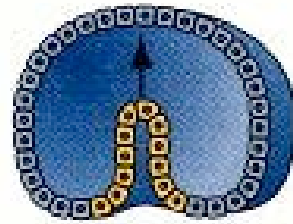


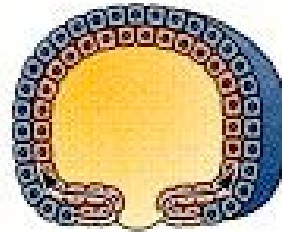
I movimenti cellulari nella gastrulazione

Invagination:
Infolding of cell sheet into embryo



Example:
Sea urchin endoderm

Involution:
Inturning of cell sheet over the basal surface of an outer layer



Example:
Amphibian mesoderm

Ingression:
Migration of individual cells into the embryo



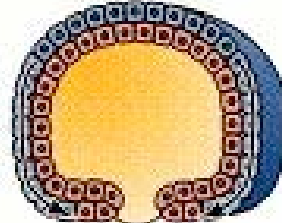
Example:
Sea urchin mesoderm,
Drosophila neuroblasts

Delamination:
Splitting or migration of one sheet into two sheets



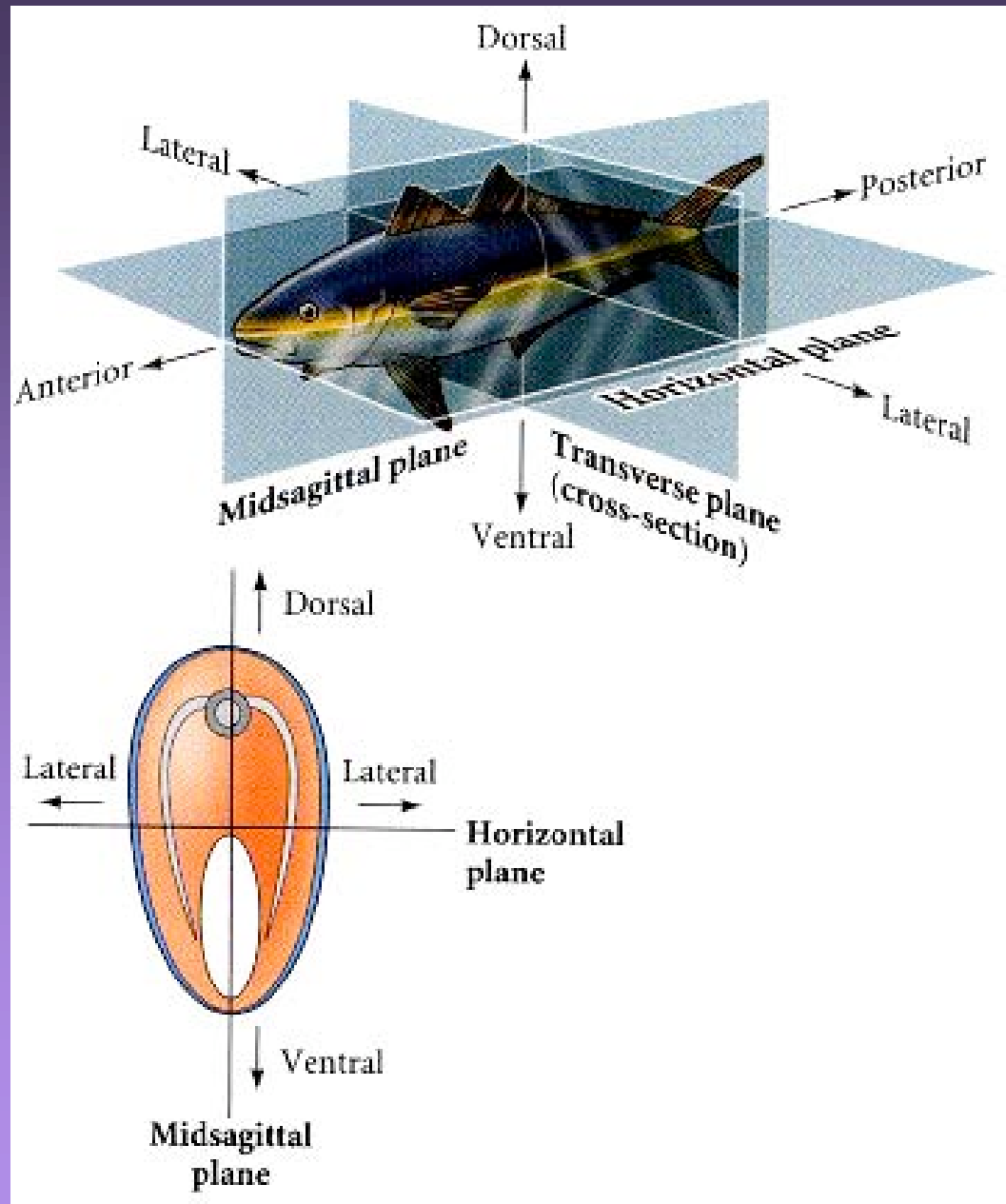
Example:
Mammalian and bird hypoblast formation

Epiboly:
The expansion of one cell sheet over other cells



Example:
Ectoderm formation in amphibians, sea urchins, and tunicates

Gli assi di simmetria negli animali



CONCETTI FONDAMENTALI

SEGMENTAZIONE: processo durante il quale mediante una Serie di divisioni mitotiche, l'enorme volume del citoplasma dell'uovo si divide in numerose piccole cellule nucleate, i blastomeri. Il risultato finale e' una *blastula*

GASTRULAZIONE: processo di movimento cellulare e tissutale mediante il quale le cellule della blastula sono riarrangiate in modo drammatico

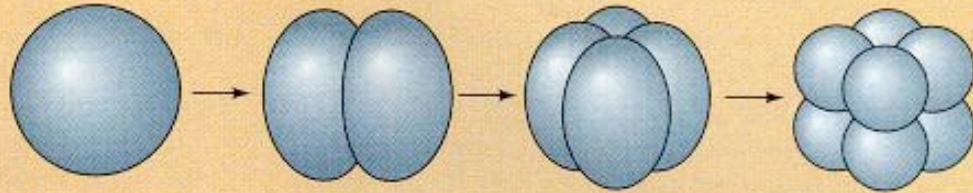
Le varie modalita' di segmentazione

I. HOLOBLASTIC (COMPLETE CLEAVAGE)

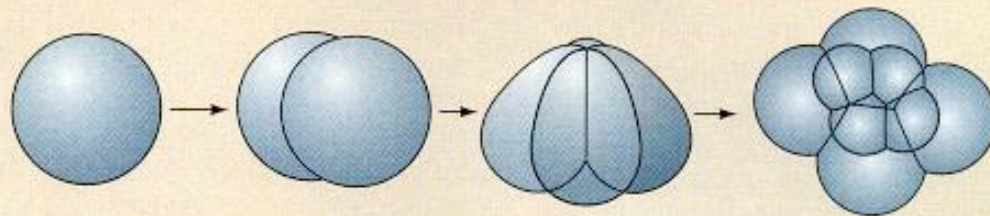
A. Isolecithal

(Sparse, evenly distributed yolk)

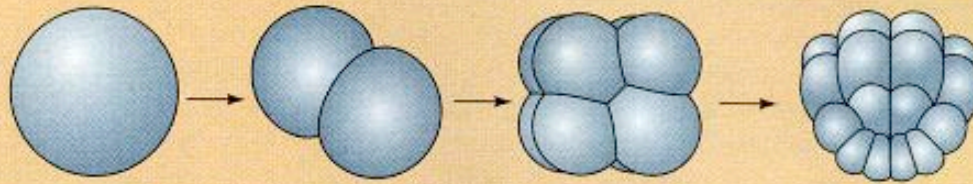
1. Radial
Echinoderms, amphioxus



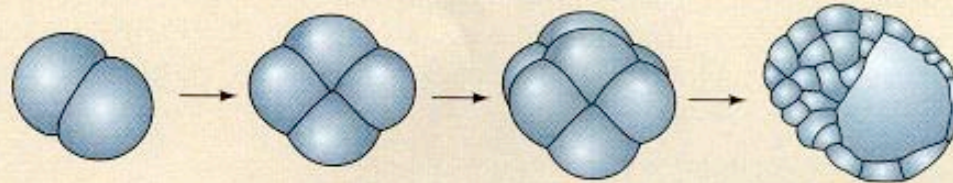
2. Spiral
Annelids, molluscs,
flatworms



3. Bilateral
Tunicates



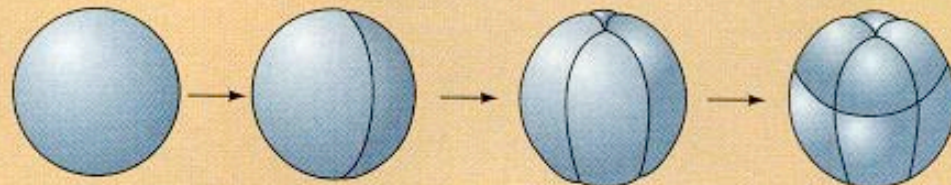
4. Rotational
Mammals, nematodes



B. Mesolecithal

(Moderate vegetal yolk disposition)

Radial
Amphibians



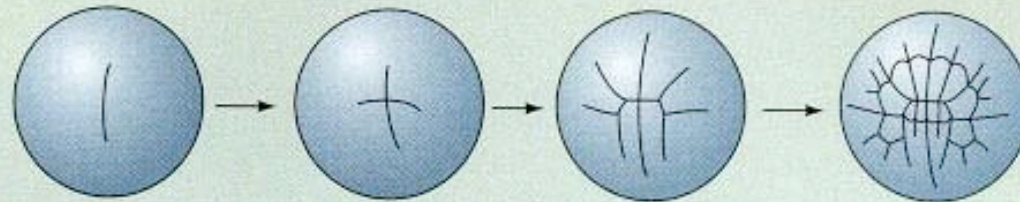
Le varie modalita' di segmentazione

II. MEROBLASTIC (INCOMPLETE CLEAVAGE)

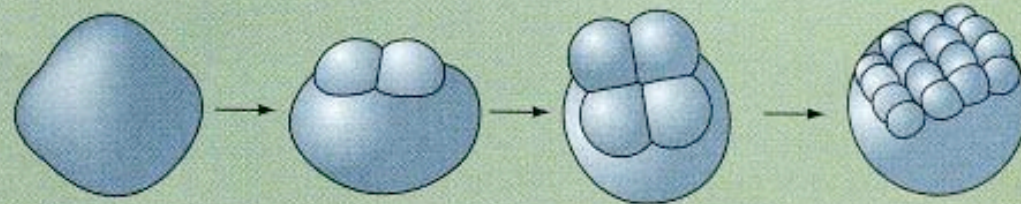
A. Telolecithal

(Dense yolk throughout most of cell)

1. Bilateral
Cephalopod molluscs



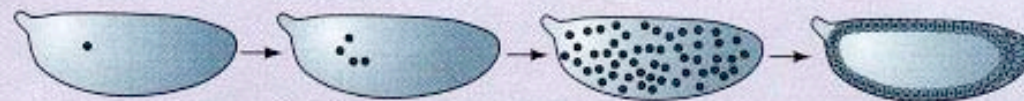
2. Discoidal
Fish, reptiles, birds



B. Centrolecithal

(Yolk in center of egg)

- Superficial
Most insects



Le varie modalita' di segmentazione

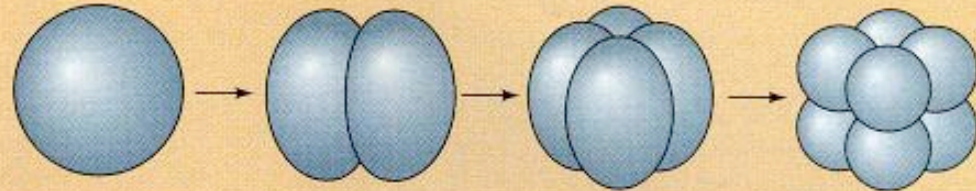
I. HOLOBLASTIC (COMPLETE CLEAVAGE)

A. Isolecithal

(Sparse, evenly distributed yolk)

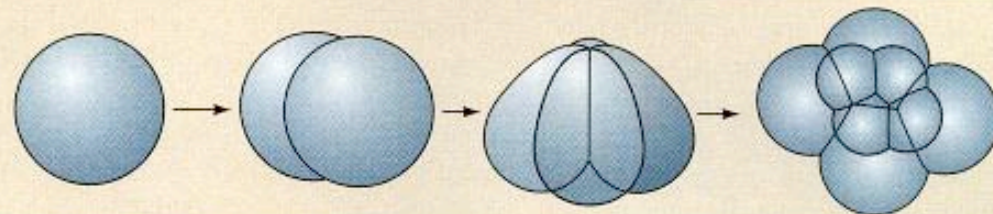
1. Radial

Echinoderms, amphioxus



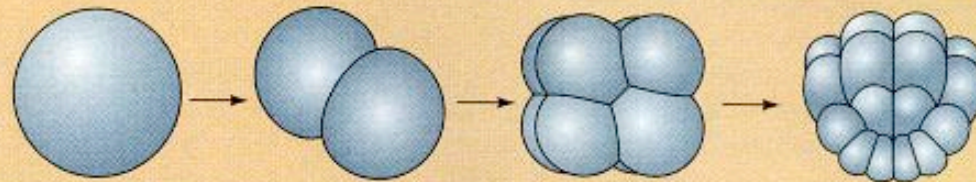
2. Spiral

Annelids, molluscs,
flatworms



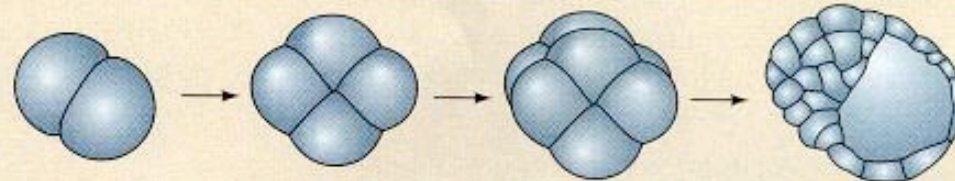
3. Bilateral

Tunicates



4. Rotational

Mammals, nematodes

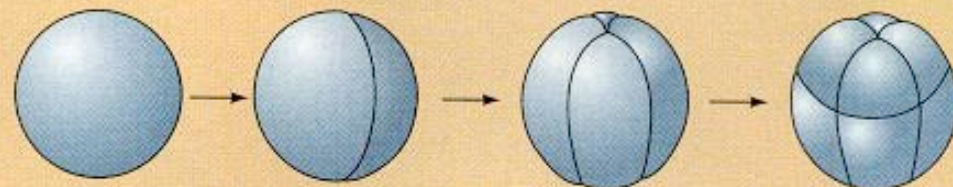


B. Mesolecithal

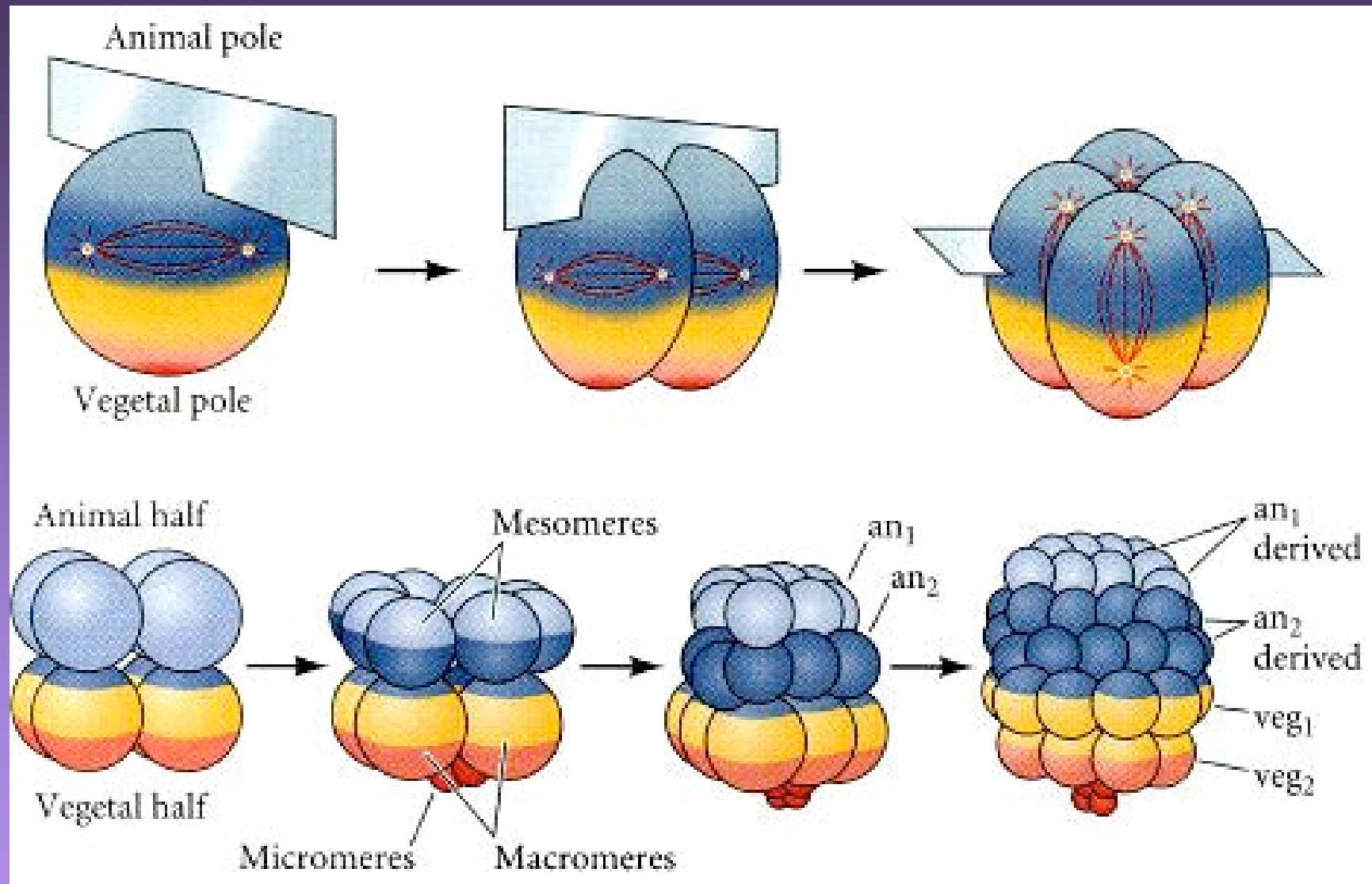
(Moderate vegetal yolk disposition)

Radial

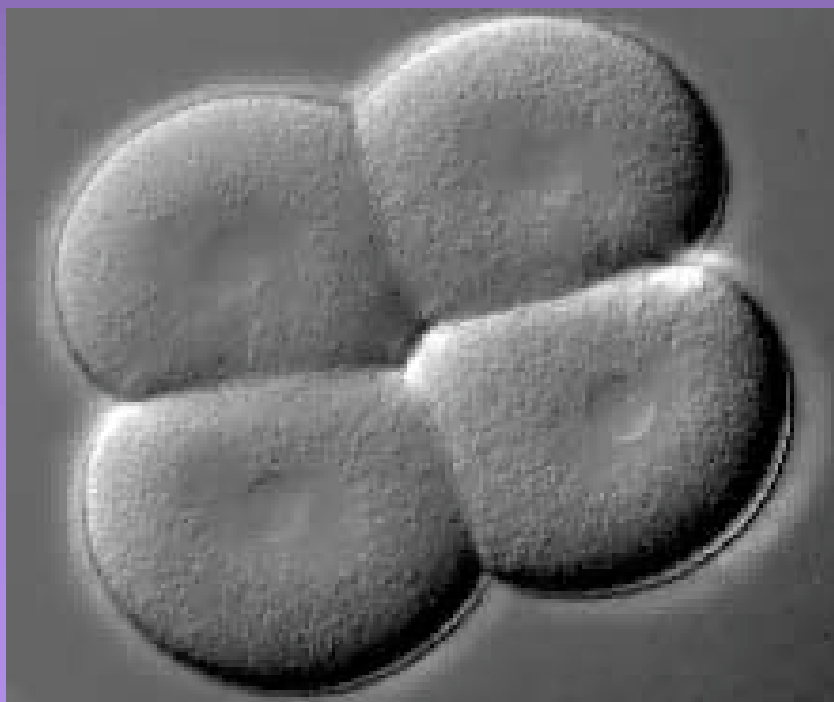
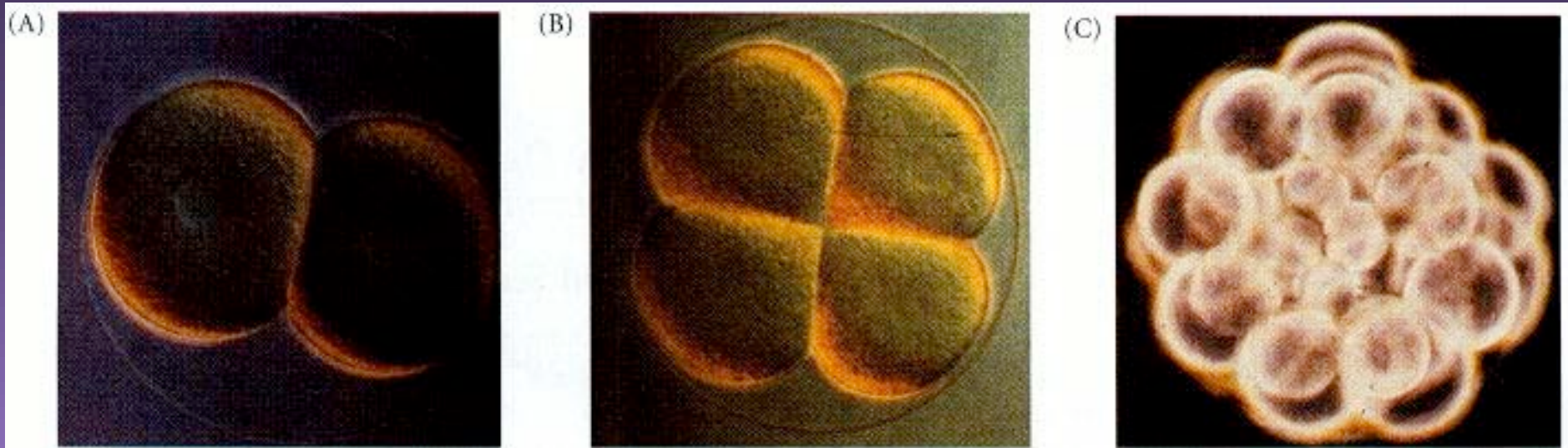
Amphibians



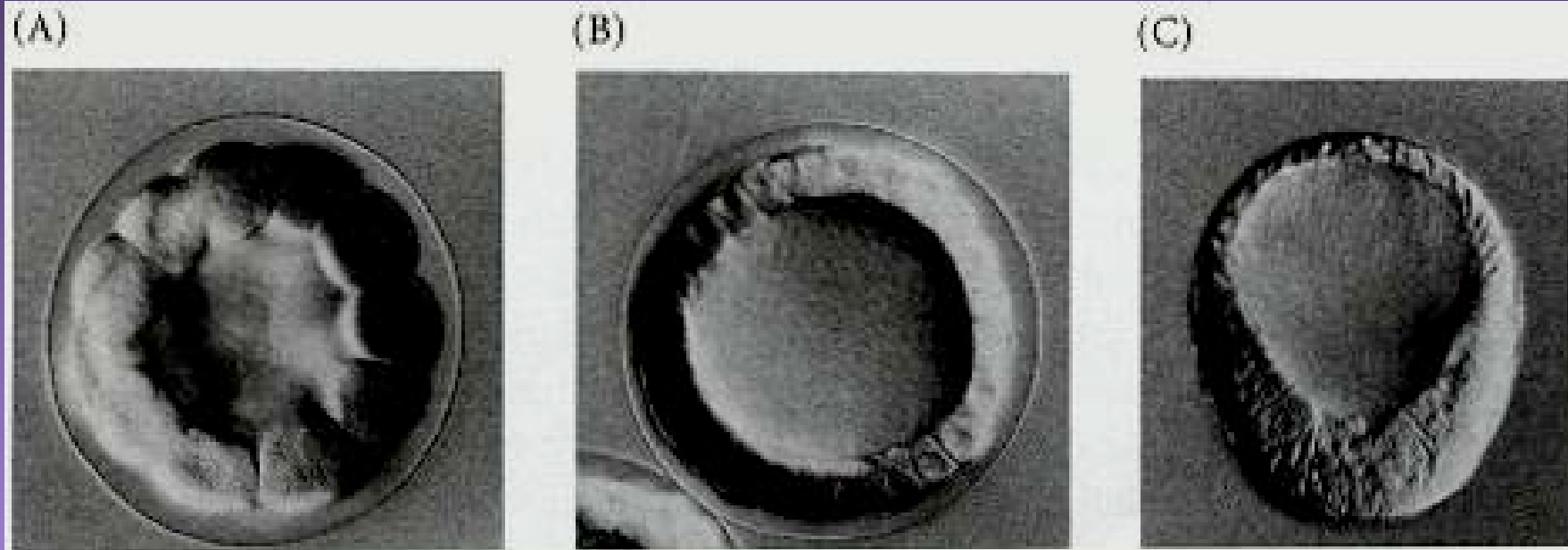
La segmentazione in riccio di mare. I



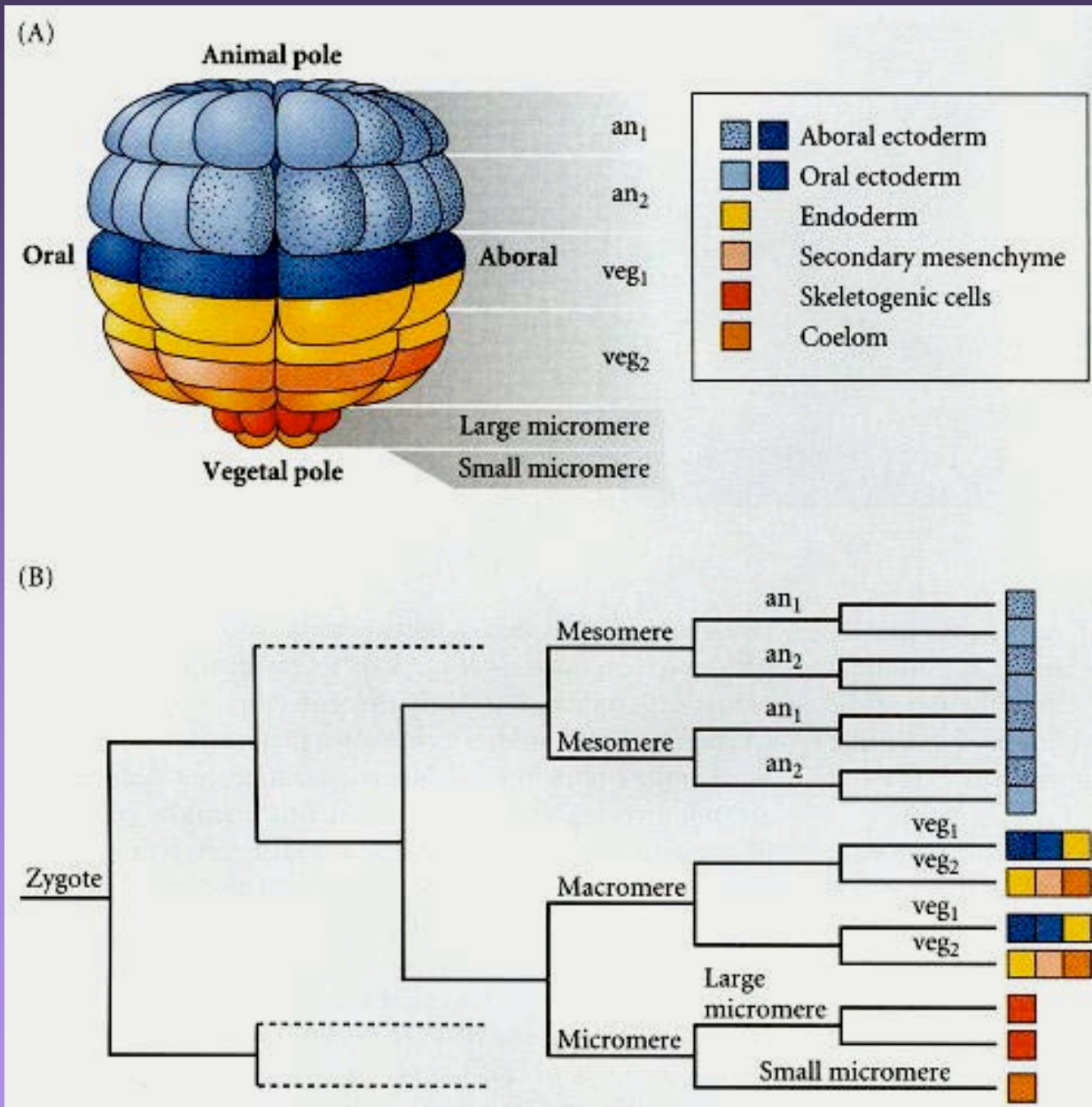
La segmentazione in riccio di mare. II



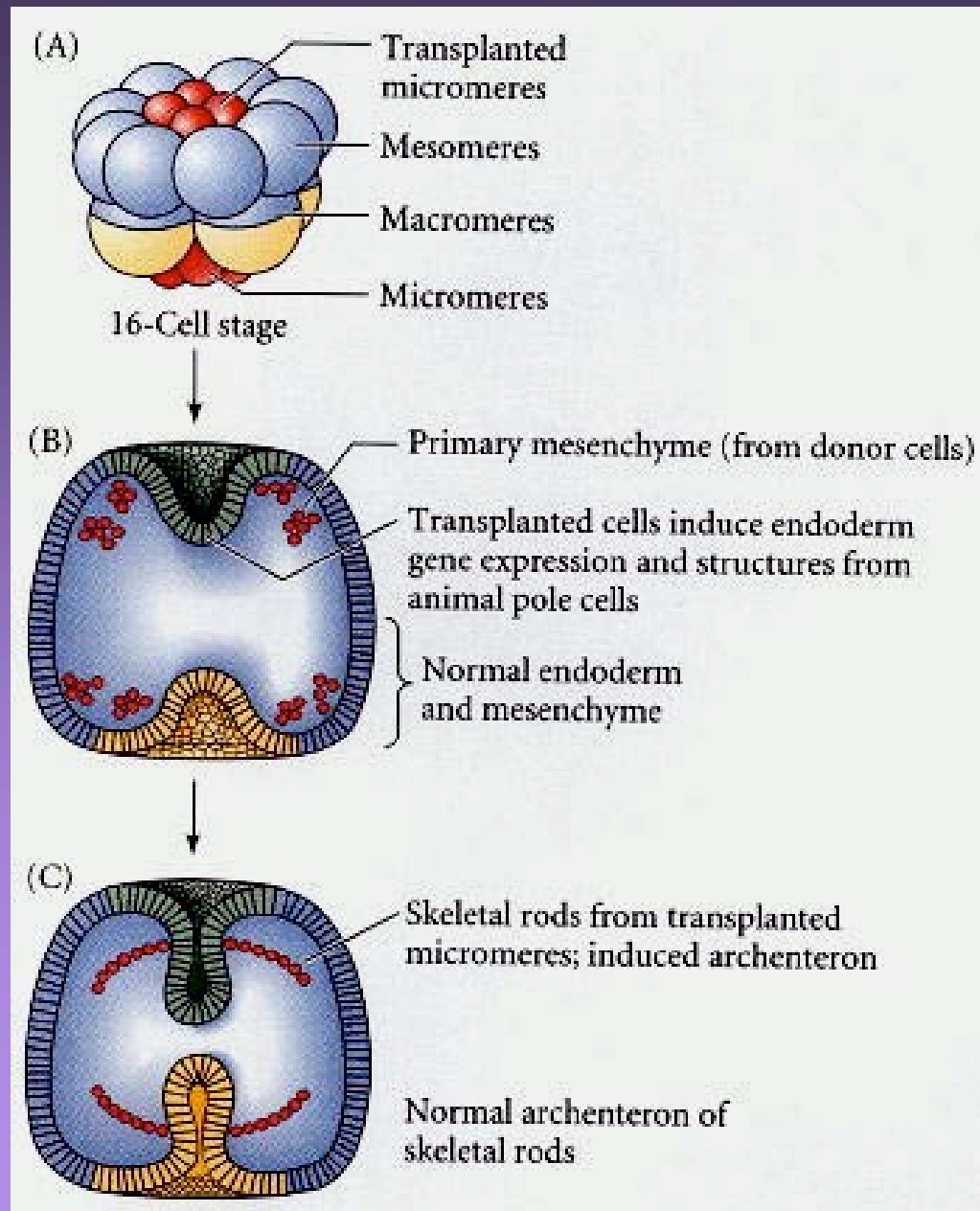
Formazione dei micromeri e blastula



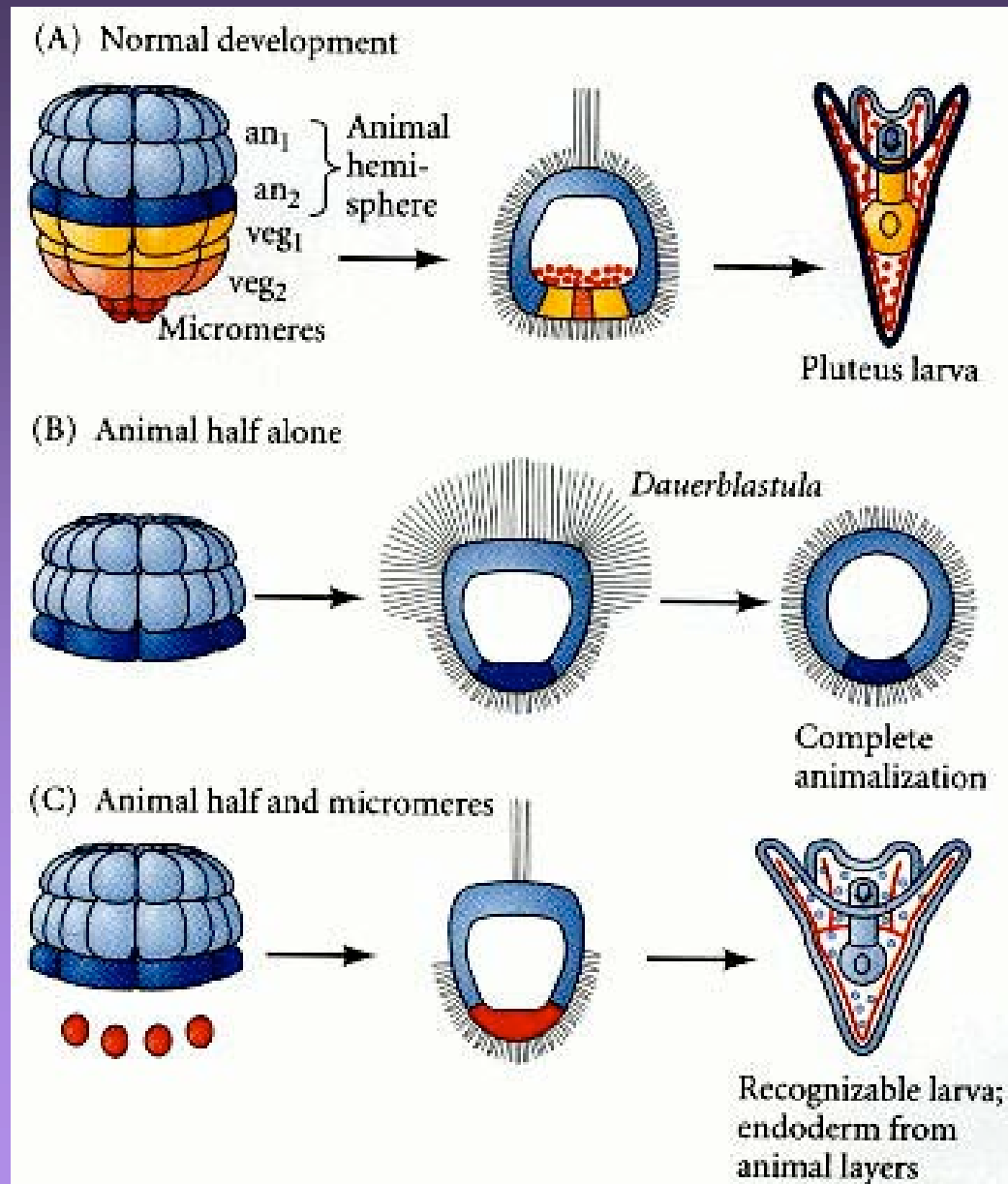
Mappe presuntive e linee cellulari in riccio di mare



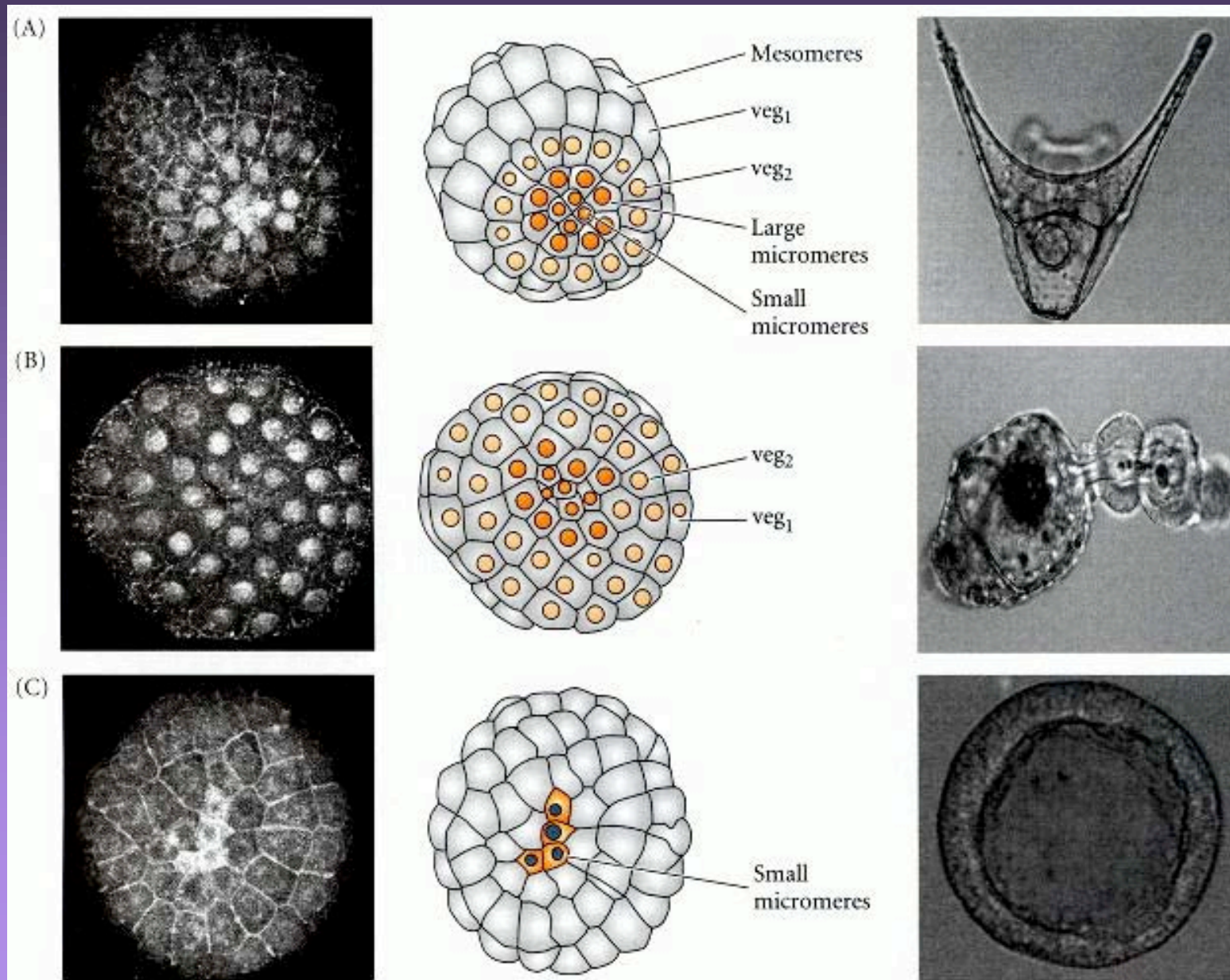
I micromeri sono in grado di indurre un asse secondario



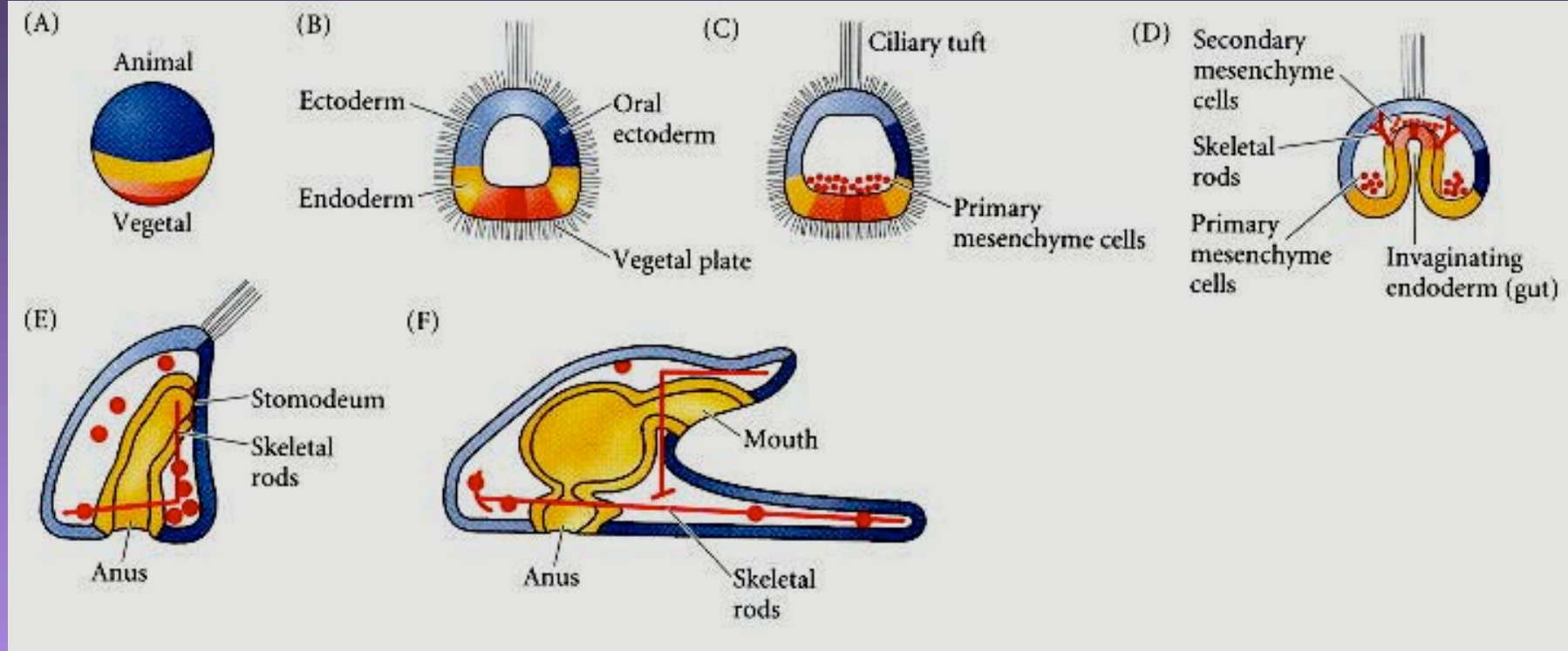
I micromeri possono indurre l'ectoderma presuntivo ad acquisire un nuovo destino (Hoerstadius, 1939)



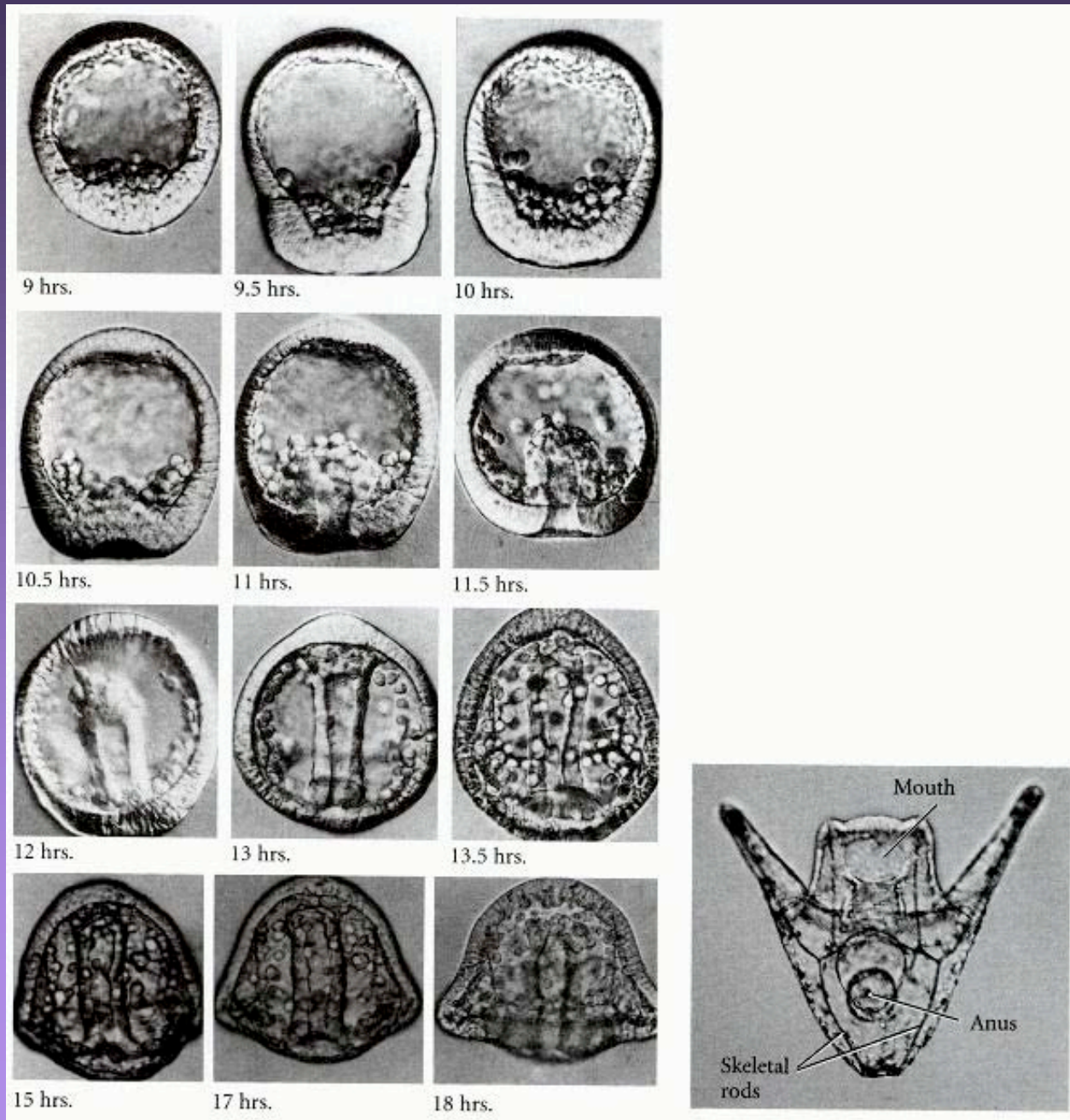
Il ruolo della beta-catenina nella specificazione del polo vegetale



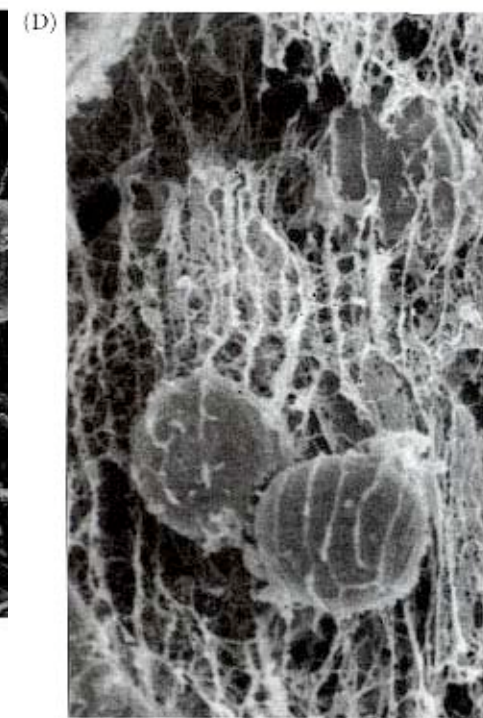
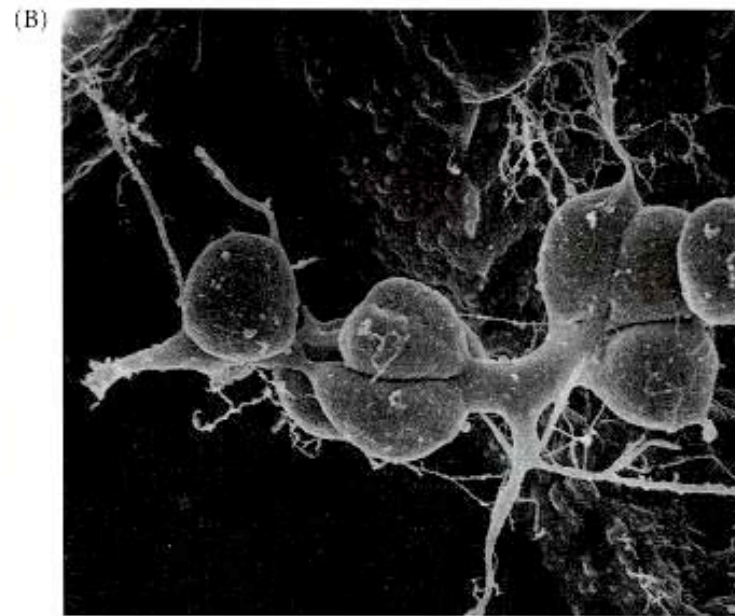
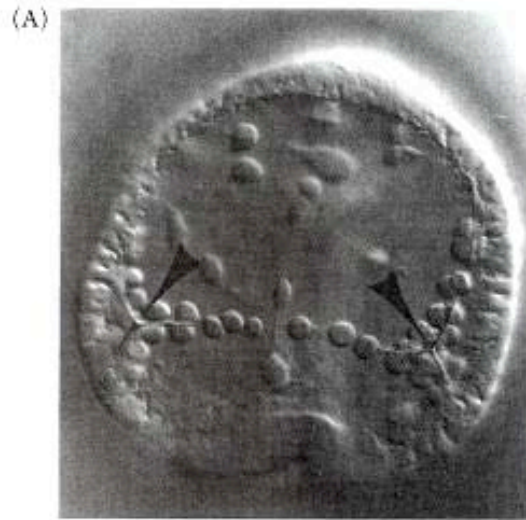
Il normale sviluppo di riccio di mare



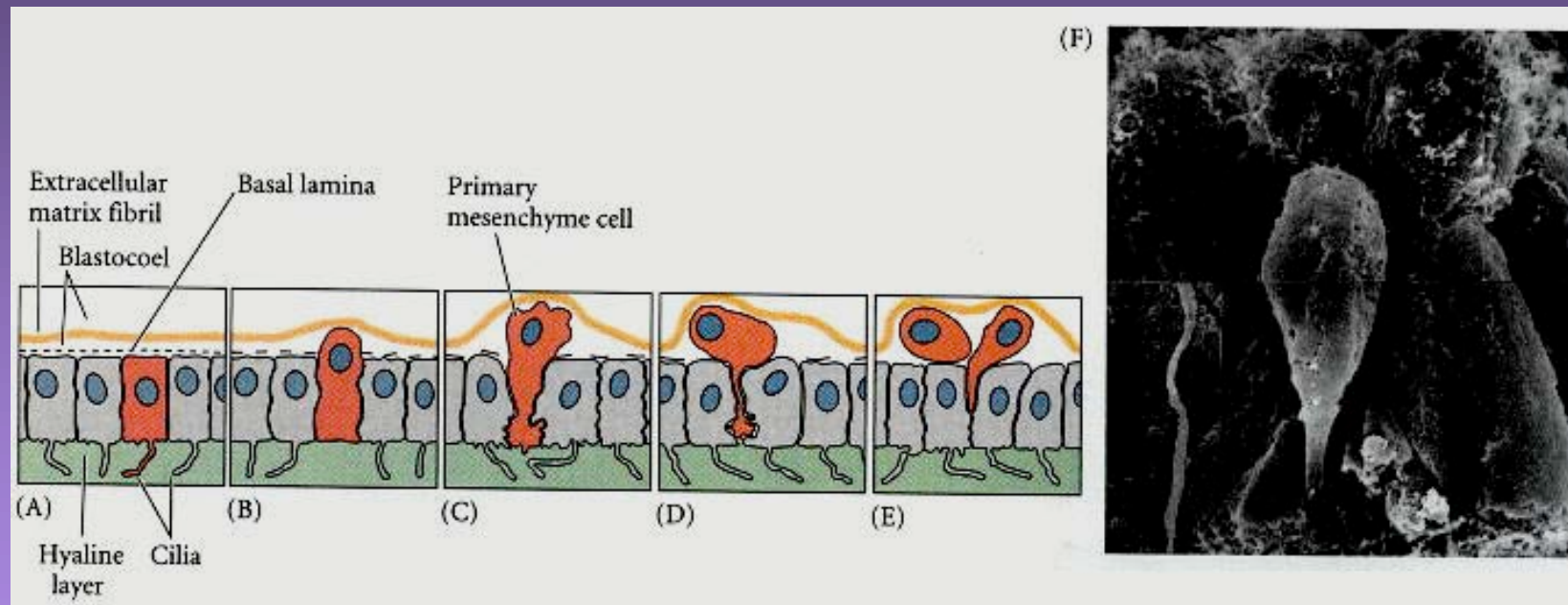
La sequenza della gastrulazione in riccio di mare



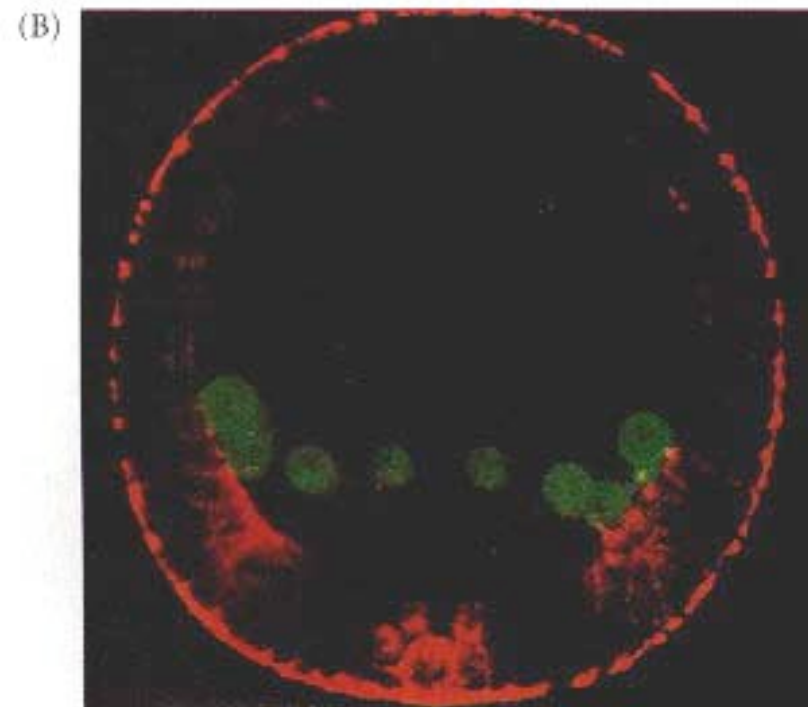
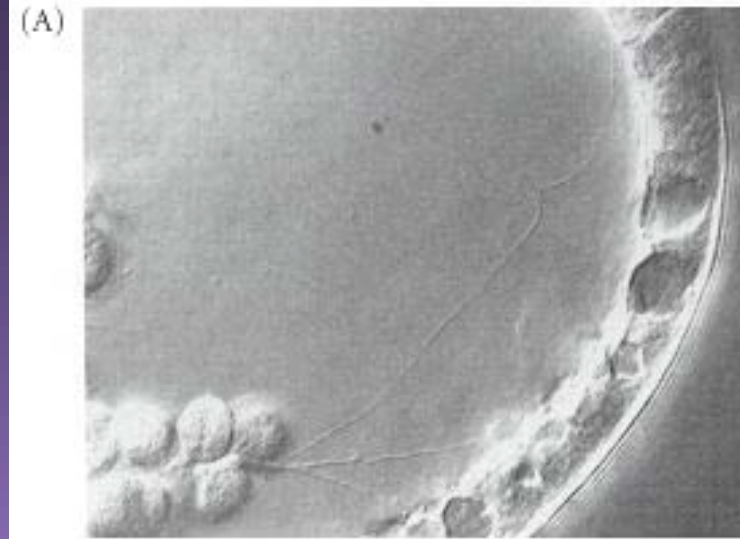
Azioni del mesenchima primario: le corde sinciziali



L'ingresso del mesenchima primario, prima fase della gastrulazione

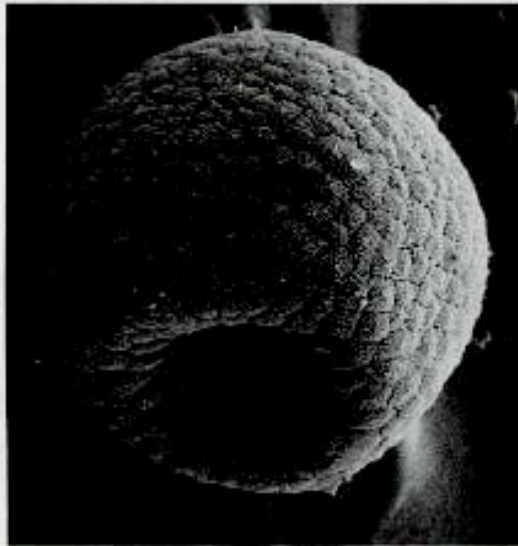


Le cellule del mesenchima primario trovano casa

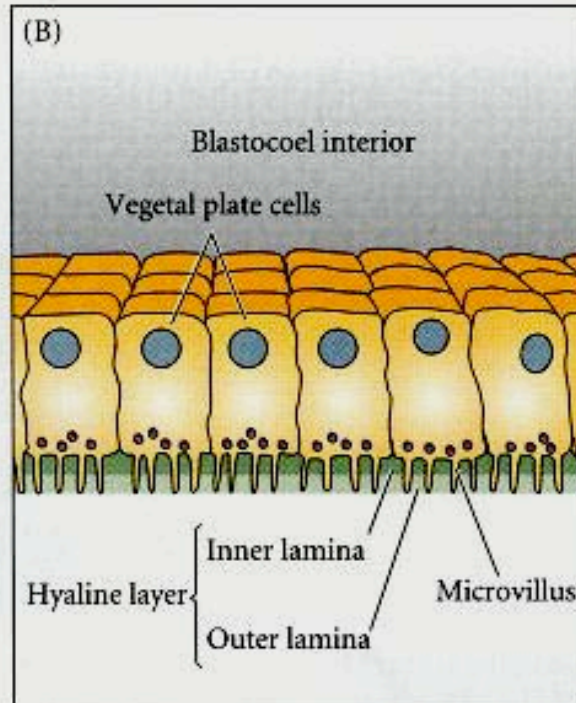


Invaginazione della piastra vegetale

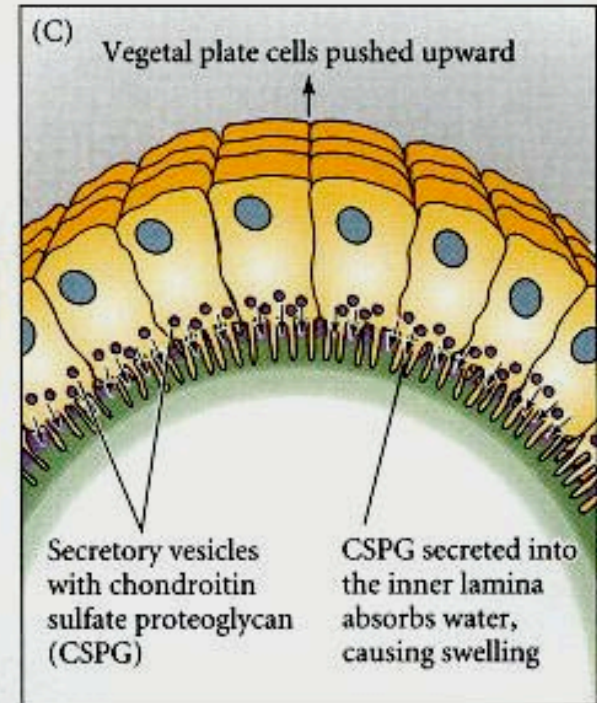
(A)



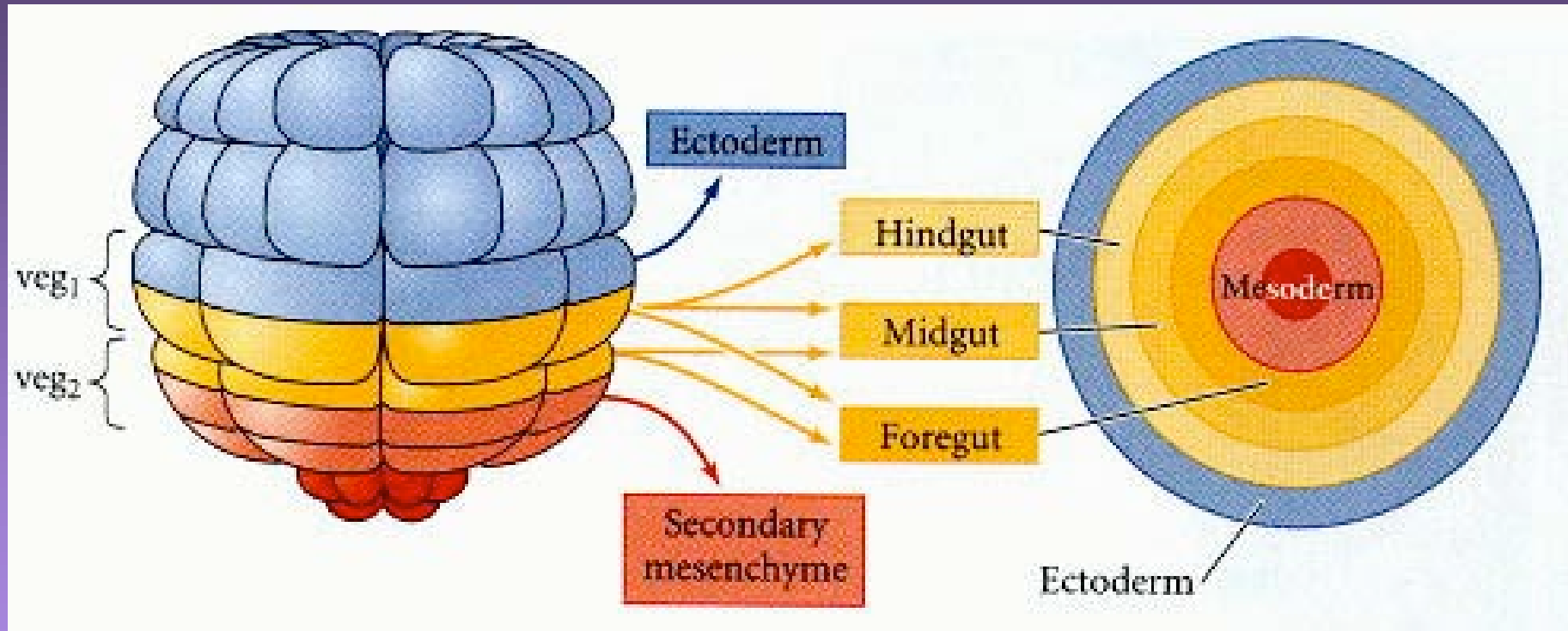
(B)



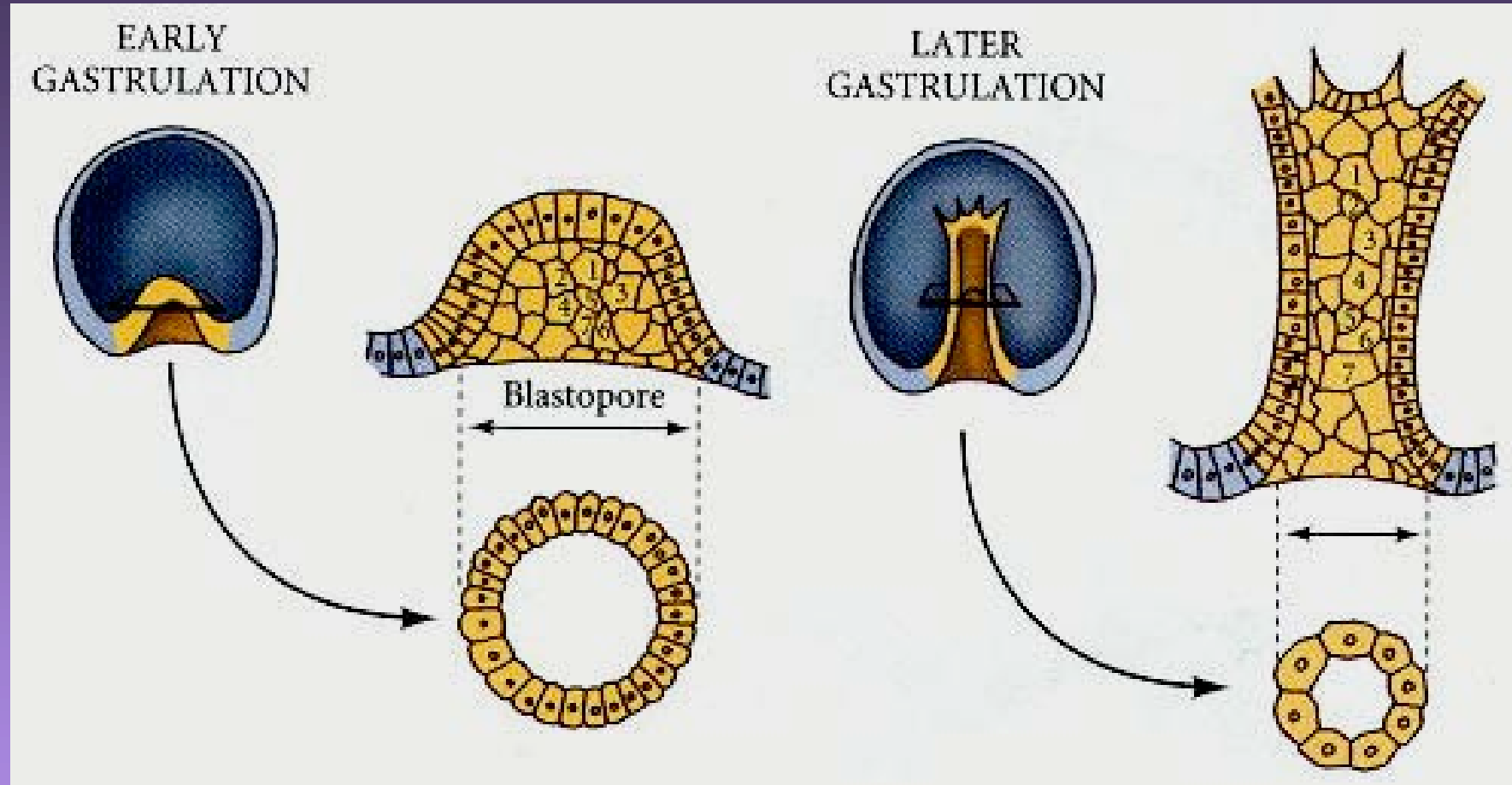
(C)



Mappa presuntiva della piastra vegetale



L'estensione dell'archenteron



Appare il mesenchima secondario

