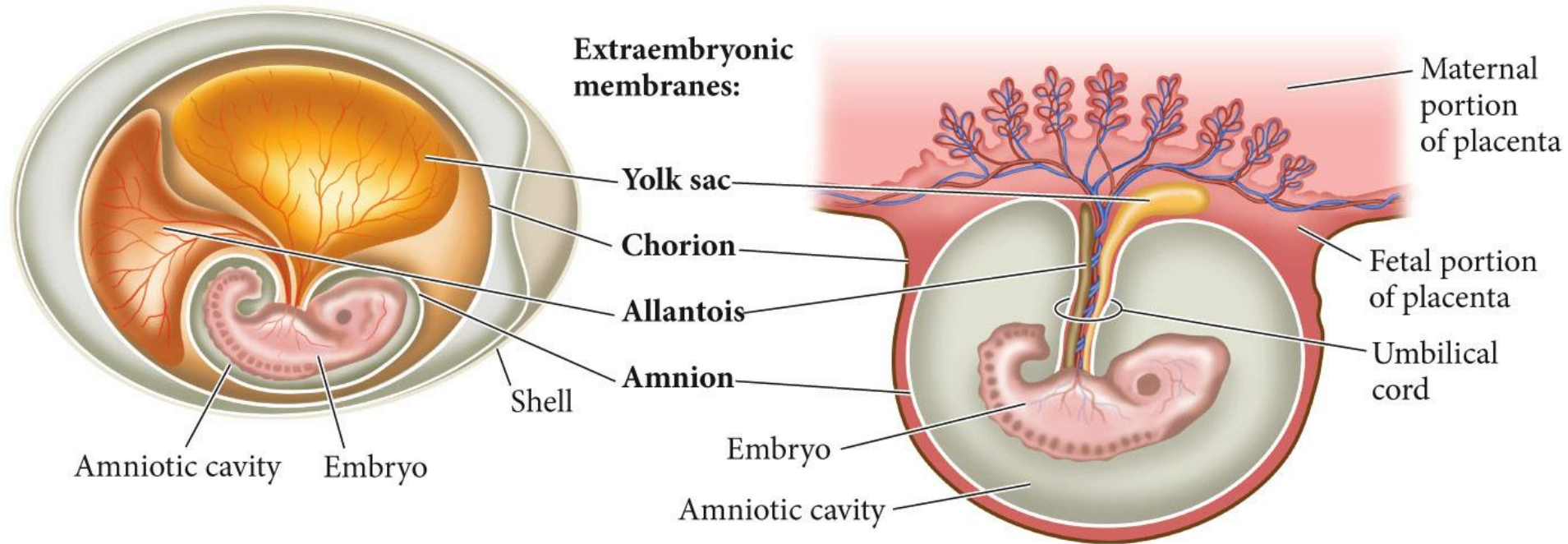


**Sviluppo diretto**

# AMNIOTI: formazione degli annessi embrionali

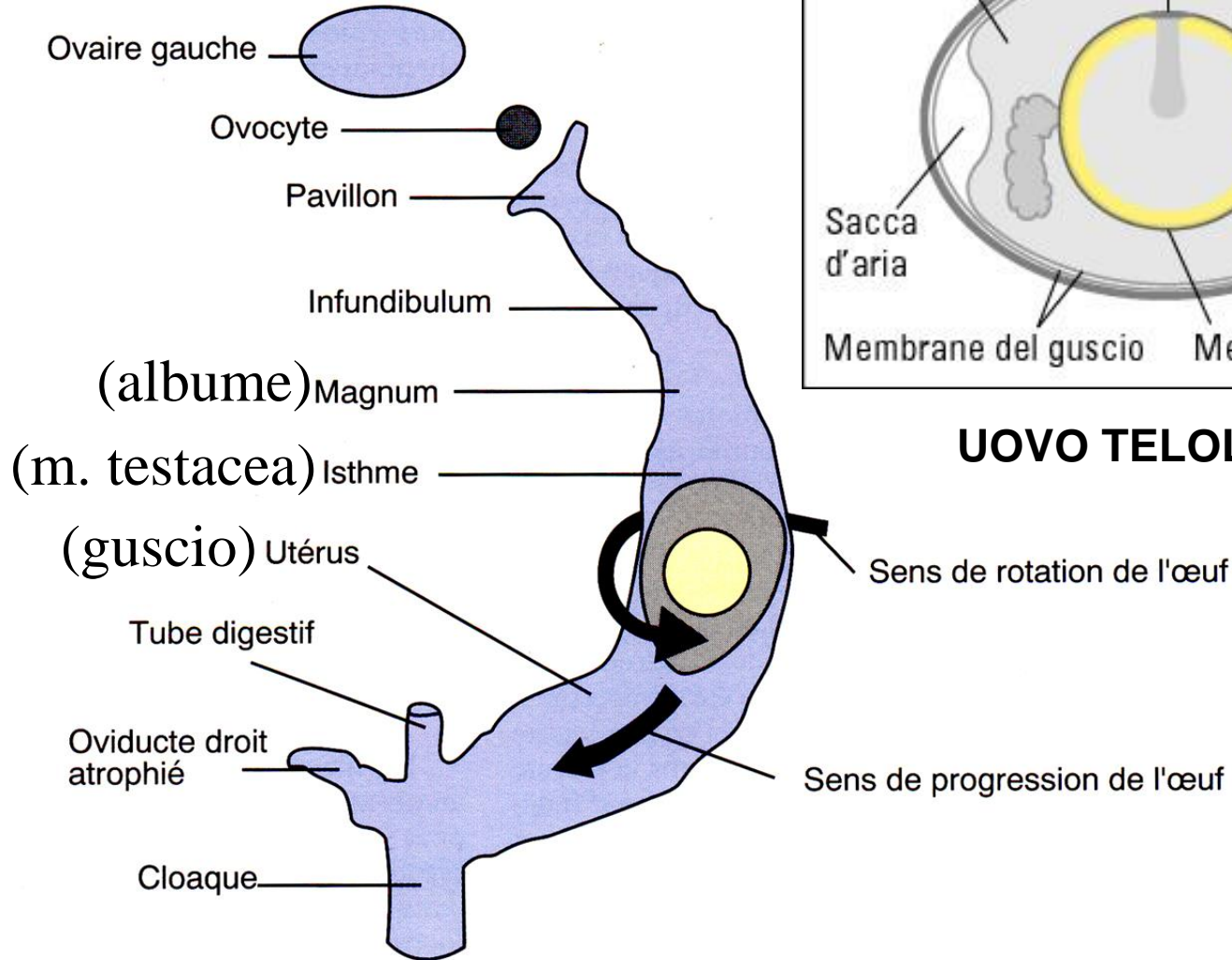
## Presenza durante lo sviluppo di territori presuntivi extra-embryonali destinati alla formazione degli annessi

(B)

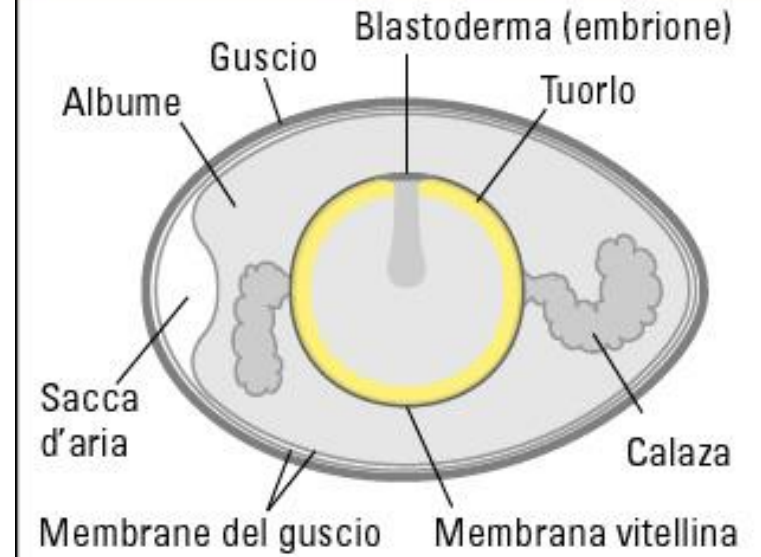


# FECONDAZIONE INTERNA (NELL'OIDOTTO)

Transit dans le tractus génital maternel



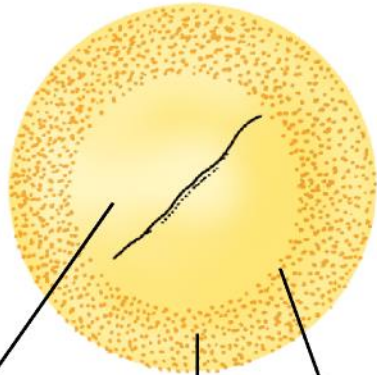
## Struttura dell'uovo di pollo fecondato al momento della deposizione



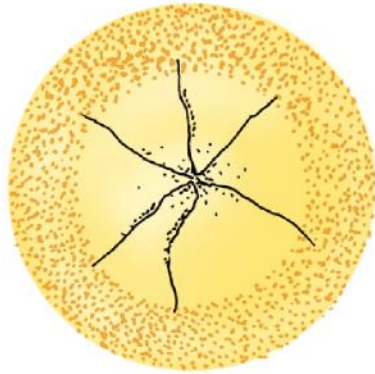
## UOVO TELELECITICO

# SEGMENTAZIONE MEROBLASTICA DISCOIDALE

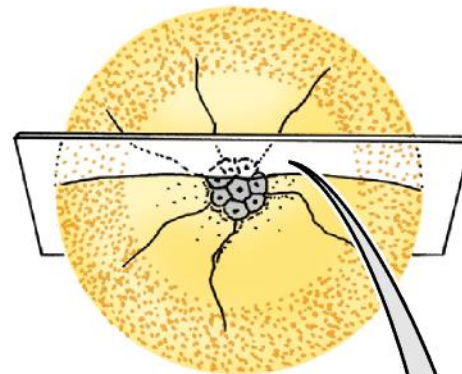
(A)



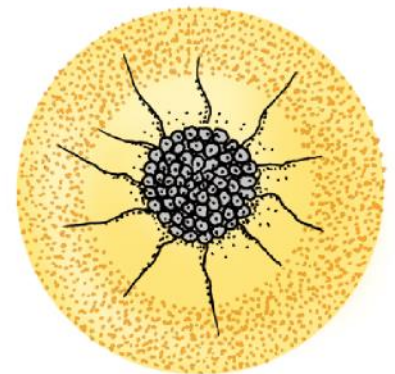
(B)



(C)



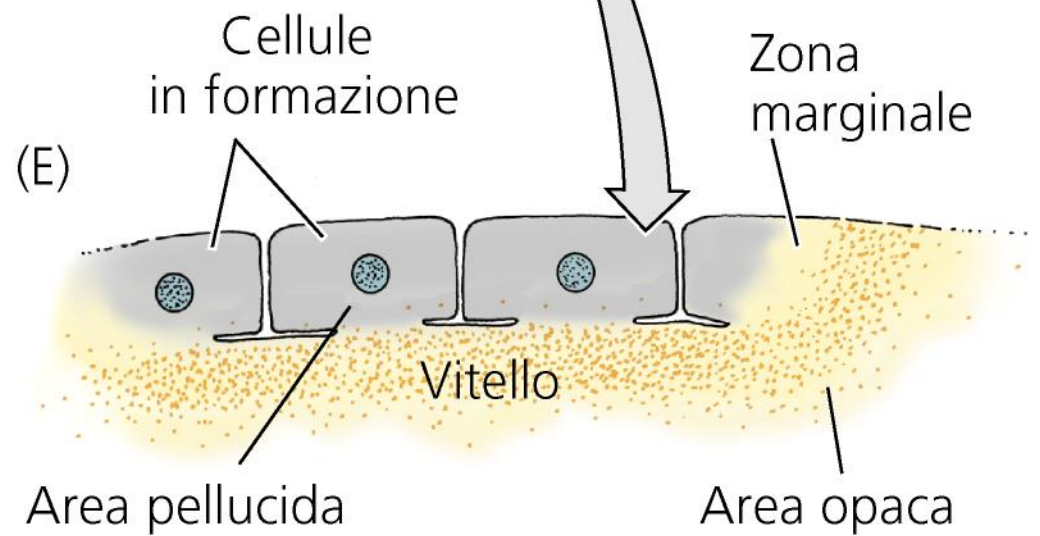
(D)



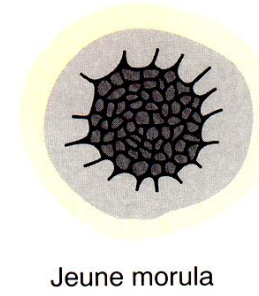
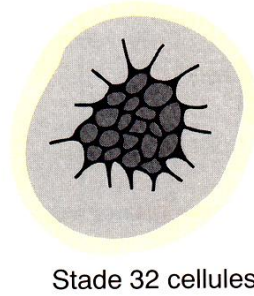
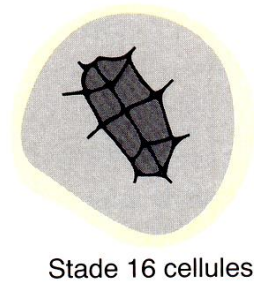
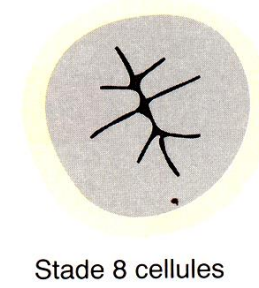
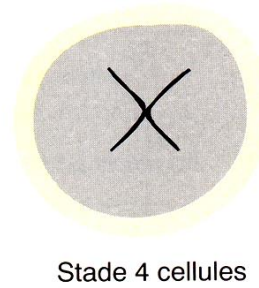
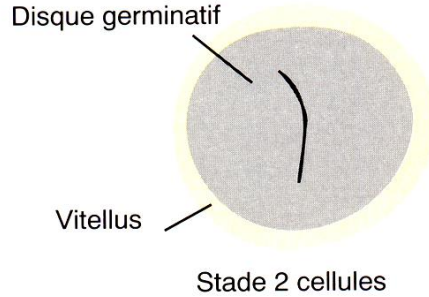
Area  
pellucida

Area  
opaca

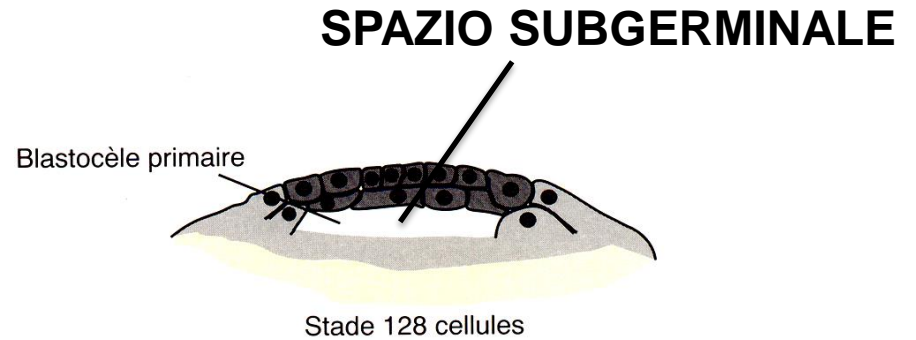
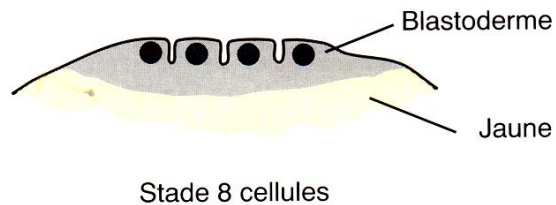
Zona  
marginale



# FORMAZIONE DEL BLASTODERMA E DELLO SPAZIO SUBGERMINALE



b) Observations en coupe du disque germinatif

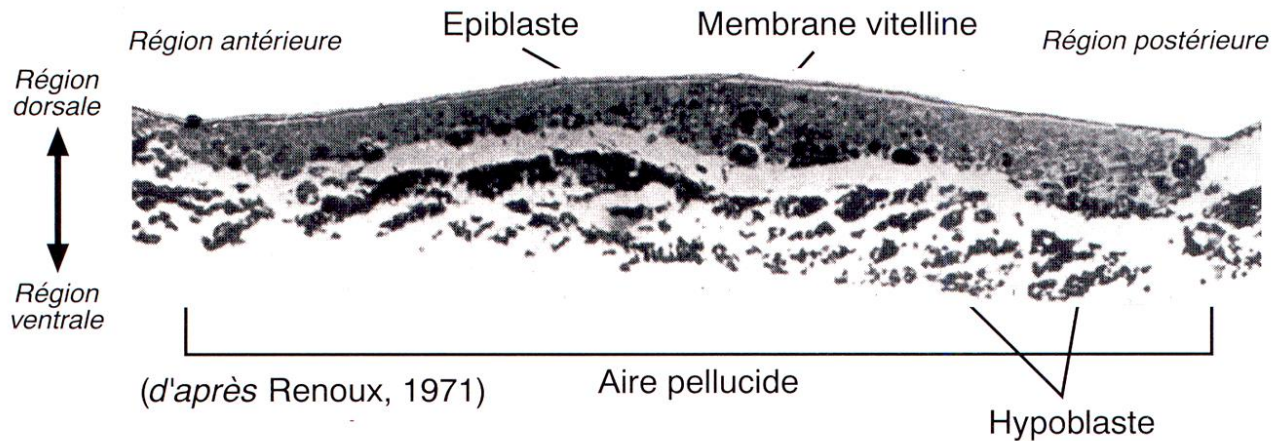
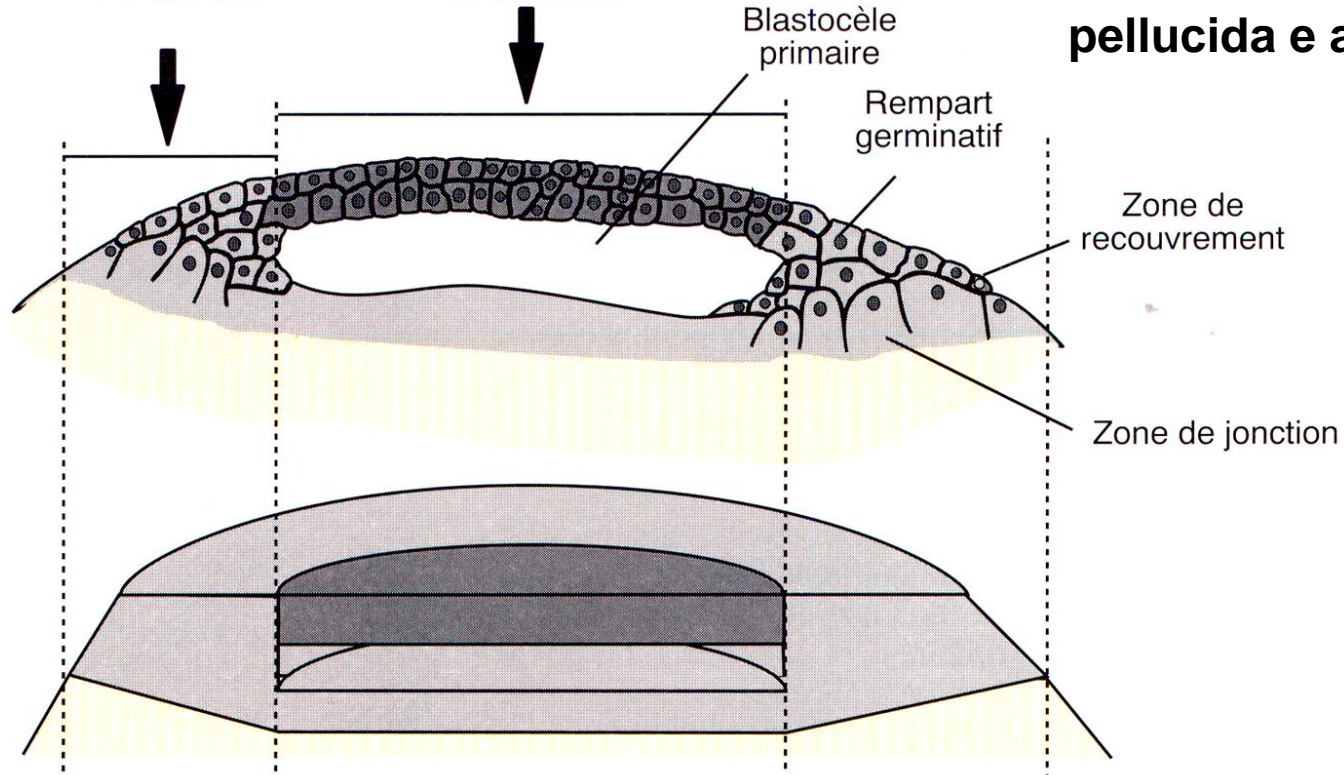


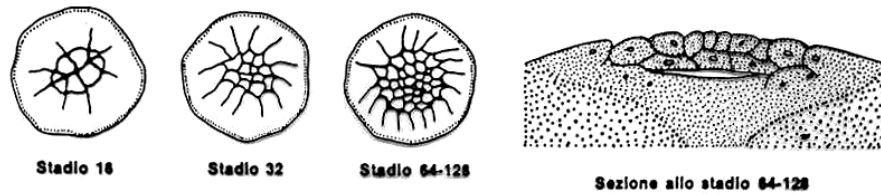
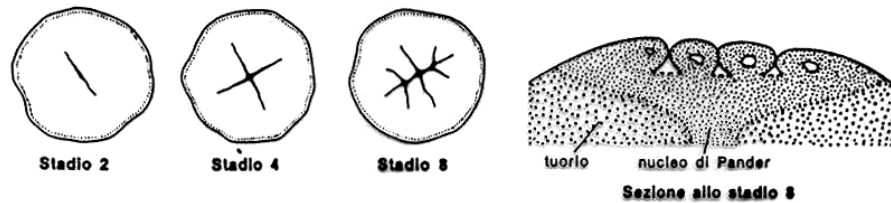
# AREA OPACA AREA PELLUCIDA

Aire opaque

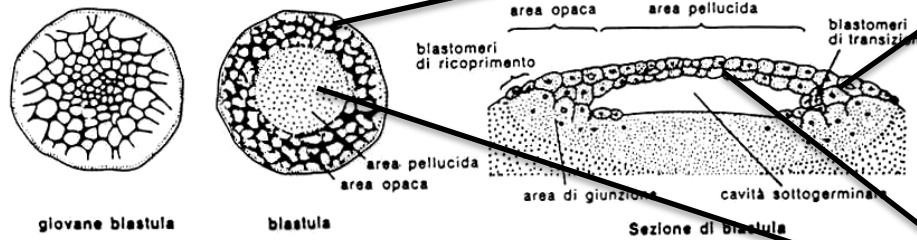
Aire pellucide

# ZONA MARGINALE Zona di transizione fra area pellucida e area opaca

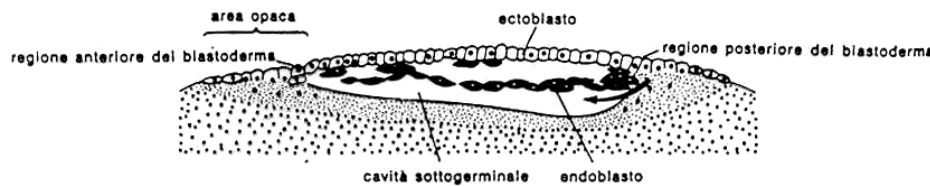




**I. SEGMENTAZIONE**



**II. BLASTULA**



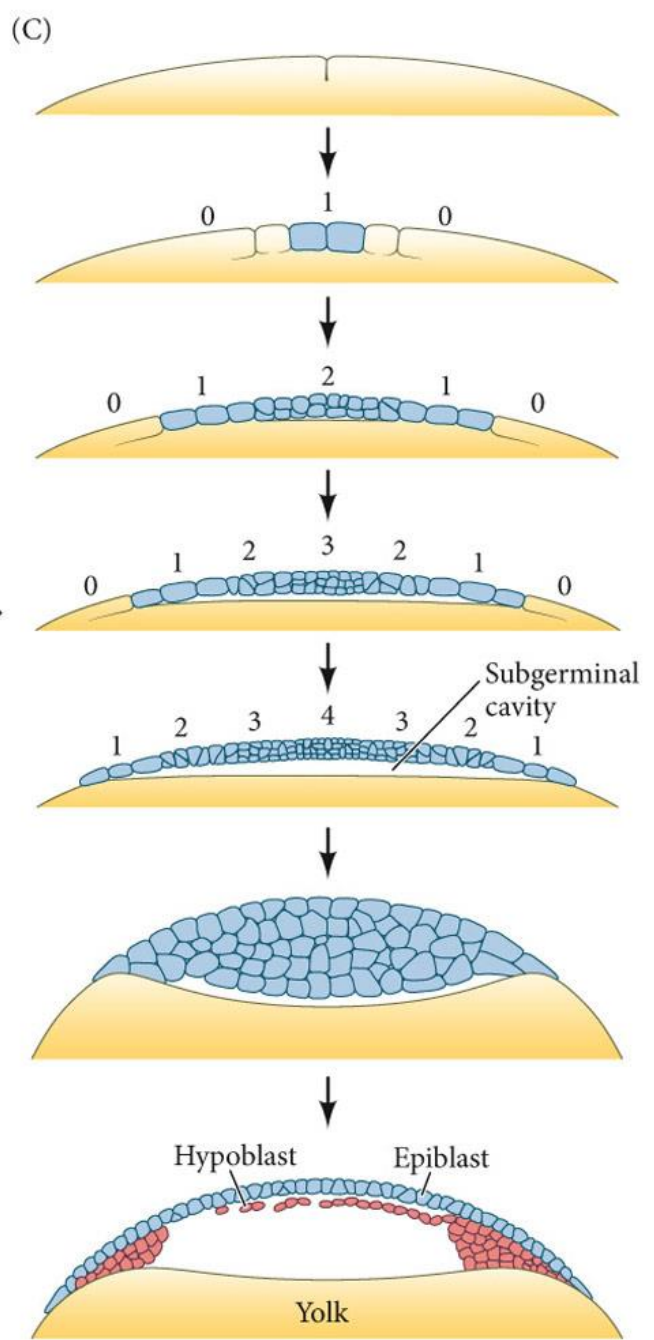
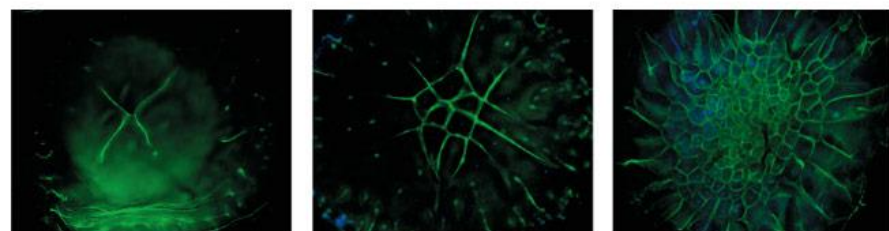
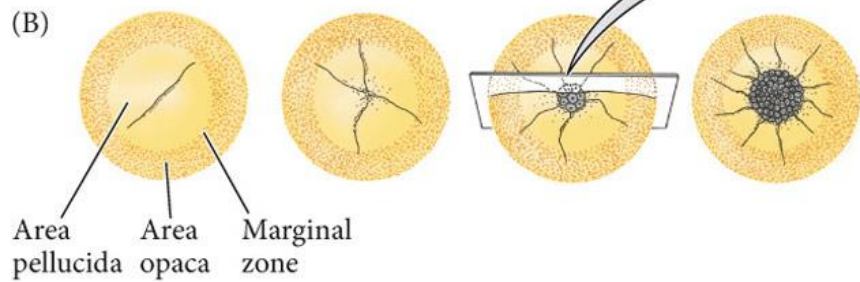
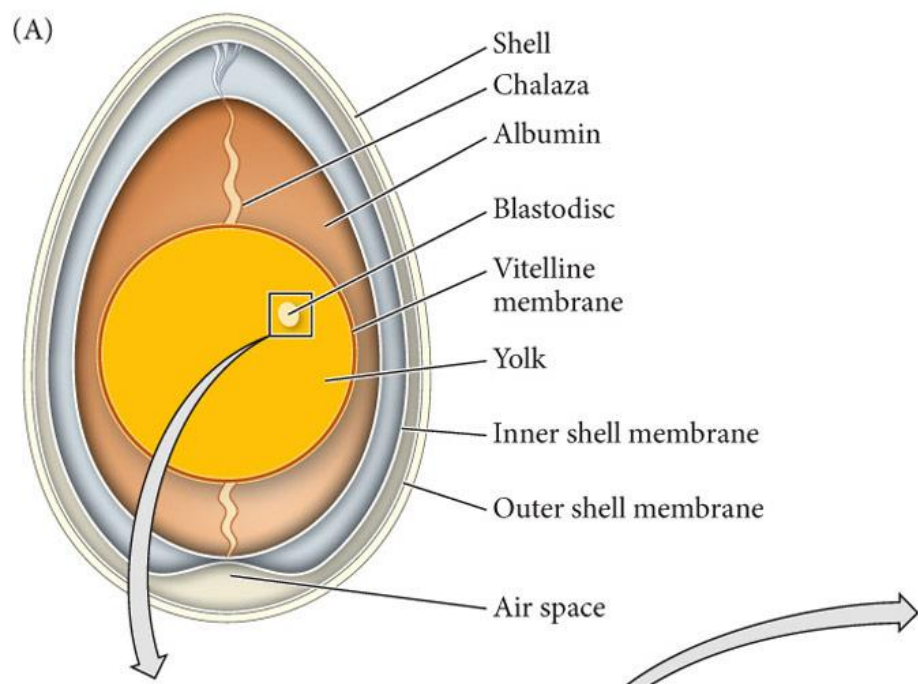
**III. FORMAZIONE DELL'ENDOBLASTO**

Sviluppo dell'uovo di pollo. I - Segmentazione; la regione della cicatrice è rappresentata in visione dall'alto e in sezione. II - Blastula; compare la differenza fra area opaca e area pellucida. III - Sezione al momento della ovideposizione; la freccia indica il movimento delle cellule che vanno a costituire lo strato endoblastico.

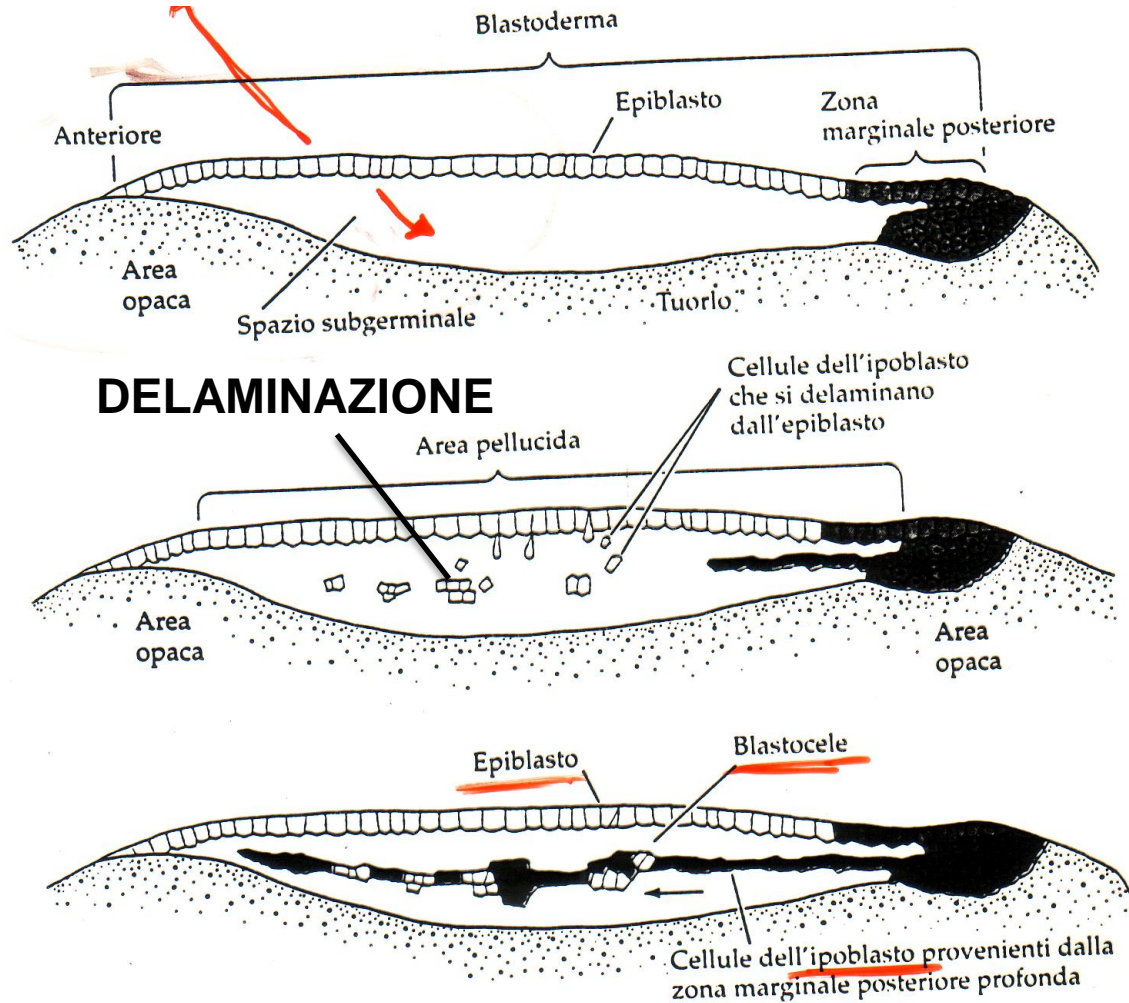
**AREA OPACA**

**AREA PELLUCIDA**  
 (Le cellule degli strati profondi dell'area pellucida muoiono dando origine a un foglietto monostratificato)





# FORMAZIONE DELL'IPOBLASTO



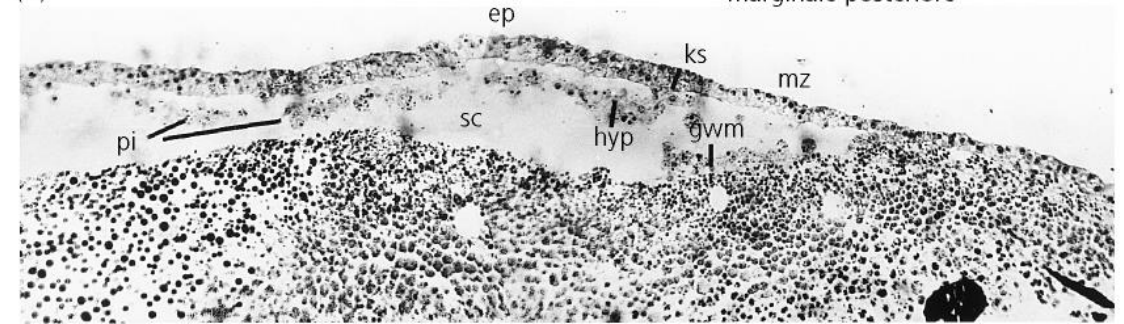
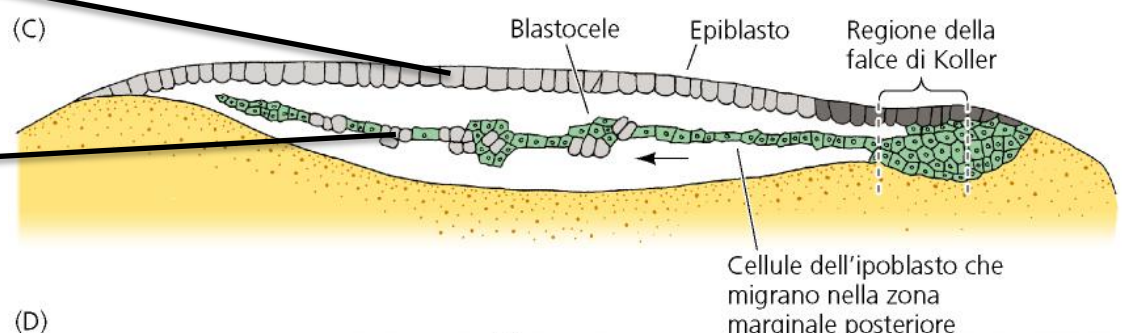
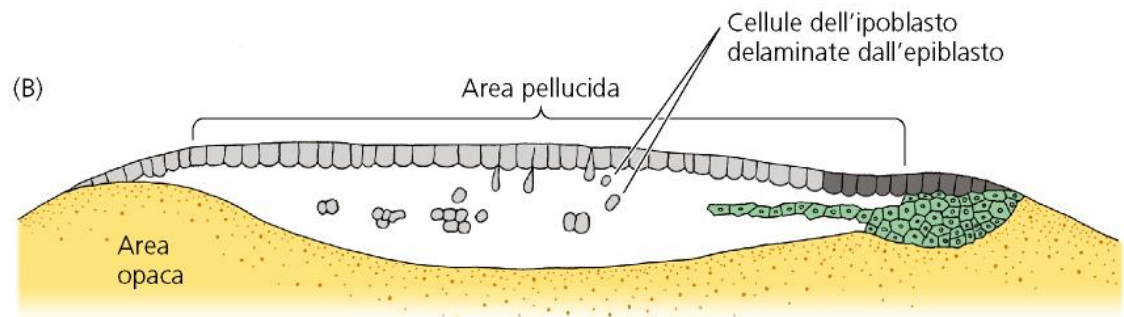
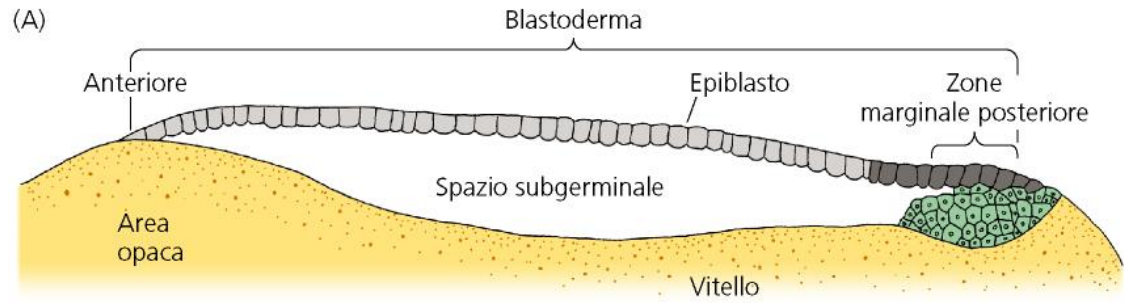
**Ipoblasto 1°**: delaminazione di cellule dell'epiblasto (isole di poli-invaginazione)

**Ipoblasto 2°**: migrazione di cellule della zona marginale posteriore (falce di Koller)

# FORMAZIONE DEL BLASTODERMA A DUE STRATI (EPIBLASTO E IPOBLASTO)

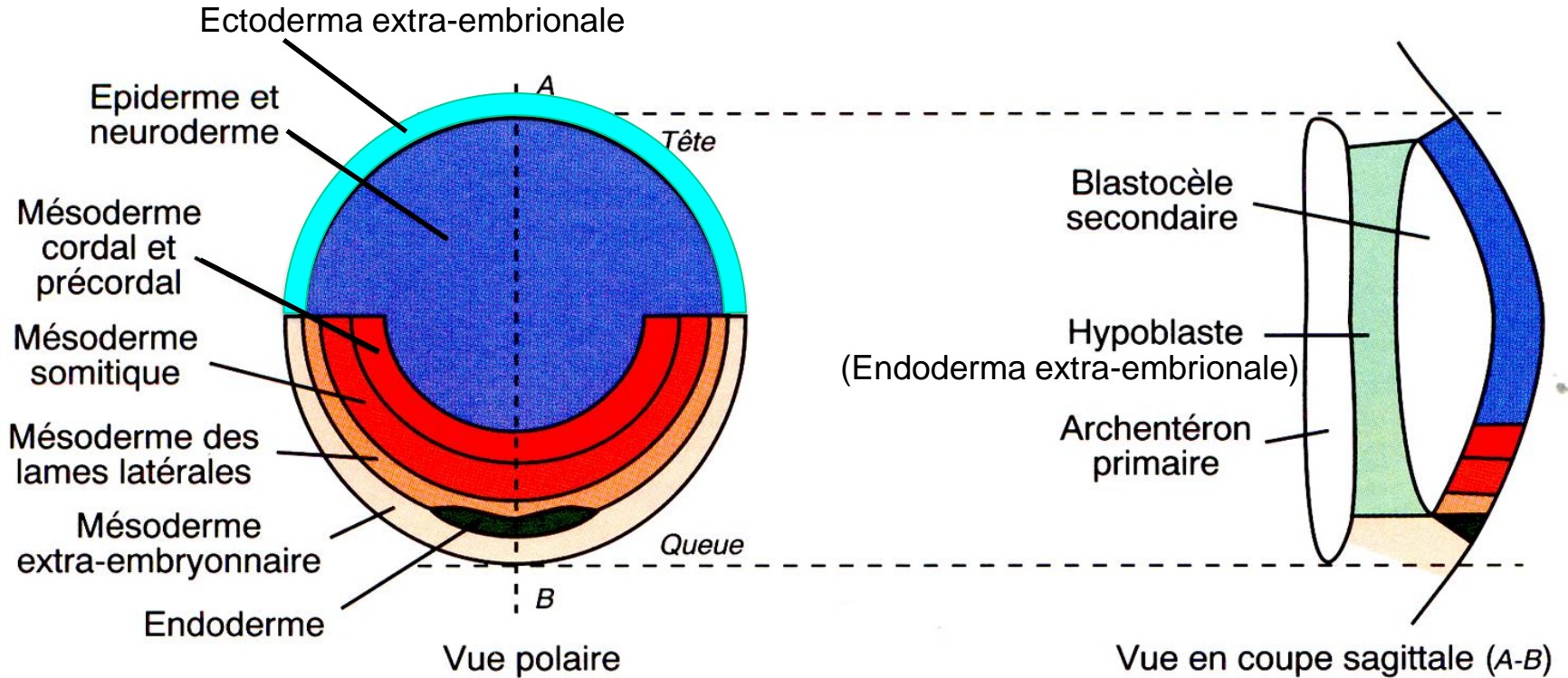
**Epiblasto: forma l'embrione e parte degli annessi embionali**

**Ipoblasto: forma parte degli annessi (sacco vitellino e allantoide)**



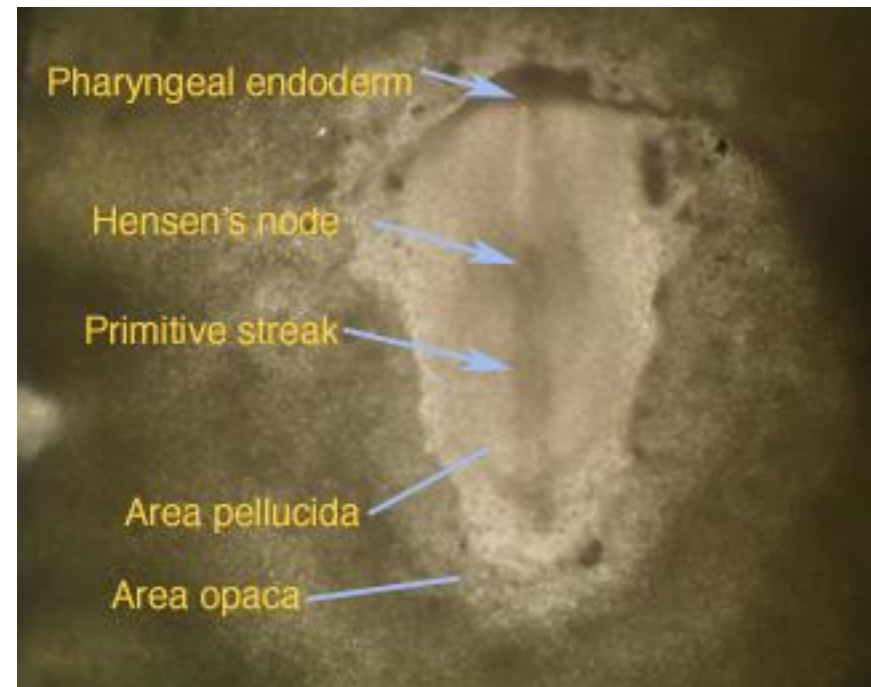
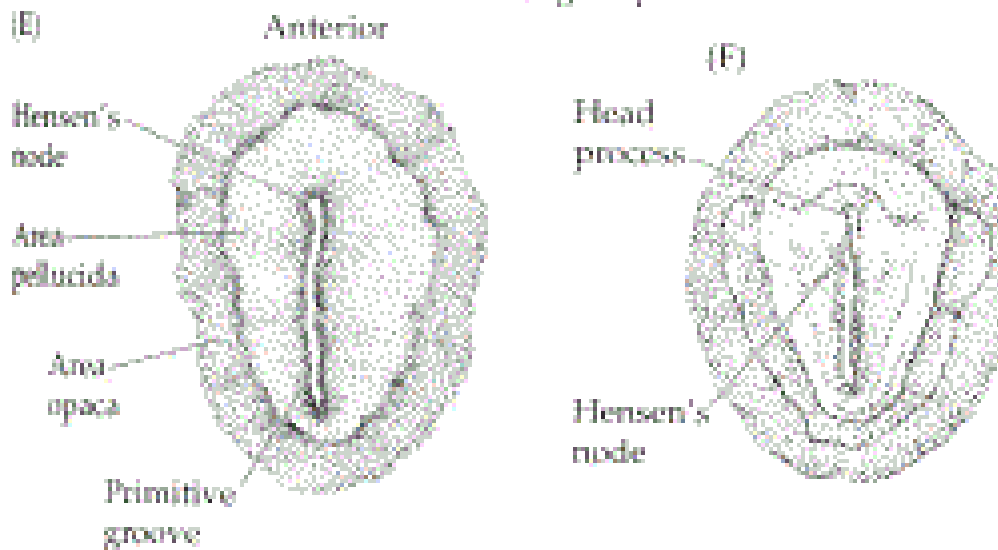
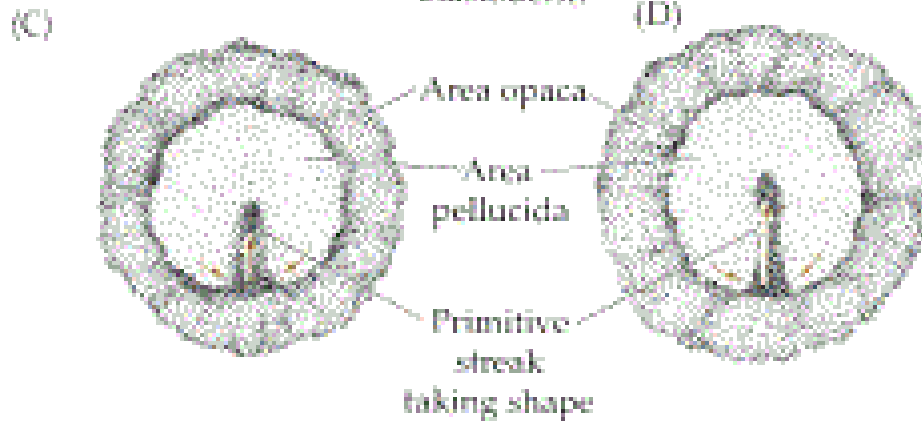
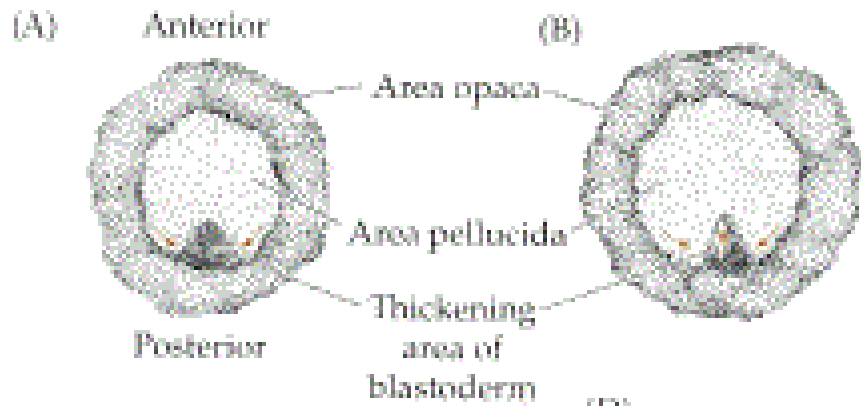
# MAPPA DEI TERRITORI PRESUNTIVI NELL'EPIBLASTO DI POLLO

Carte des territoires présomptifs au niveau de l'épiblaste



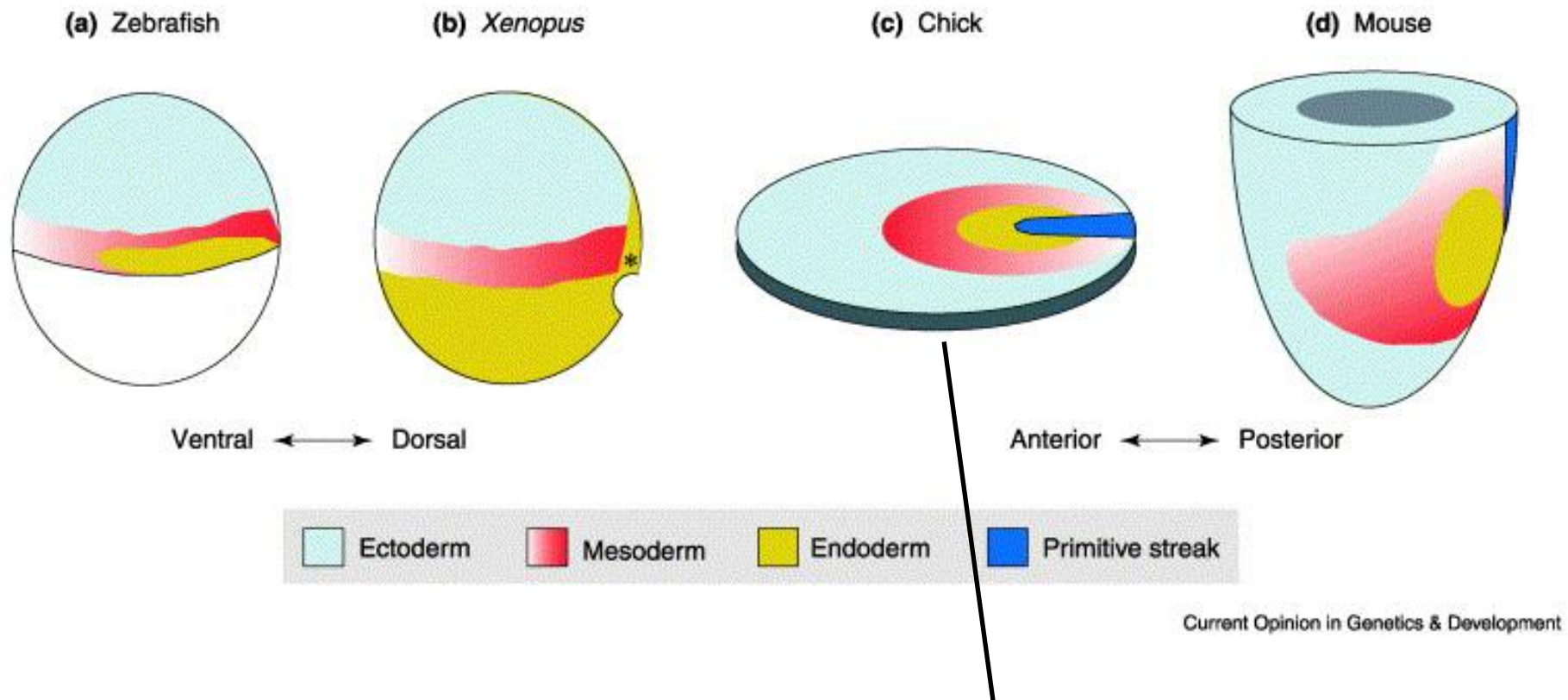
I tre foglietti embrionali (ectoderma, mesoderma ed endoderma) hanno una componente **embrionale** che dà origine ai tessuti dell'embrione ed una componente **extra-embryonale** che dà origine agli annessi

# LA FORMAZIONE DELLA STRIA PRIMITIVA SEGNA L'INIZIO DELLA GASTRULAZIONE



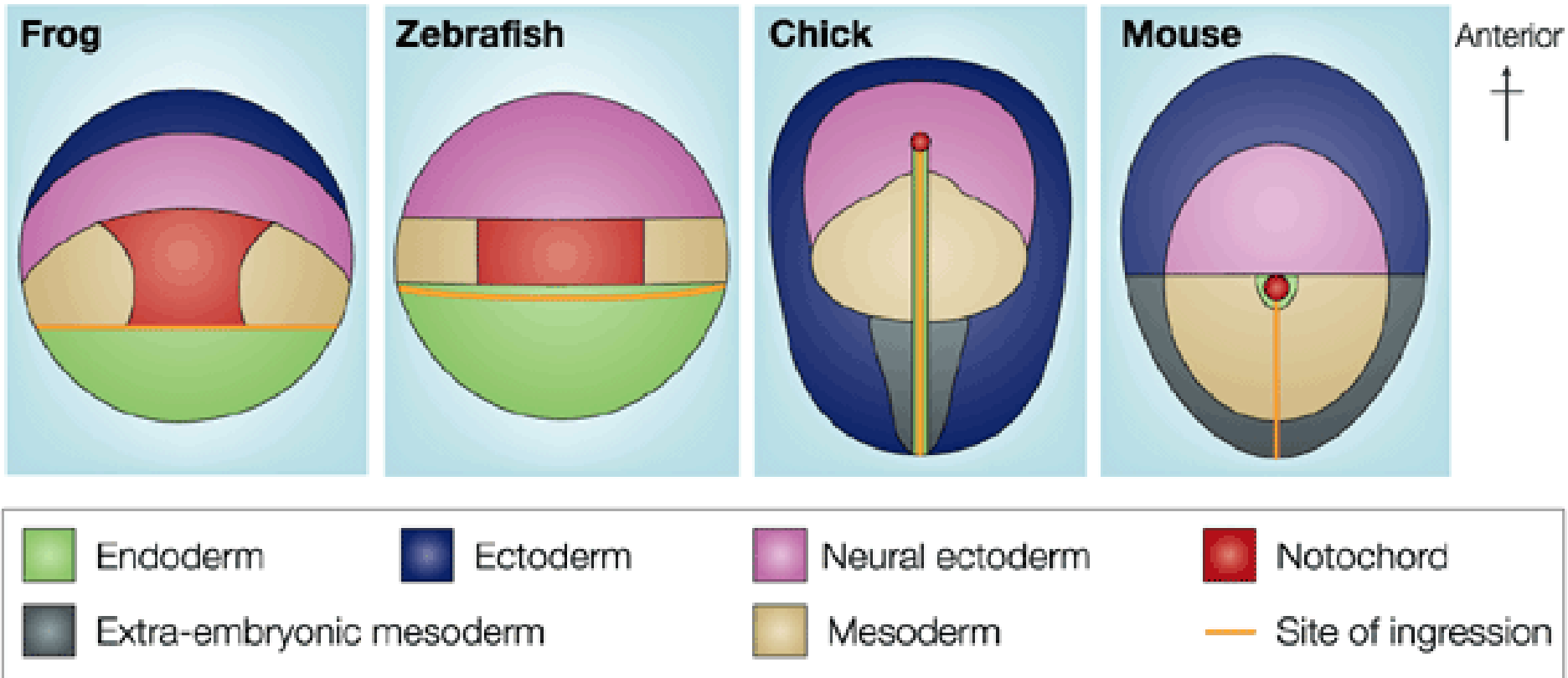
# CONFRONTO FRA LE MAPPE PRESUNTIVE DI EMBRIONI DI VERTEBRATI ALLO STADIO DI GASTRULA PRECOCE

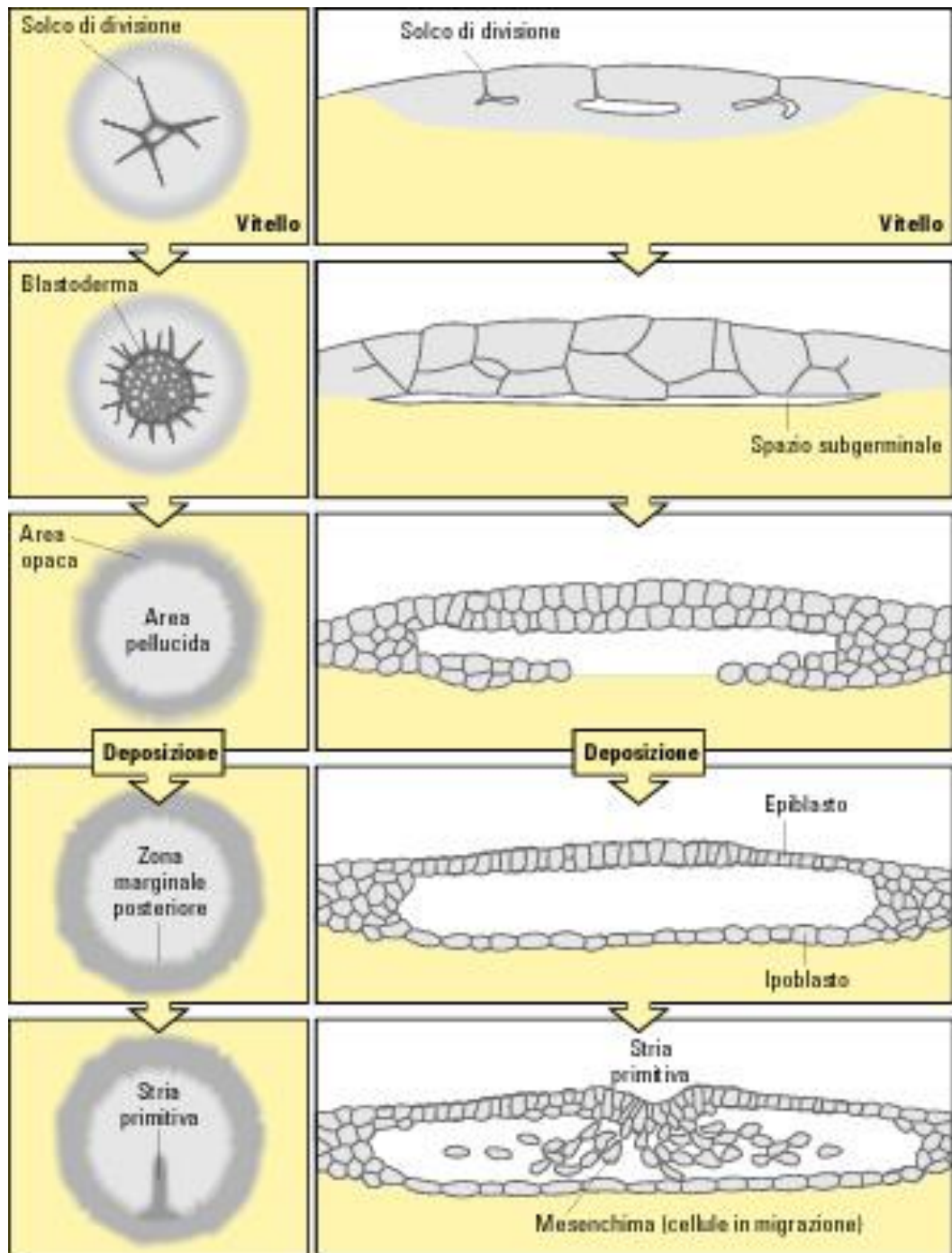
Anche nel pollo il territorio presuntivo del mesoderma embrionale è inizialmente racchiuso fra l'ectoderma e l'endoderma embrionali presuntivi



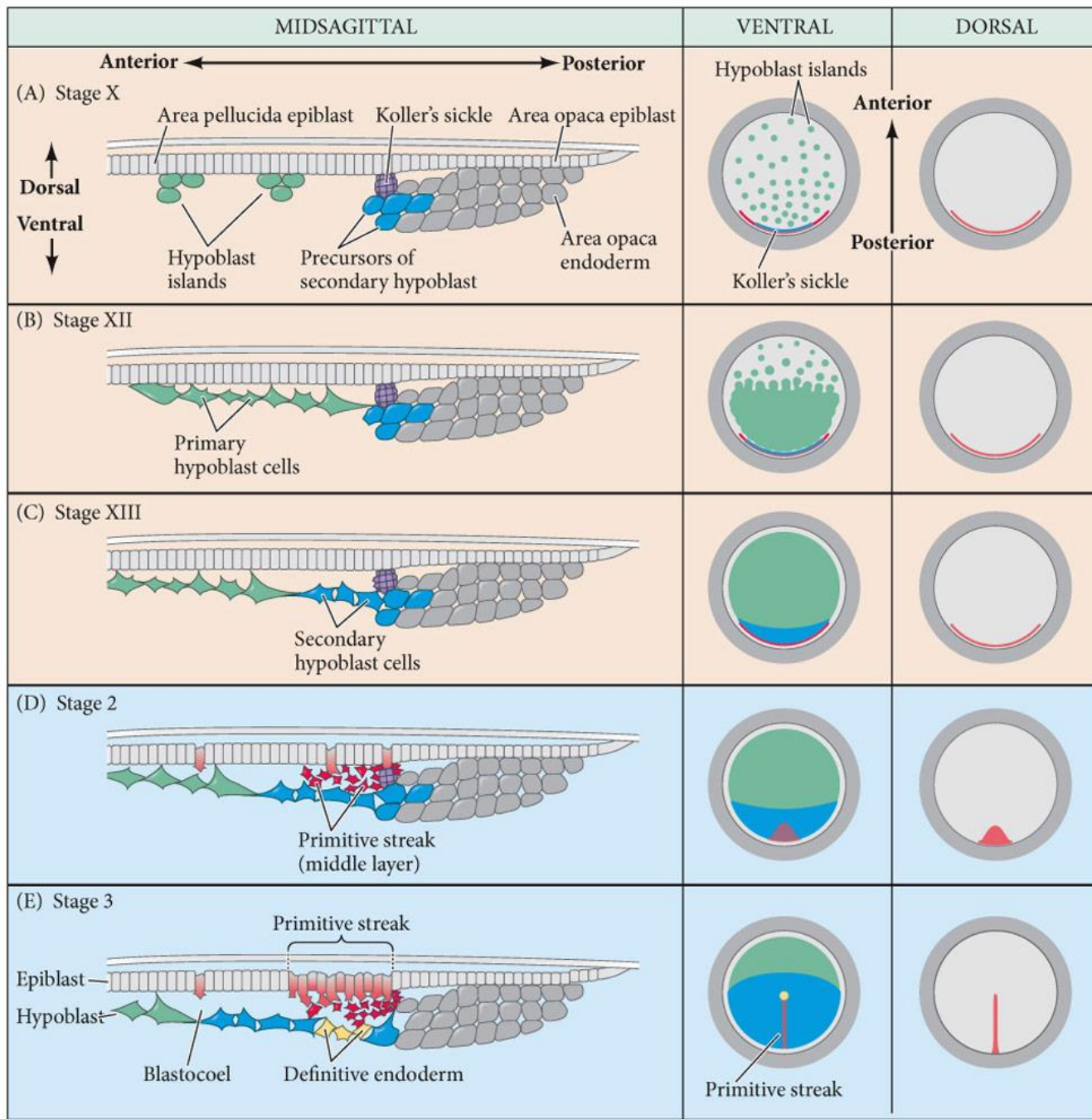
Mappa dei territori presuntivi embrionali all'inizio della formazione della stria primitiva

# Mappa dei territori presuntivi nell'epiblasto alla fine dell'allungamento della stria primitiva



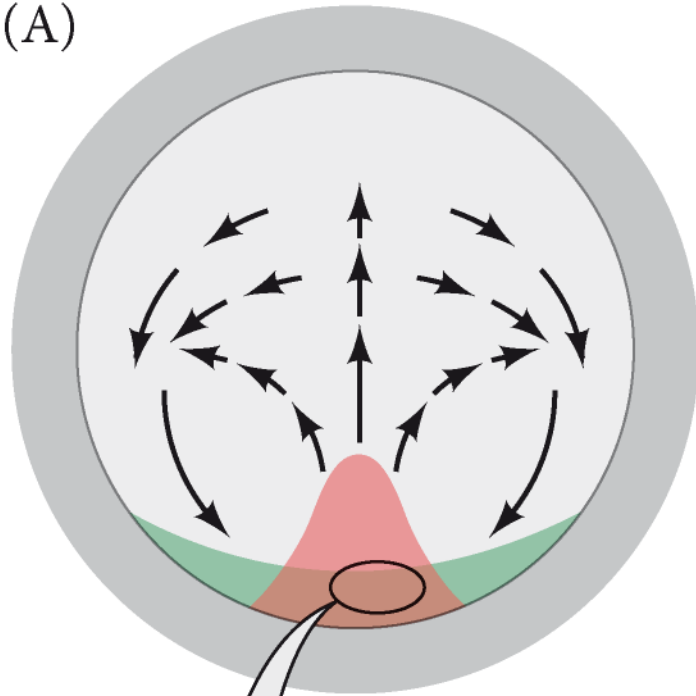




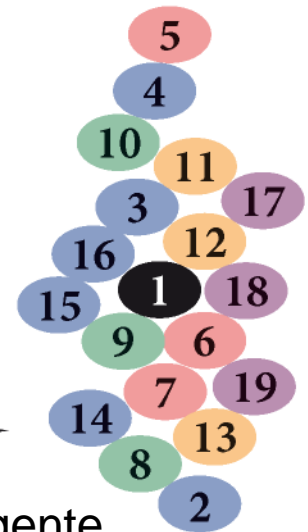
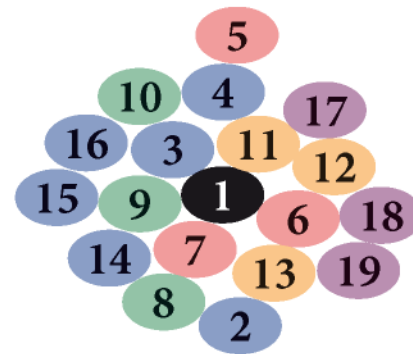
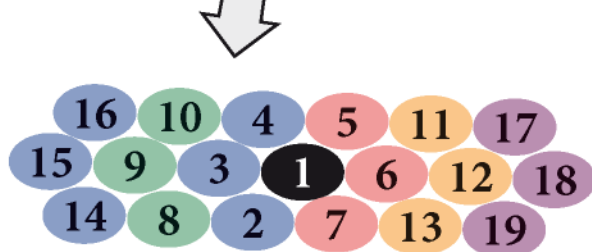
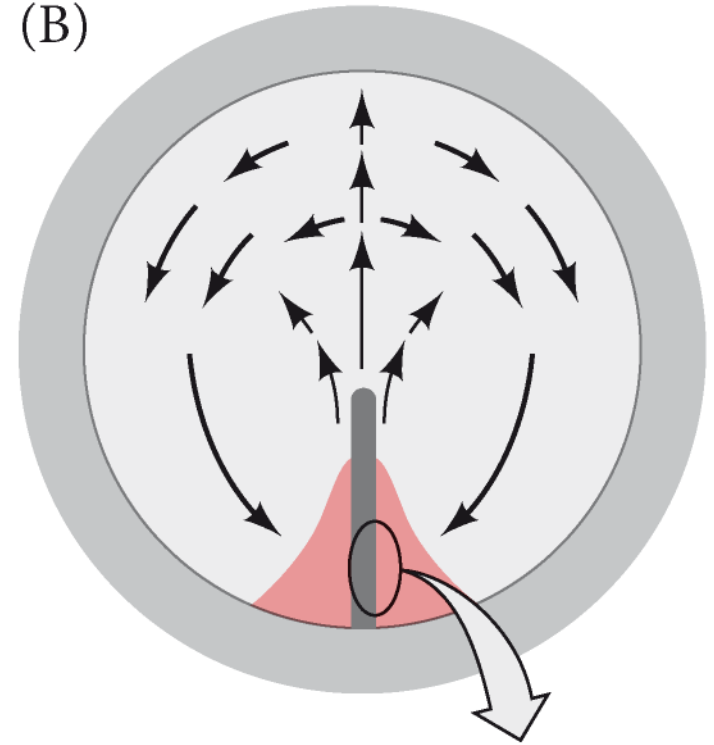


*DEVELOPMENTAL BIOLOGY 11e*, Figure 12.3

(A)

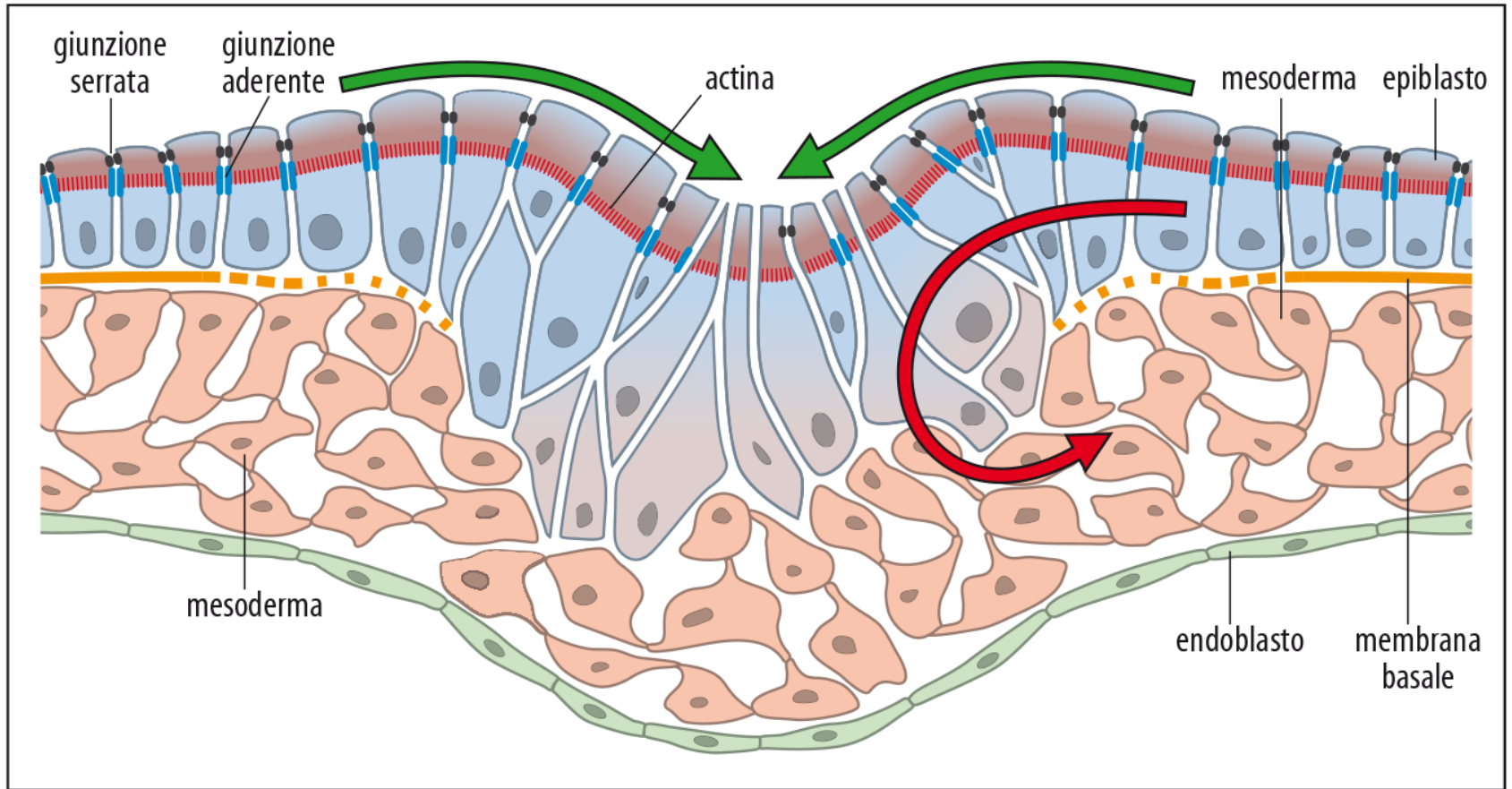


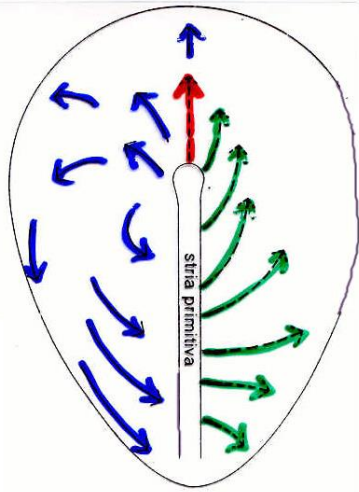
(B)



Tempo

L'allungamento della stria primitiva è un processo di estensione convergente promosso da movimenti di intercalazione medio-laterale





epiblasto

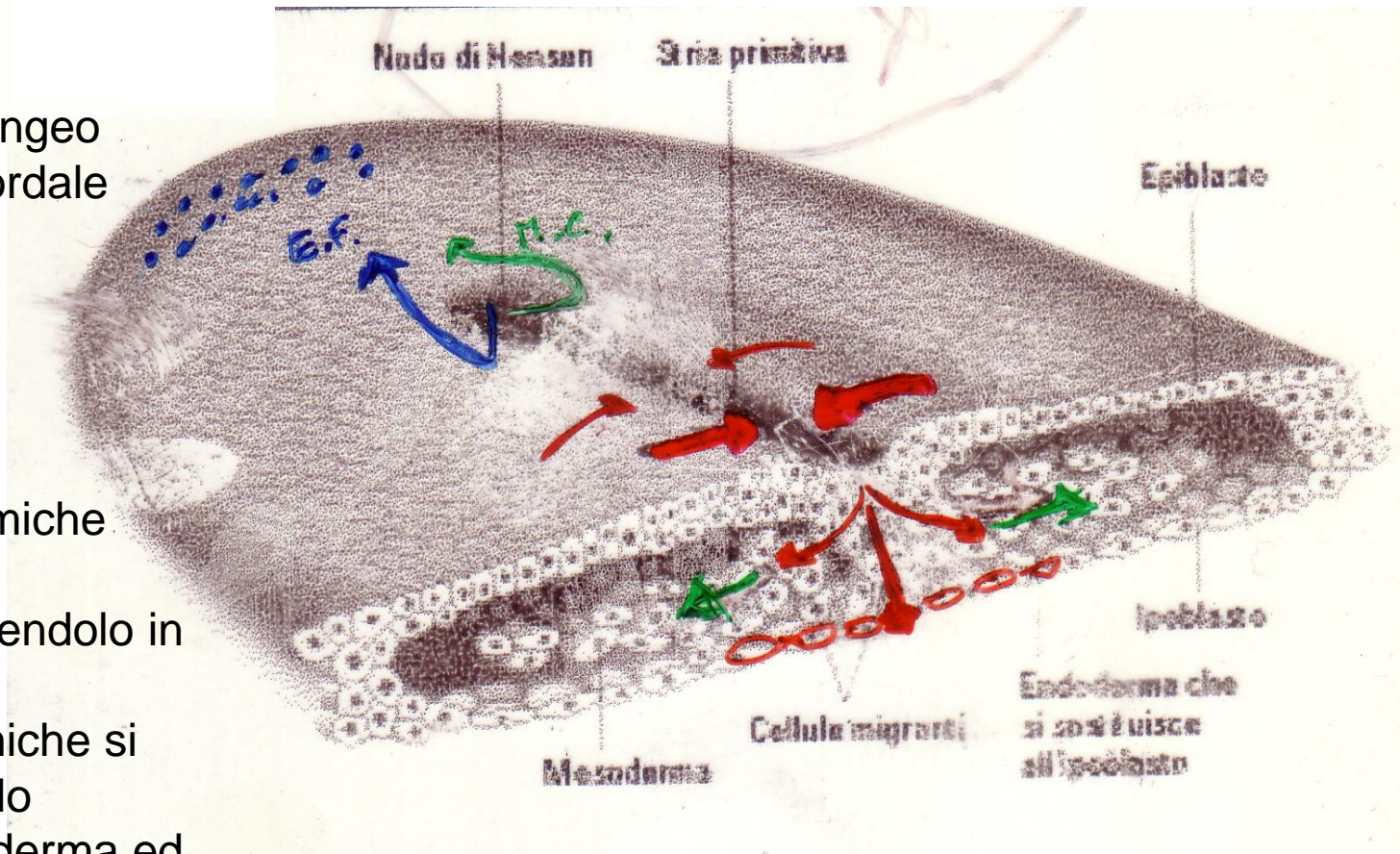
cellule migranti

Stria primitiva ↔ blastoporo

Nodo di Hensen ↔ labbro dorsale blastoporo

EF: endoderma faringeo  
MC: mesoderma cordale

Le cellule endodermiche migrano al livello dell'ipoblasto spingendolo in periferia.  
Le cellule mesodermiche si collocano a un livello intermedio fra ectoderma ed endoderma

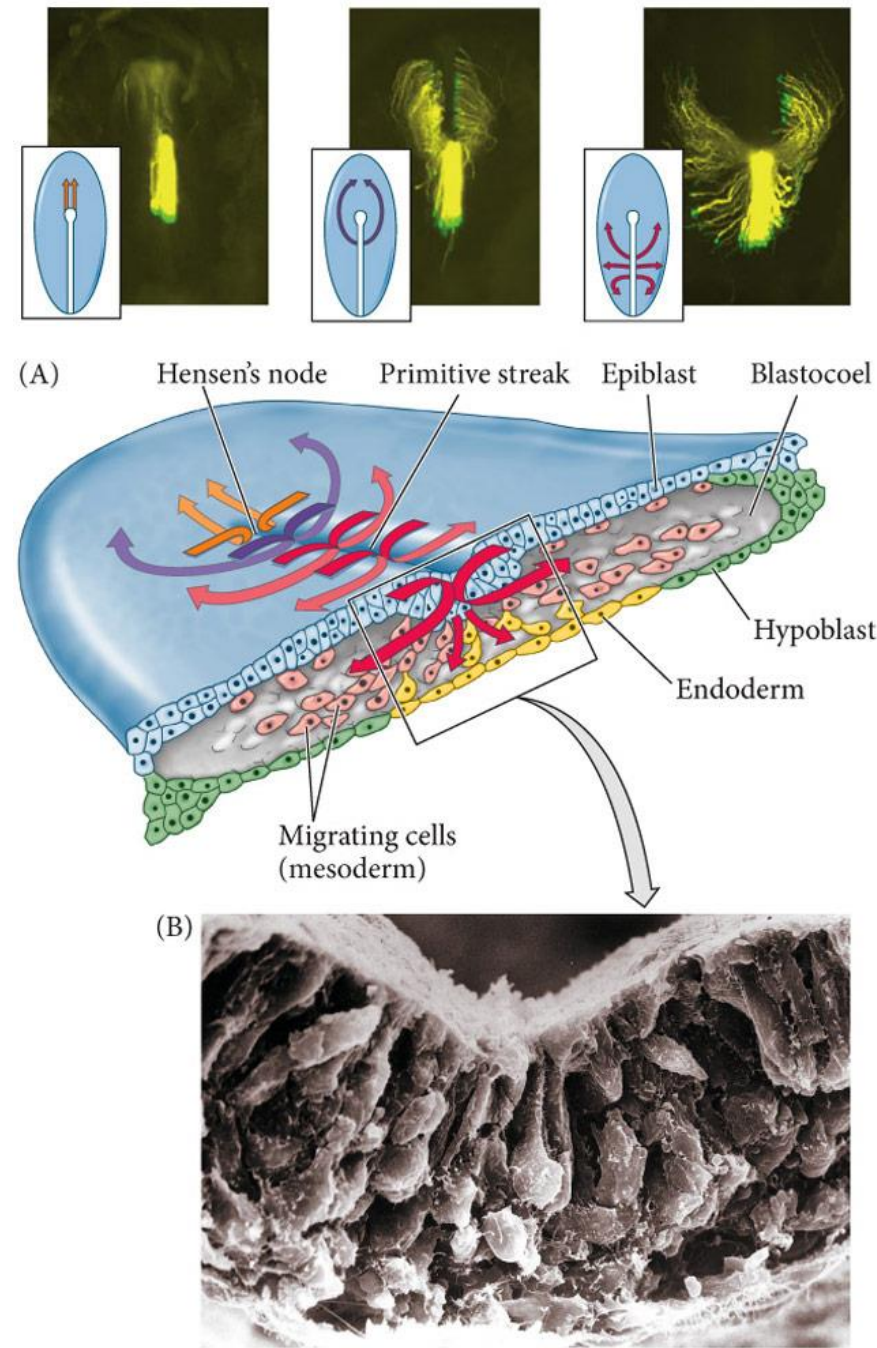


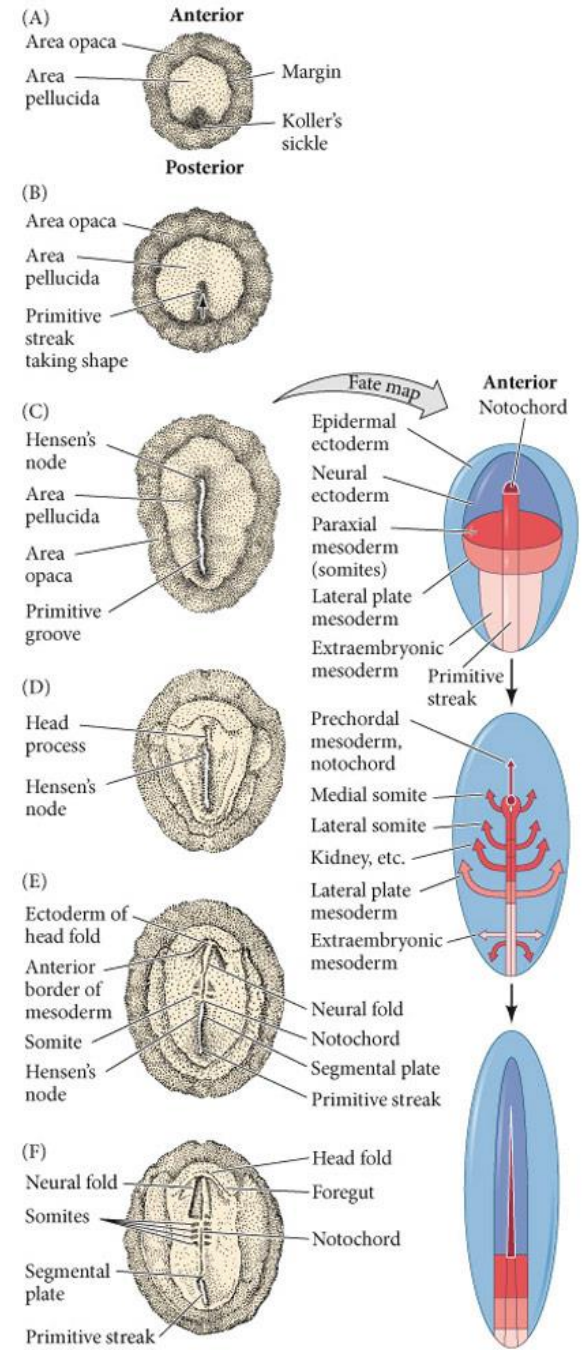
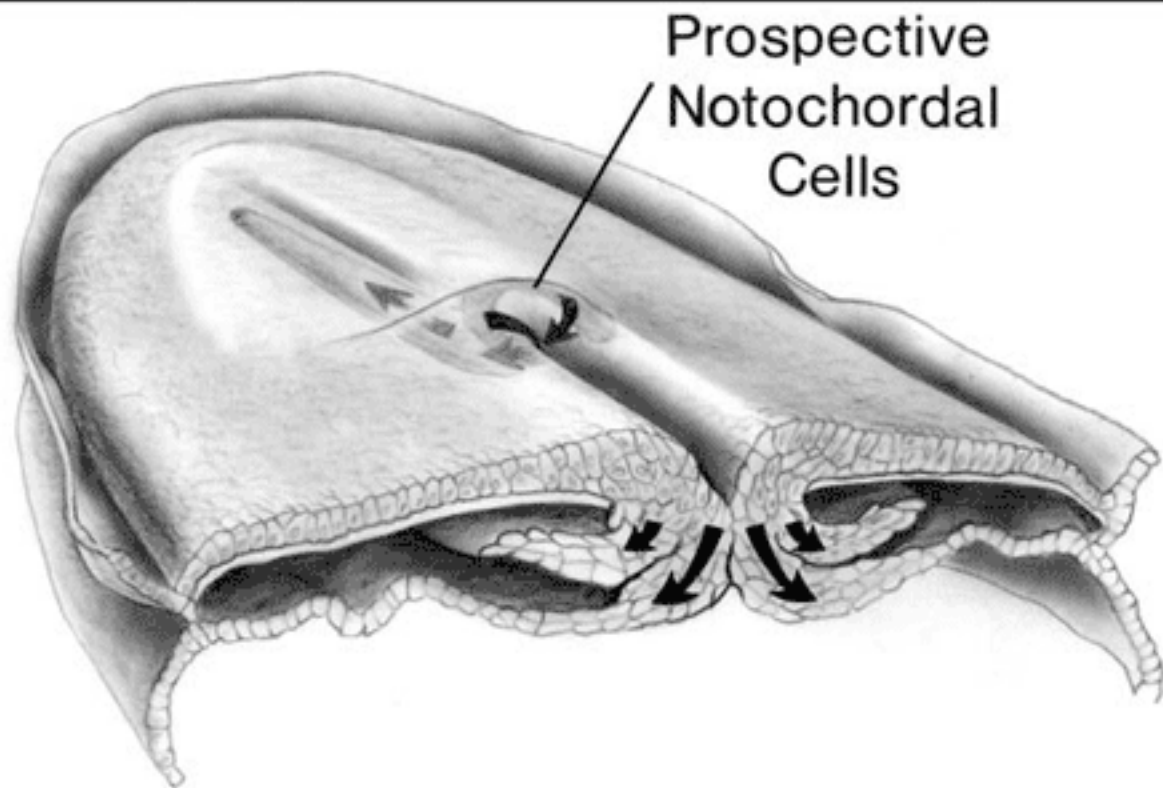
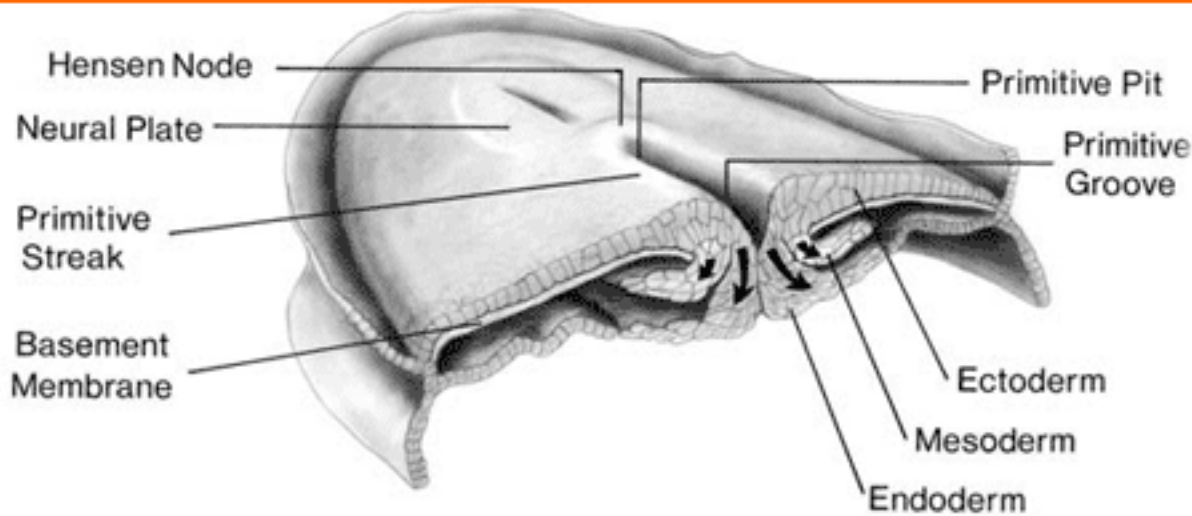
## La migrazione del mesendoderma avviene tramite transizione epiteliomesenchimatica e movimenti individuali di ingressione

**Cellule che migrano attraverso la stria formano:** cellule mesodermiche (mesoderma latero ventrale, extraembrionale, quest'ultimo attraverso la regione posteriore della stria), endoderma embrionale (l'endoderma extraembrionale si forma dall'ipoblasto).

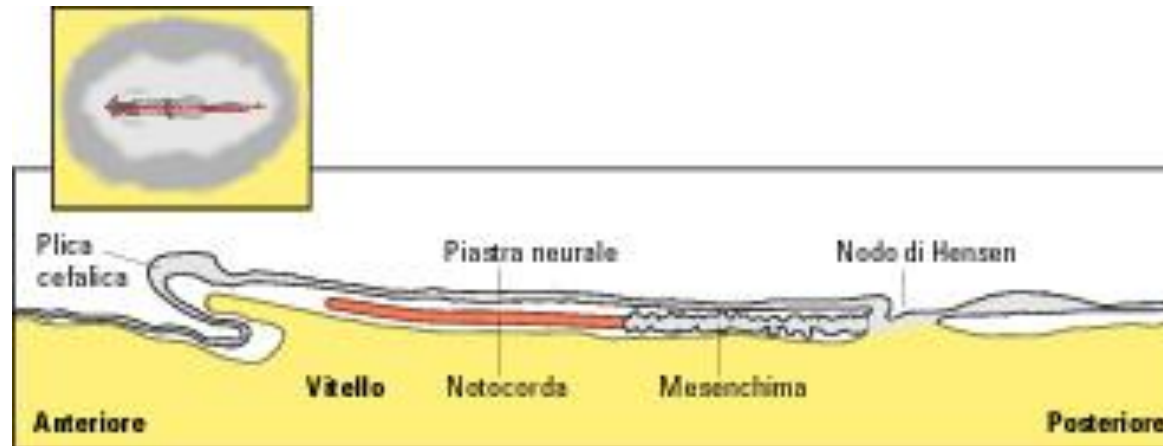
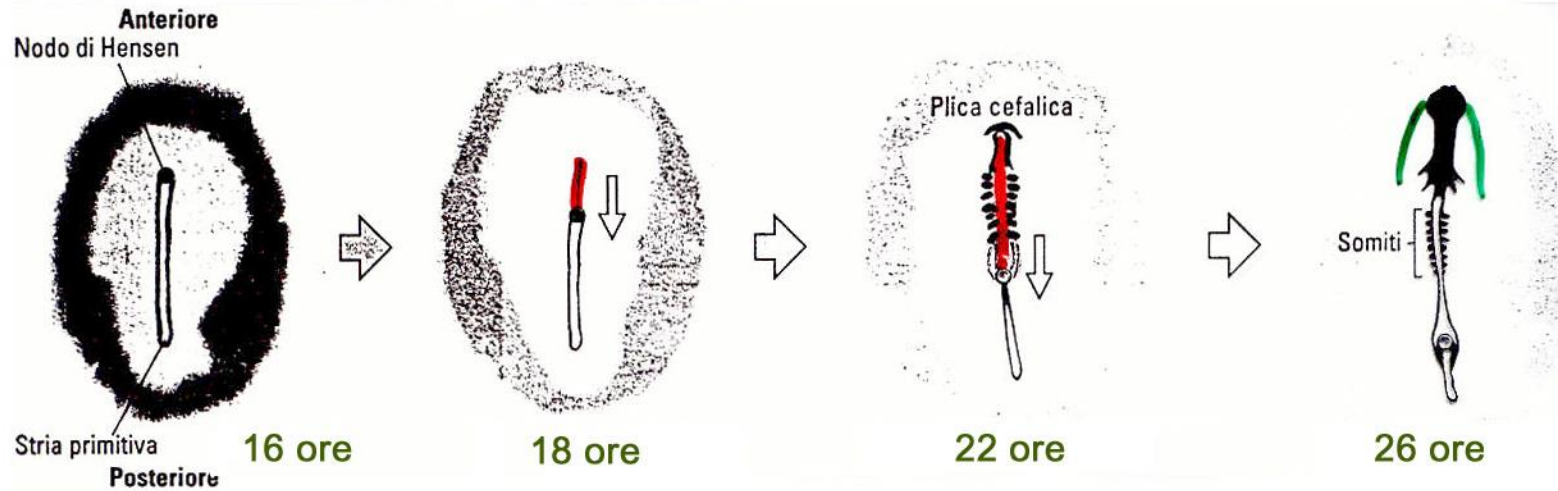
**Cellule che entrano attraverso il nodo di Hensen formano:** endoderma faringeo, mesoderma cefalico, mesoderma dorsale (notocorda, somiti).

La stria primitiva e' costituita da popolazioni cellulari in continuo cambiamento.



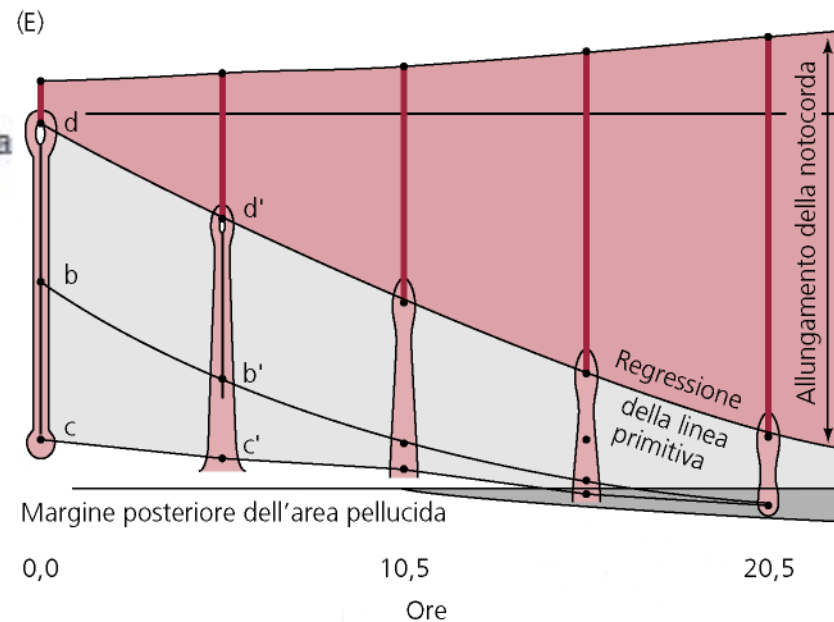
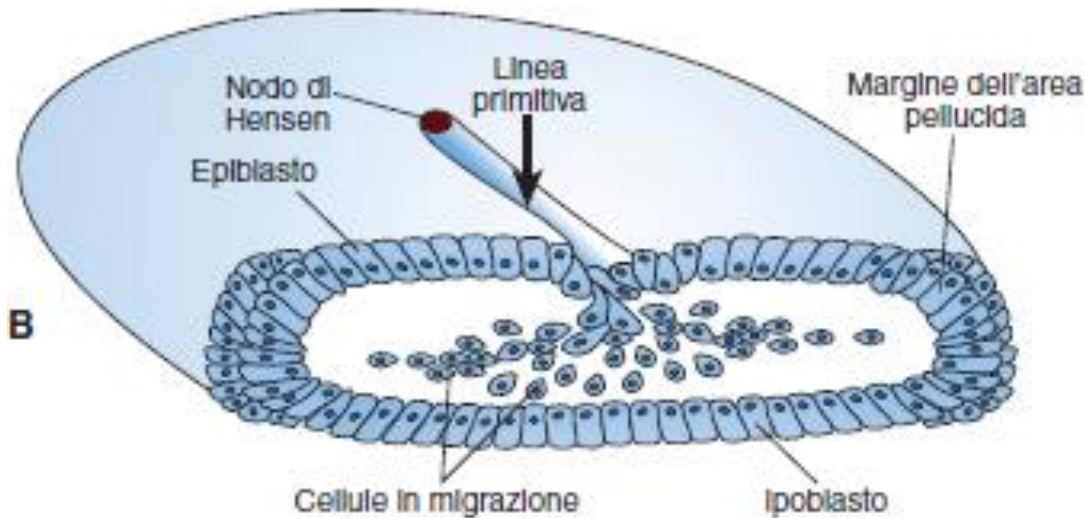
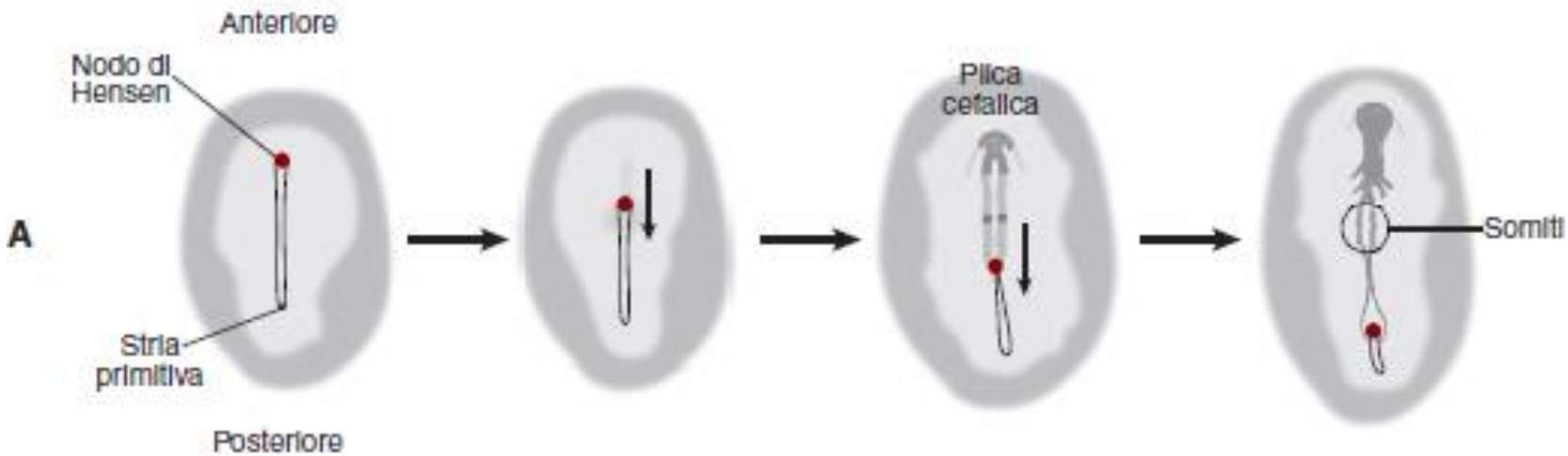


# NELLE FASI TARDIVE DELLA GASTRULAZIONE SI VERIFICA LA REGRESSIONE DELLA STRIA PRIMITIVA



Dalla regressione del nodo di Hensen, si ha la deposizione del materiale del cordomesoderma

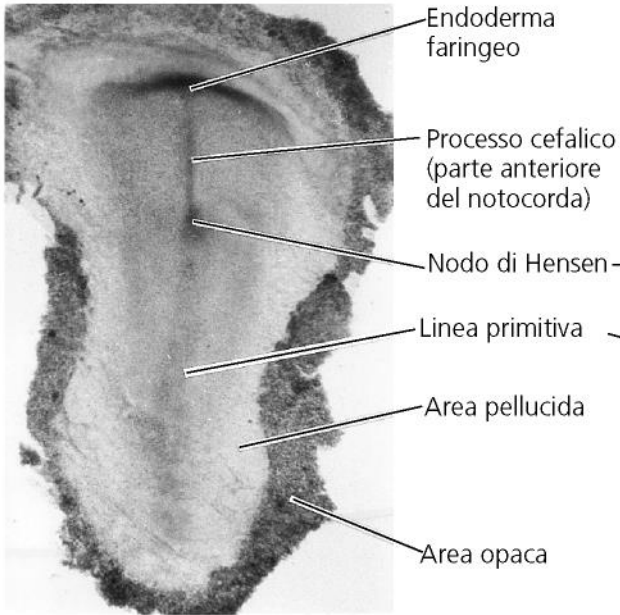
# La regressione del nodo di Hensen nelle regioni caudali è accompagnata dall'inizio della neurulazione nelle regioni cefaliche



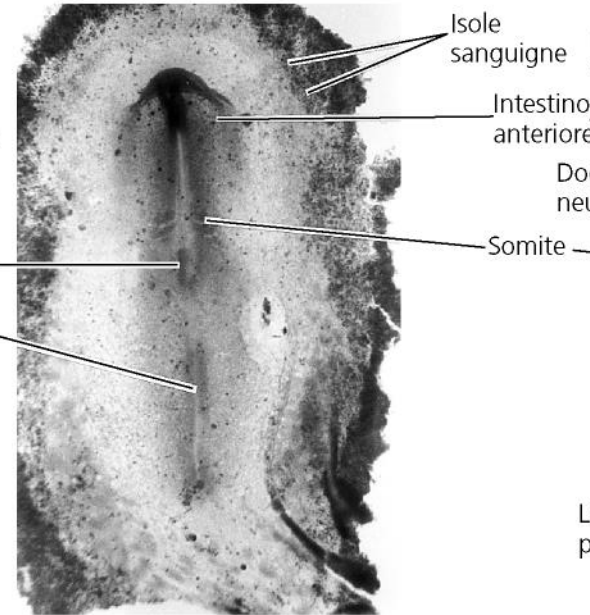


# MOVIMENTI DI NEURULAZIONE IN EMBRIONI DI POLLO

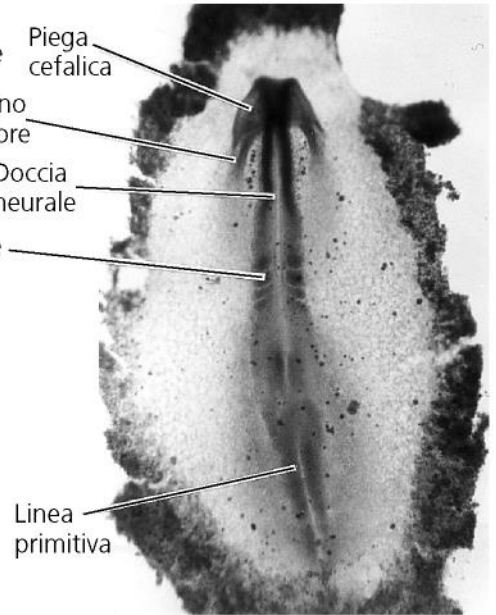
(A)



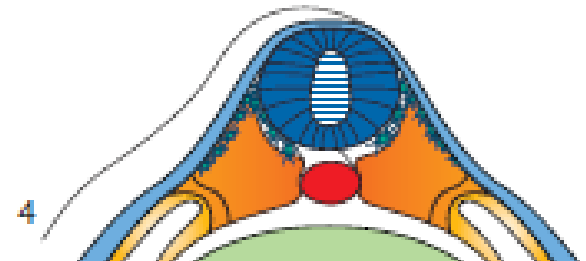
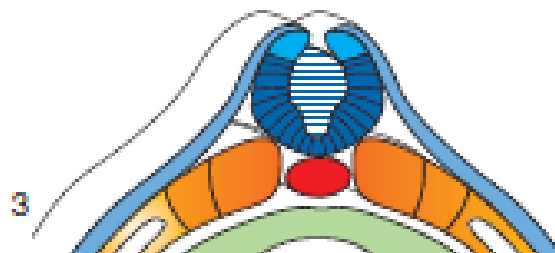
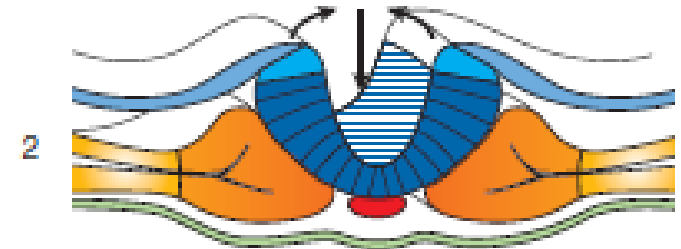
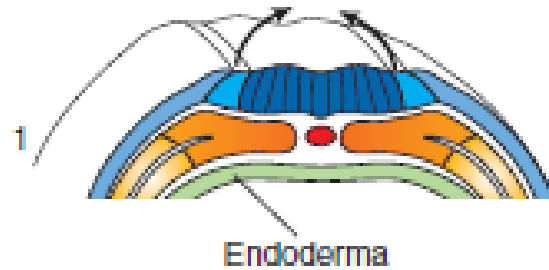
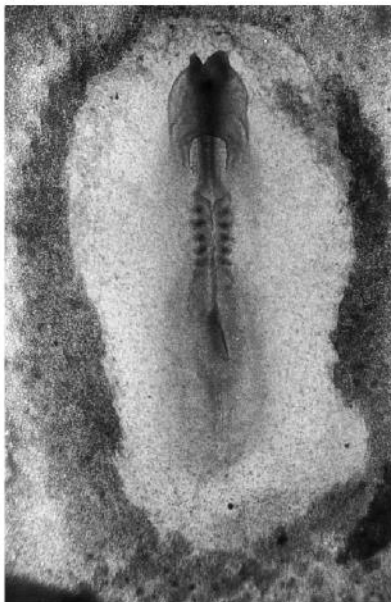
(B)



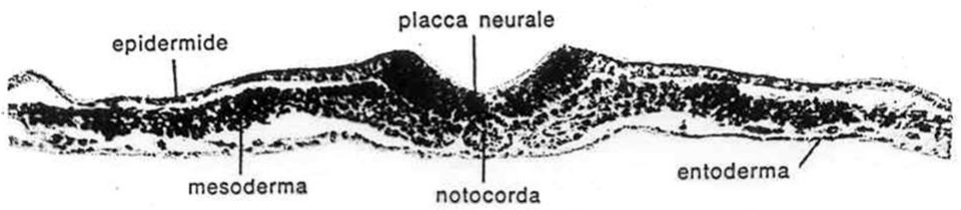
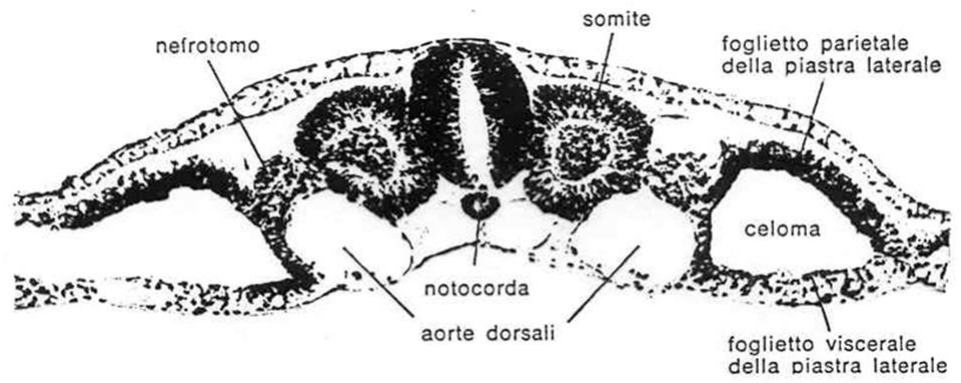
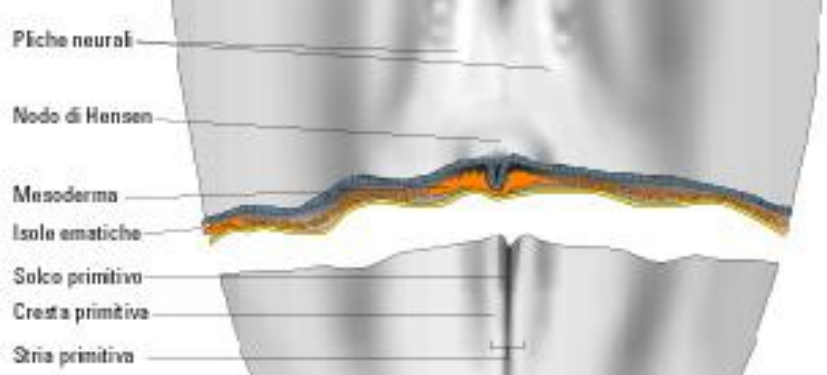
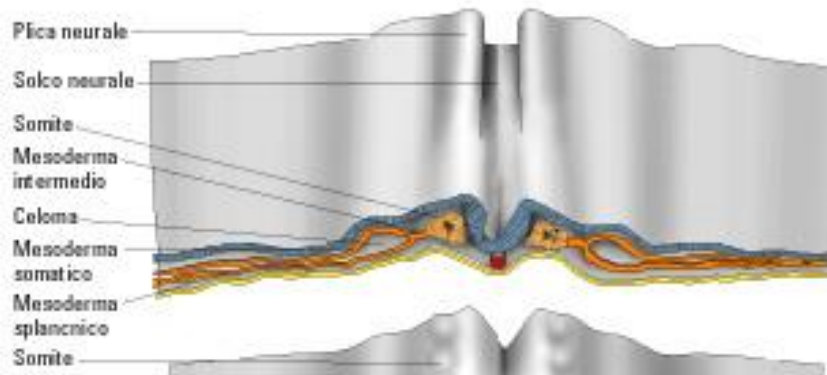
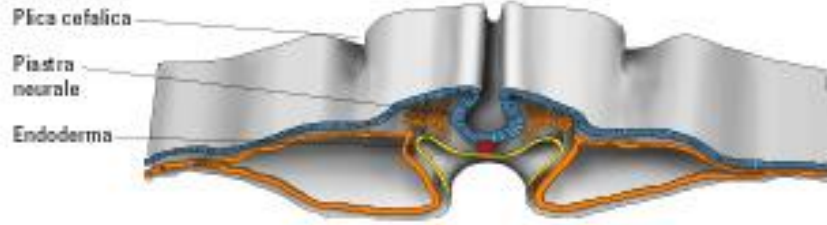
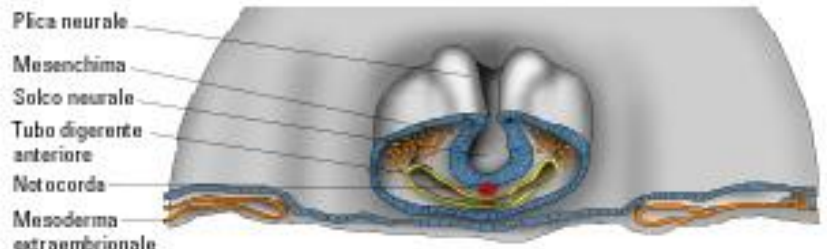
(C)



(D)

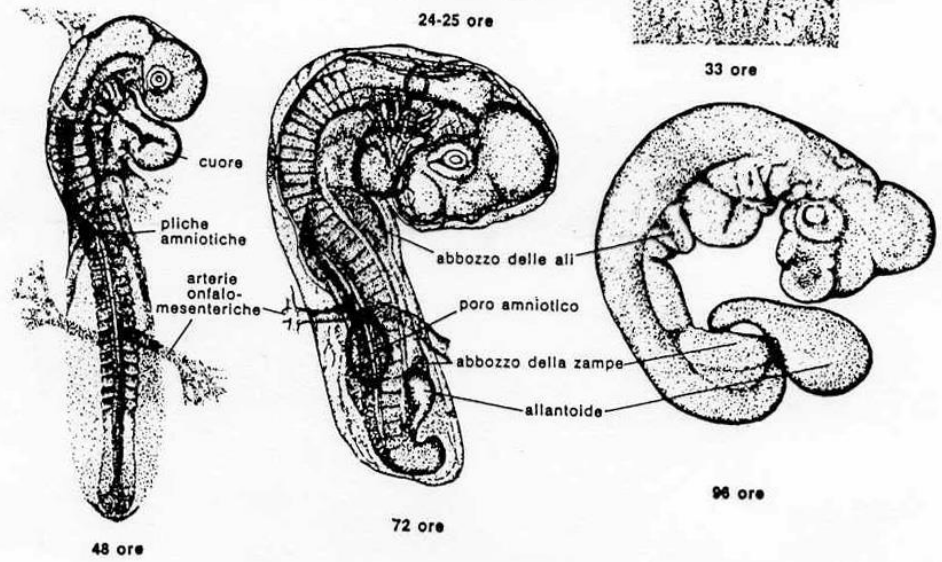
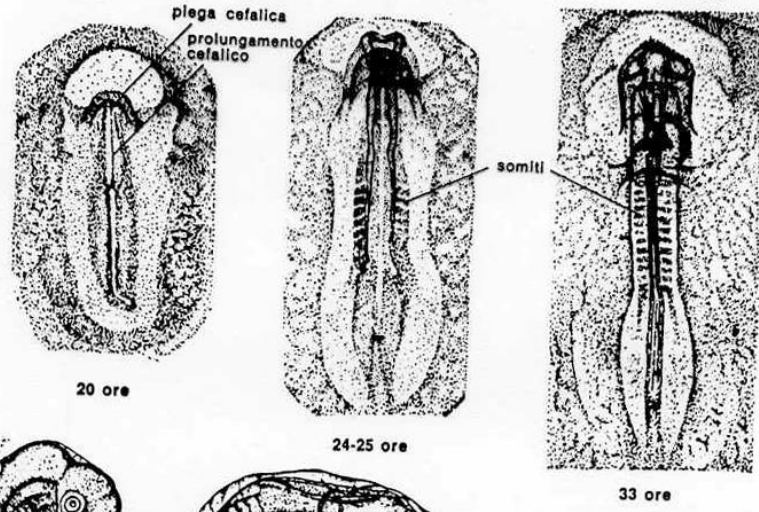
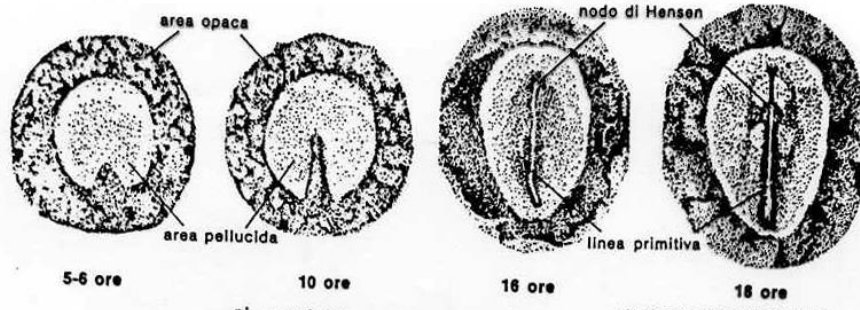


# I MOVIMENTI DI GASTRULAZIONE E NEURULAZIONE AVVENGONO A TEMPI DIVERSI LUNGO L'ASSE ANTERO-POSTERIORE

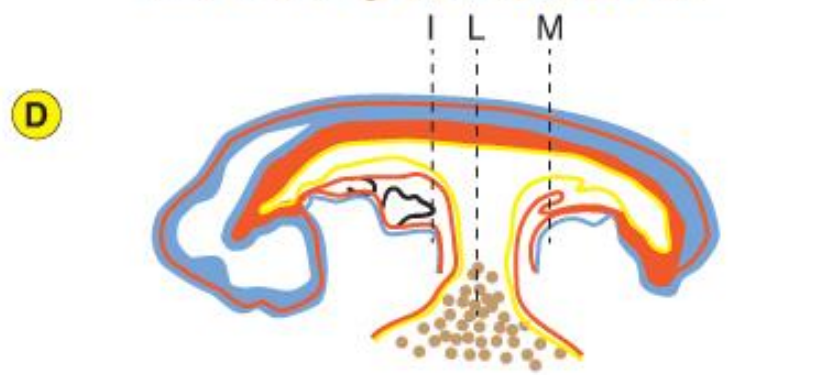
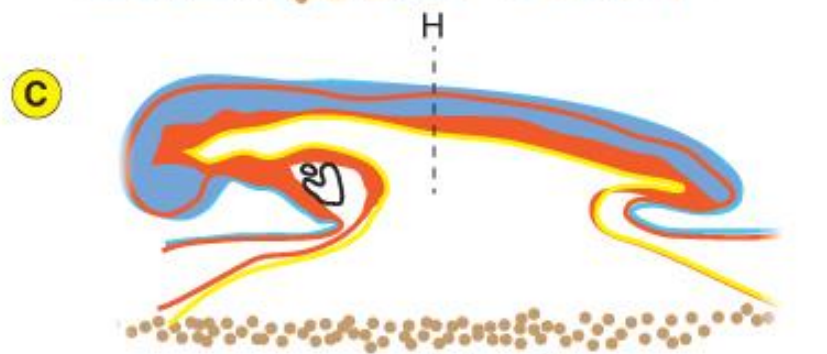
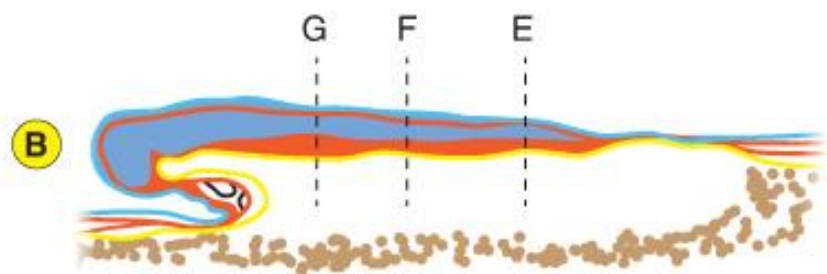


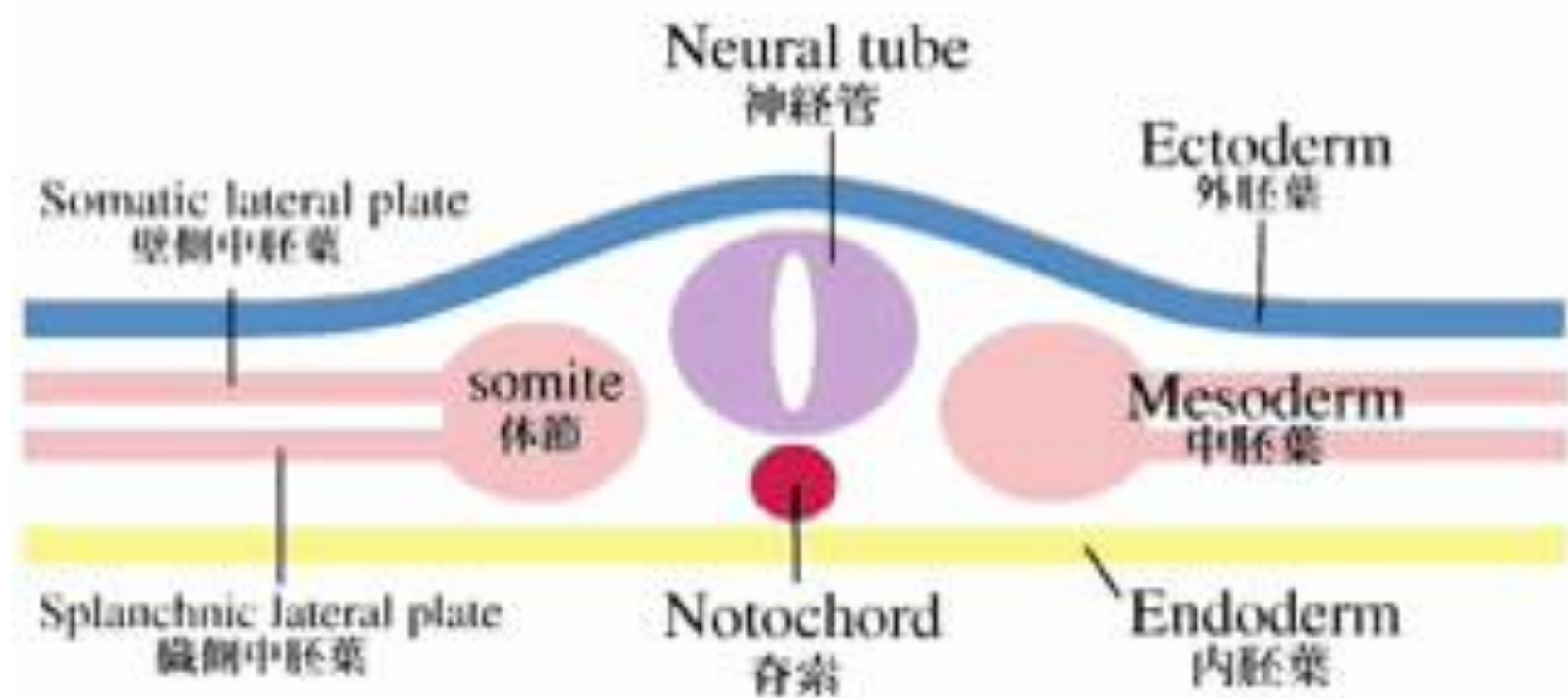
foglietto viscerale della piastra laterale





Principali stadi di sviluppo dell'uovo di pollo nei primi giorni di incubazione. Nello stadio a 96 ore l'embrione è stato liberato dall'amnios.





# Annessi embrionali

- Lo sviluppo embrionale in ambiente terrestre ha determinato la comparsa di strutture che consentono di proteggere e nutrire l'embrione

## FUNZIONI

Prevenire disidratazione: Amnios

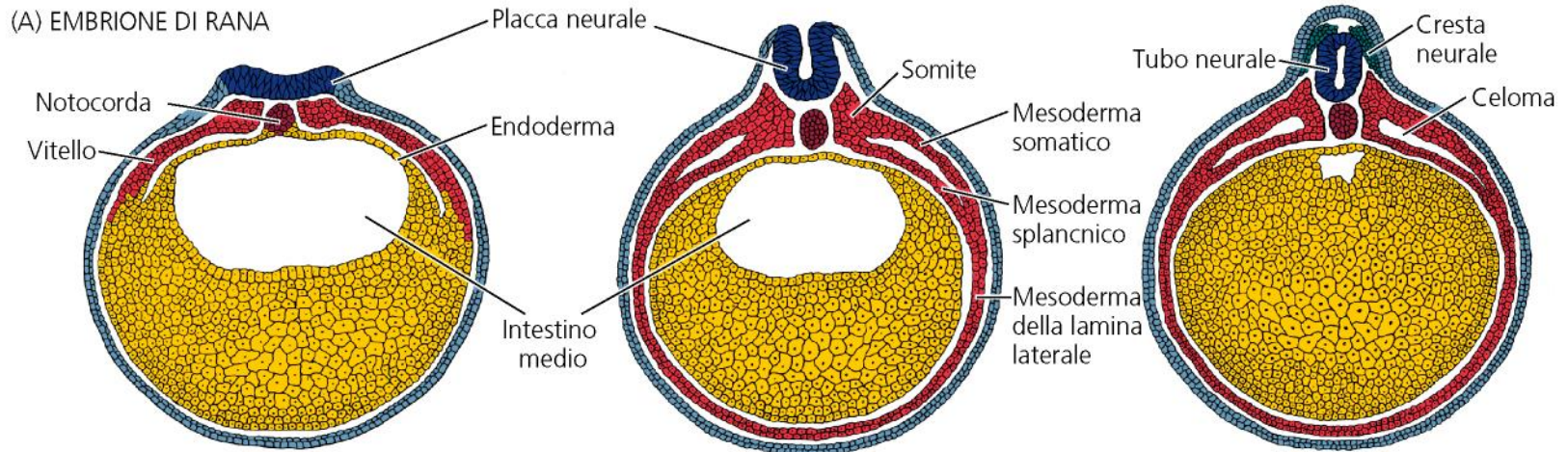
Permettere scambi gassosi: Corion e Allantoide

Eliminare scorie metaboliche: Allantoide

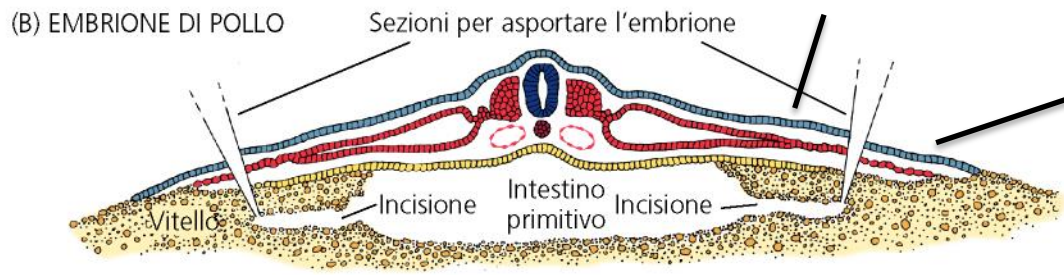
Assorbimento dei nutrienti del tuorlo: Sacco del tuorlo

**Cellule dell'Amnios producono il liquido amniotico che fornisce un ambiente acquoso per lo sviluppo**

**Nutrienti del tuorlo sono digeriti da cellule endodermiche del sacco del tuorlo e trasportati tramite vascolatura del sacco del tuorlo**

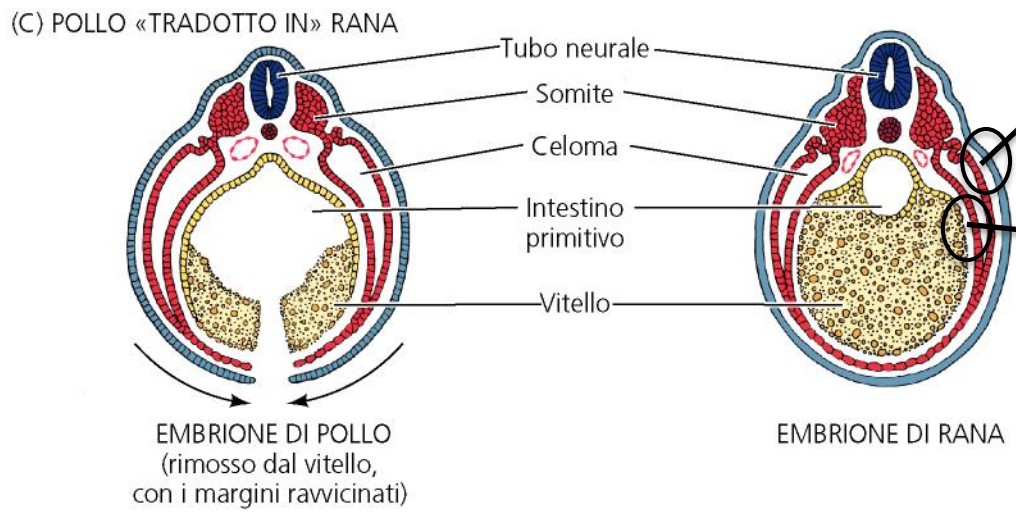


### Territori embrionali



### Territori extra-embryionali

- Somatopleura**
- Ectoderma
- Mesoderma somatico



- Splancnopleura**
- Endoderma
- Mesoderma splanchnico



## ANNESI EMBRIONALI

**Componente ectodermica o endodermica fornisce tessuti epiteliali**

**Componente mesodermica fornisce la vascolatura**

CORION → Funzione: scambi gassosi, protezione, riassorbimento del calcio  
Membrane: Somatopleura extra-embrionale  
(ectoderma extra-embr. + mesod. somatico extra-embr.)

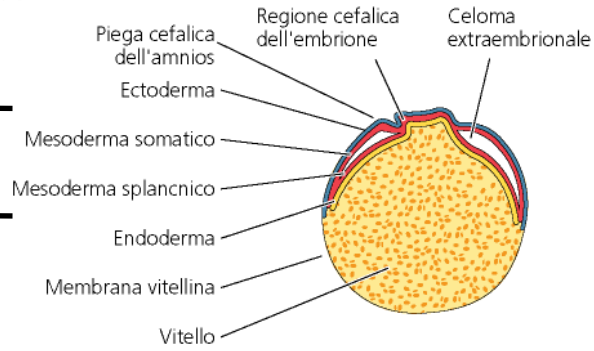
AMNIOS → Funzione: Impedire disidratazione e attutire gli urti  
Membrane: Somatopleura extra-embrionale  
(ectoderma extra-embr. + mesod. somatico extra-embr.)

ALLANTOIDE → Funzione: Assorbimento materiali di rifiuto  
Membrane: Splanchnopleura extra-embrionale  
(ipoblasto + mesod. splancnico extra-embr.)

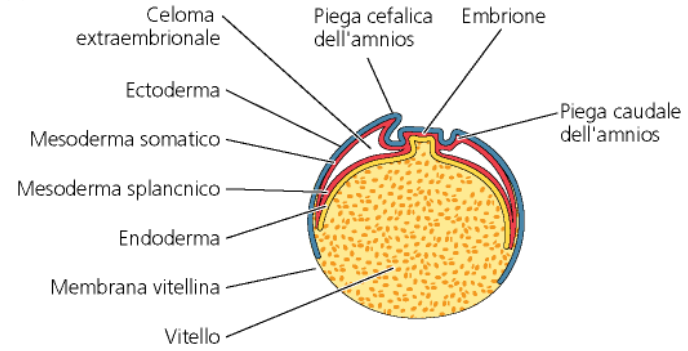
SACCO DEL TUORLO → Funzione: Avvolgimento e Assorbimento del tuorlo  
Membrane: Splanchnopleura extra-embrionale  
(ipoblasto + mesod. splancnico extra-embr.)

Porzione  
extra-embr.

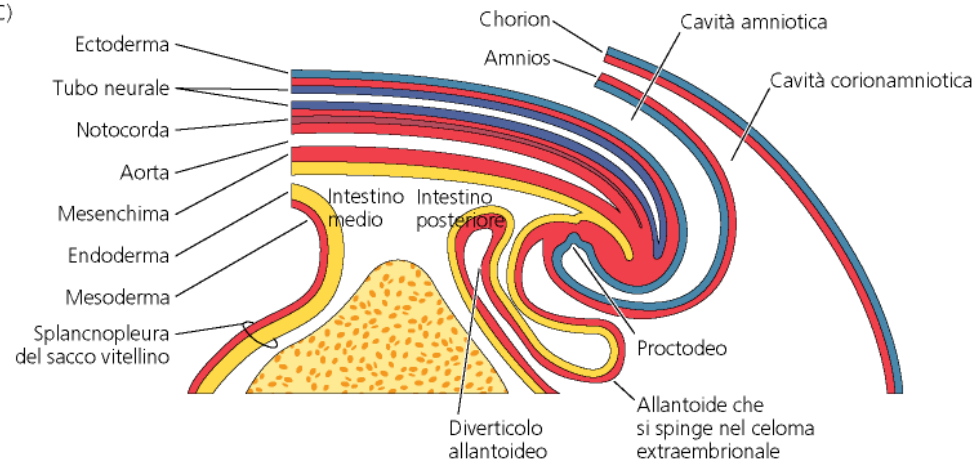
(A)



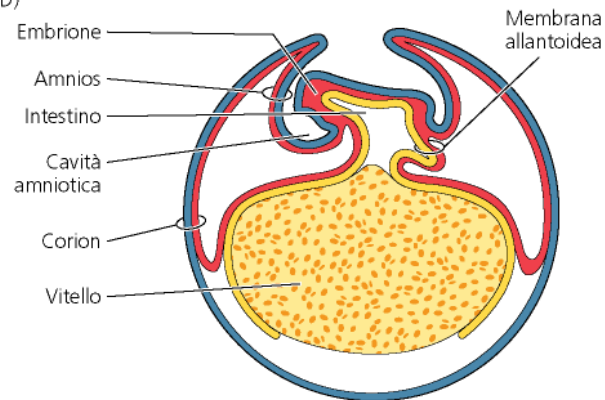
(B)



(C)



(D)



(E)

