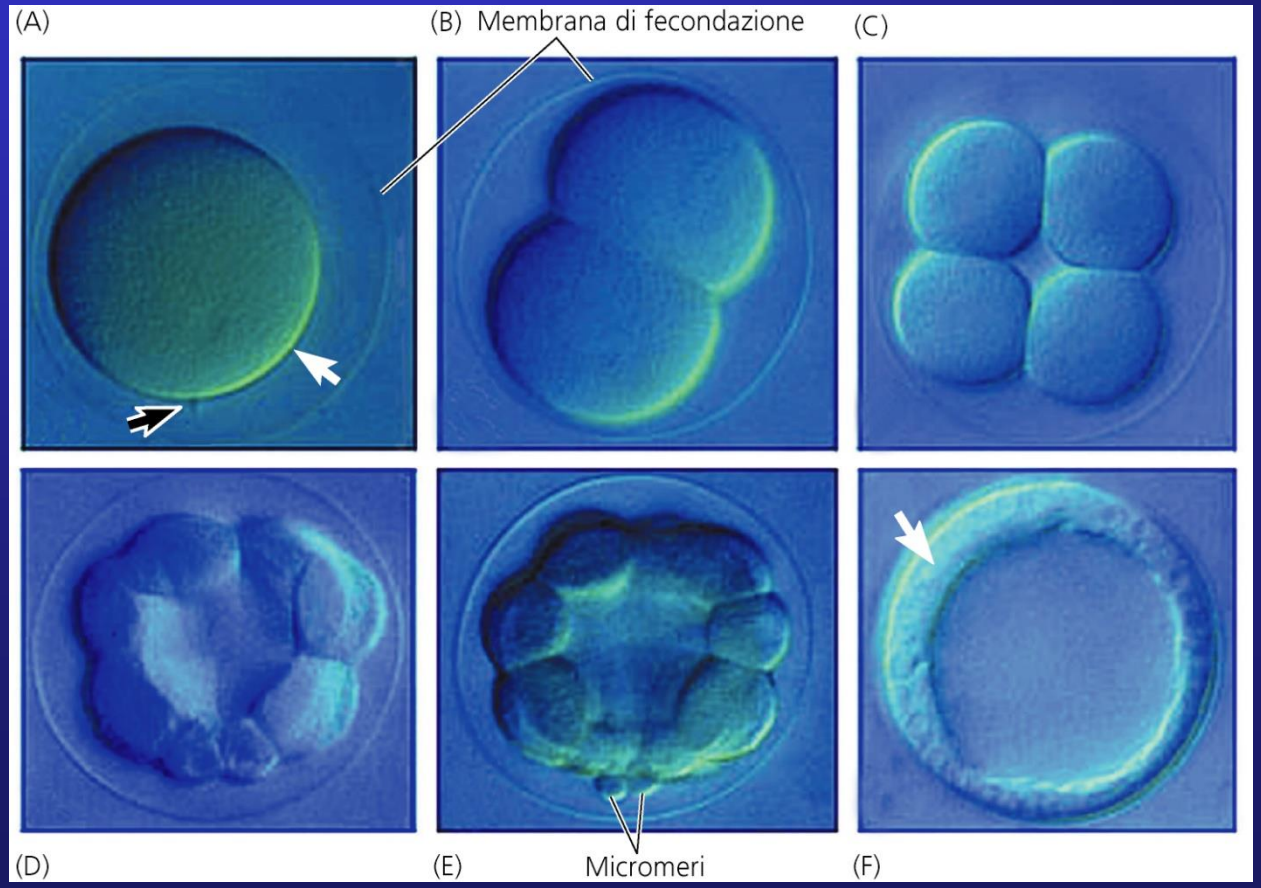
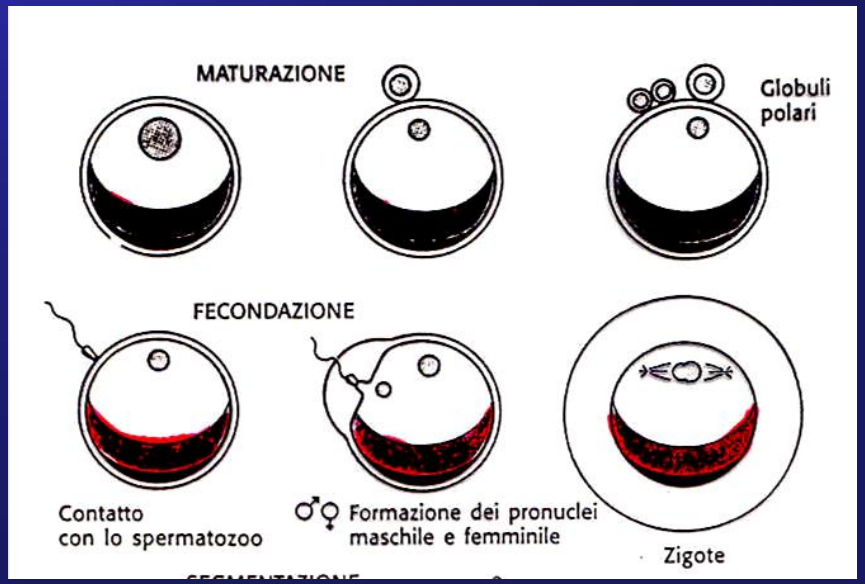
Sviluppo riccio di mare



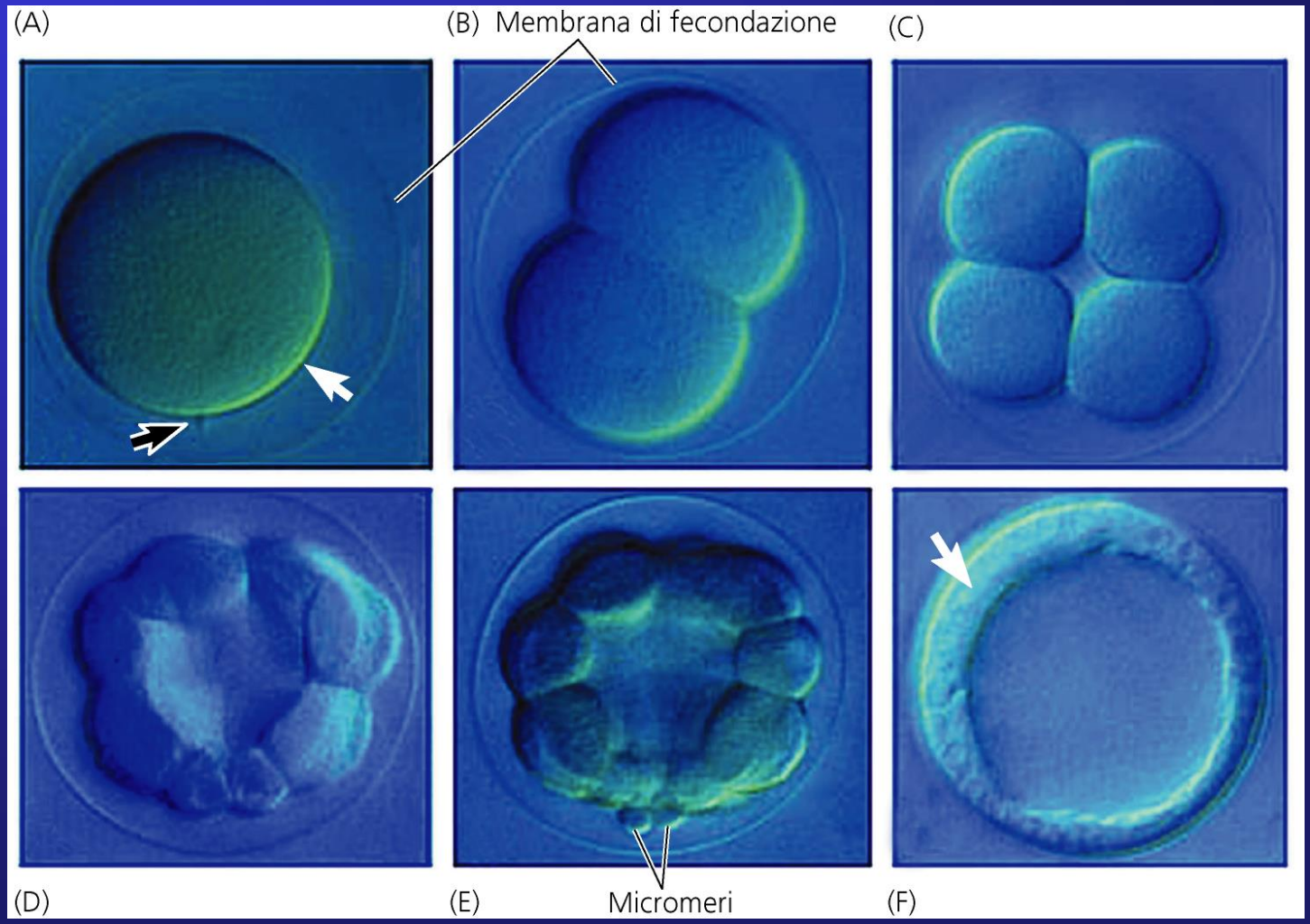
- Tipico organismo modello in embriologia :

- sviluppo embrionale esterno
- elevato numero di gameti e di embrioni
- tempi brevi di sviluppo (48 ore)
- embrione trasparente
- facile manipolazione

- Uovo oligolecitico
-Uovo maturo prima della fecondazione
-Fecondazione esterna
-Blocco rapido+blocco lento della polispermia
-Formazione della membrana di fecondazione
-Sviluppo indiretto

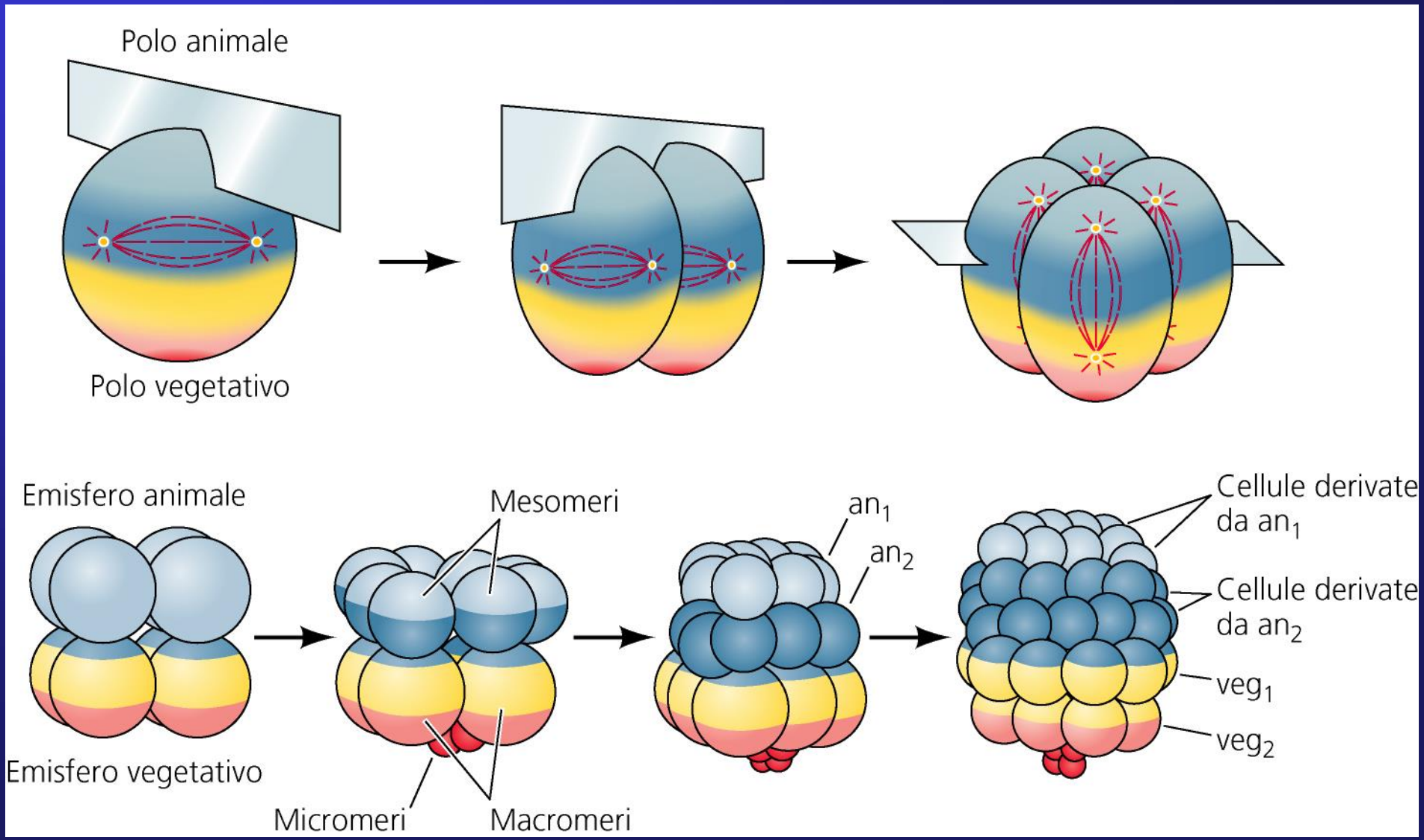


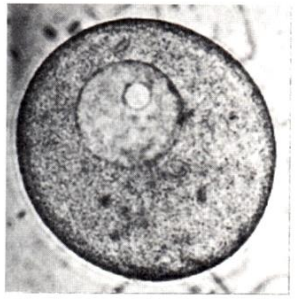
Embrione trasparente



SEGMENTAZIONE

Oloblastica radiale subuguale

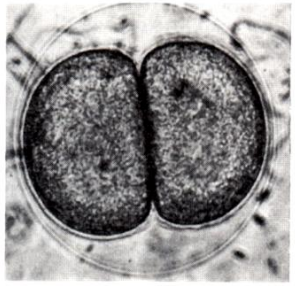




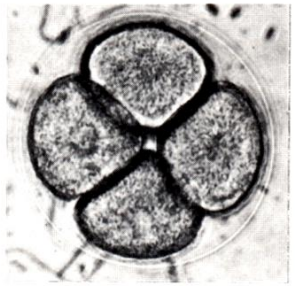
Ovocyte

Œuf mûr

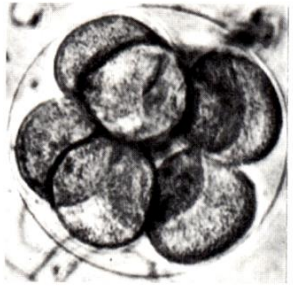
Œuf fécondé



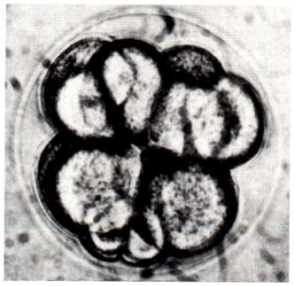
2 cellules



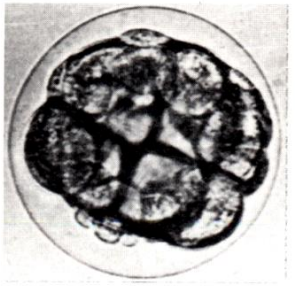
4 cellules



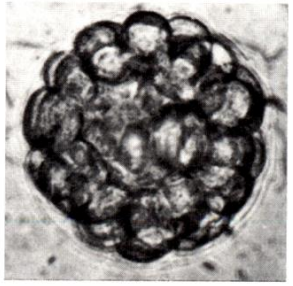
8 cellules



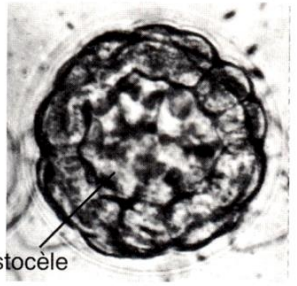
16 cellules



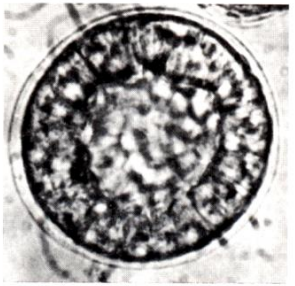
32 cellules



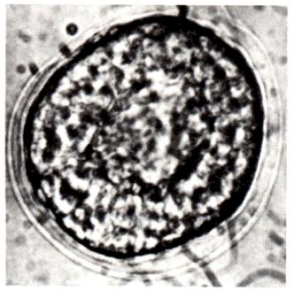
Morula



Jeune blastula

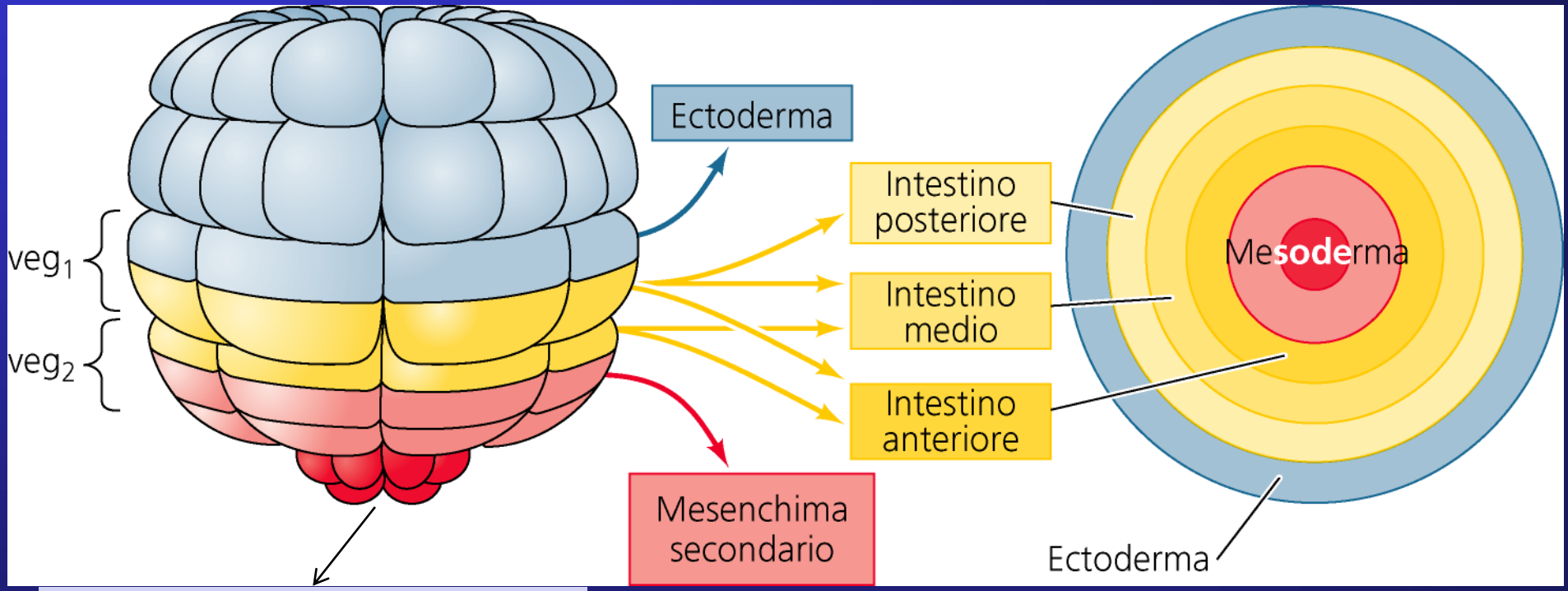


Blastula

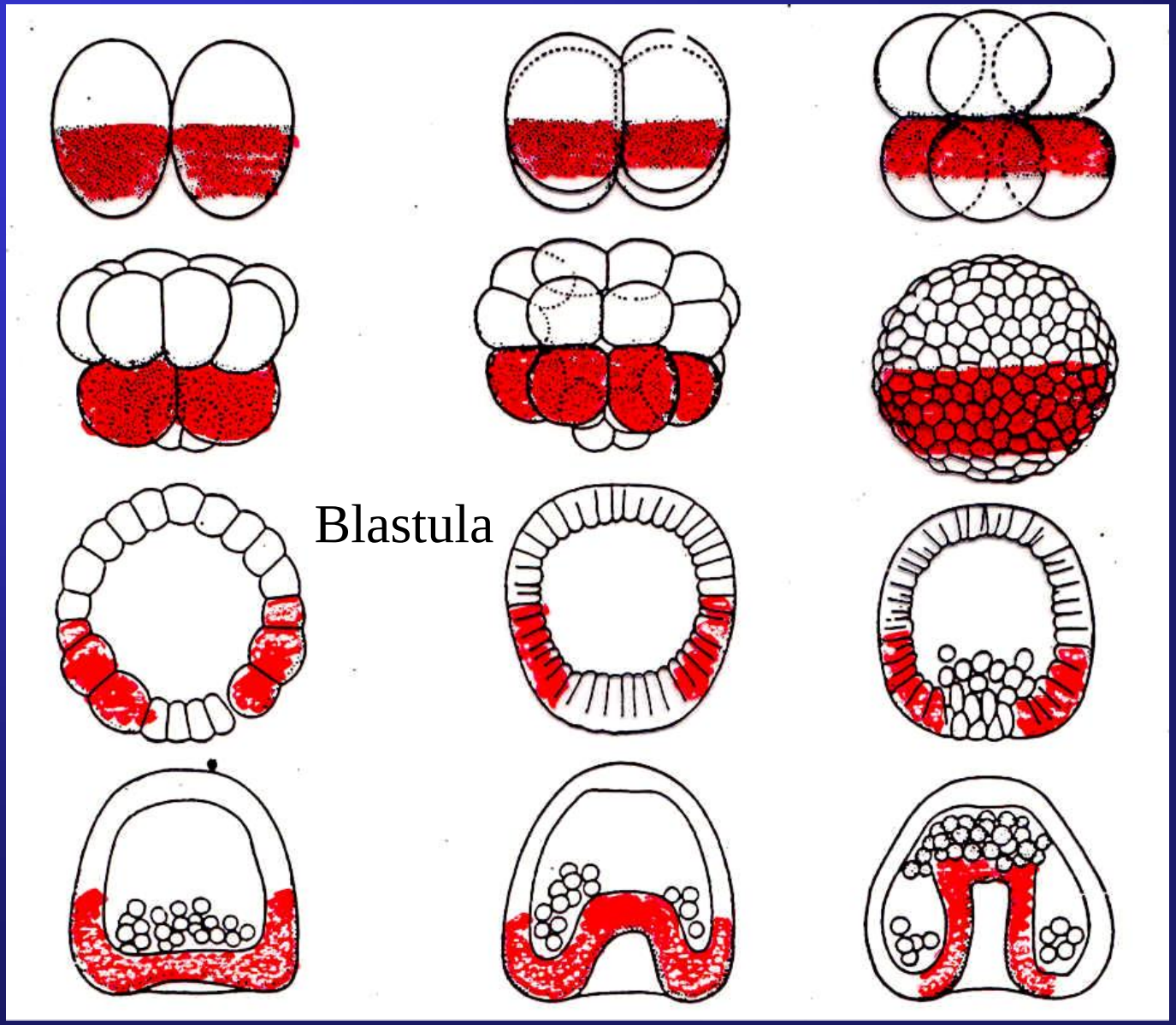


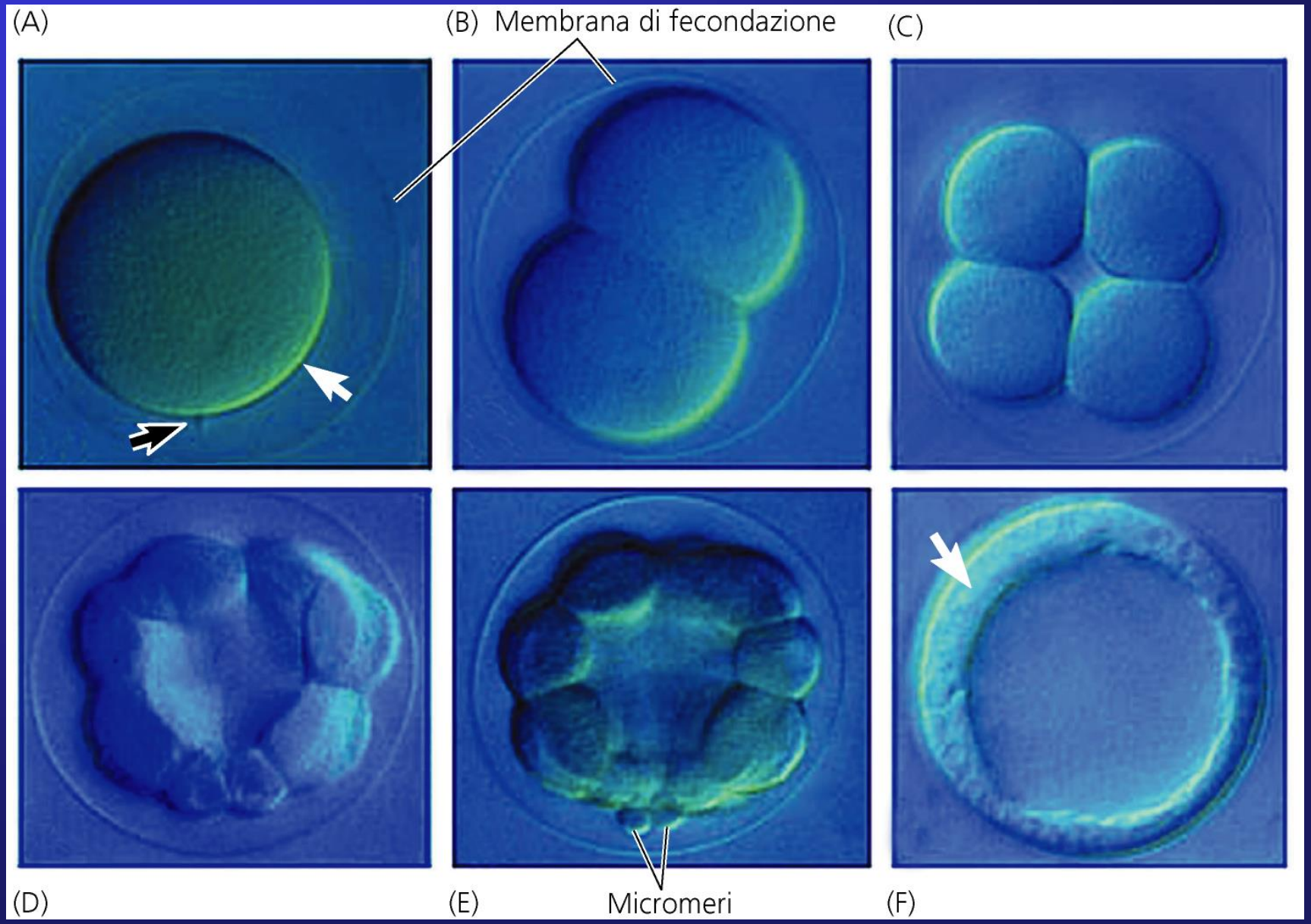
Blastula à l'éclosion

Mappa dei territori presuntivi

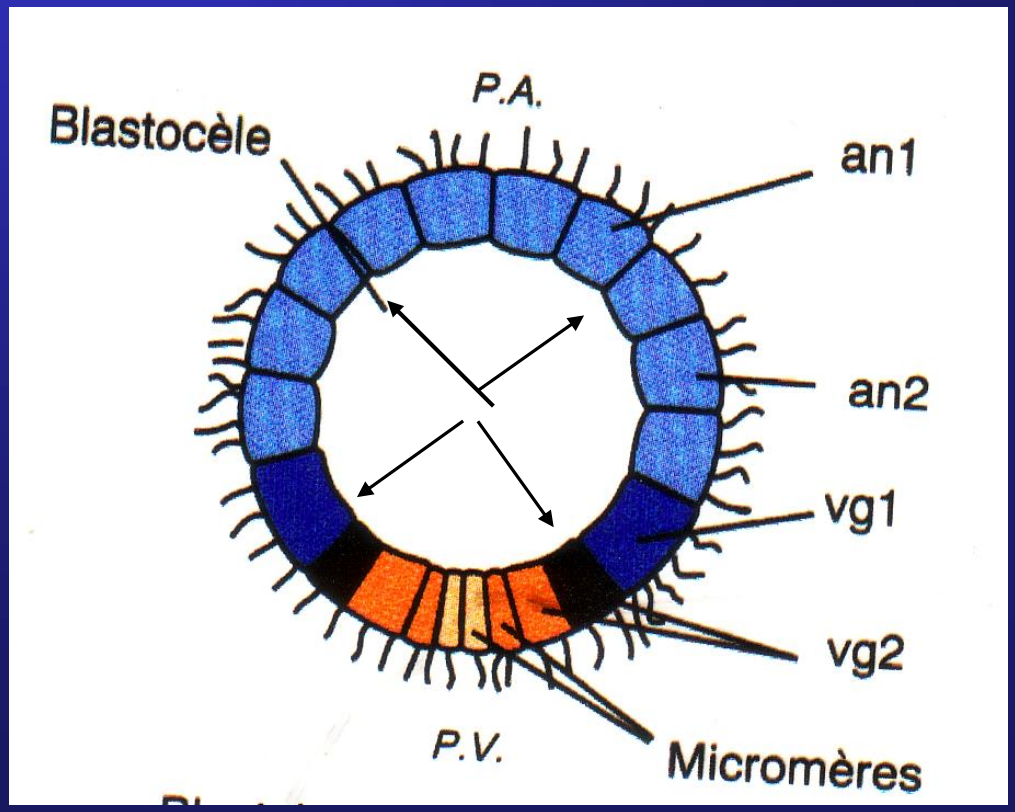


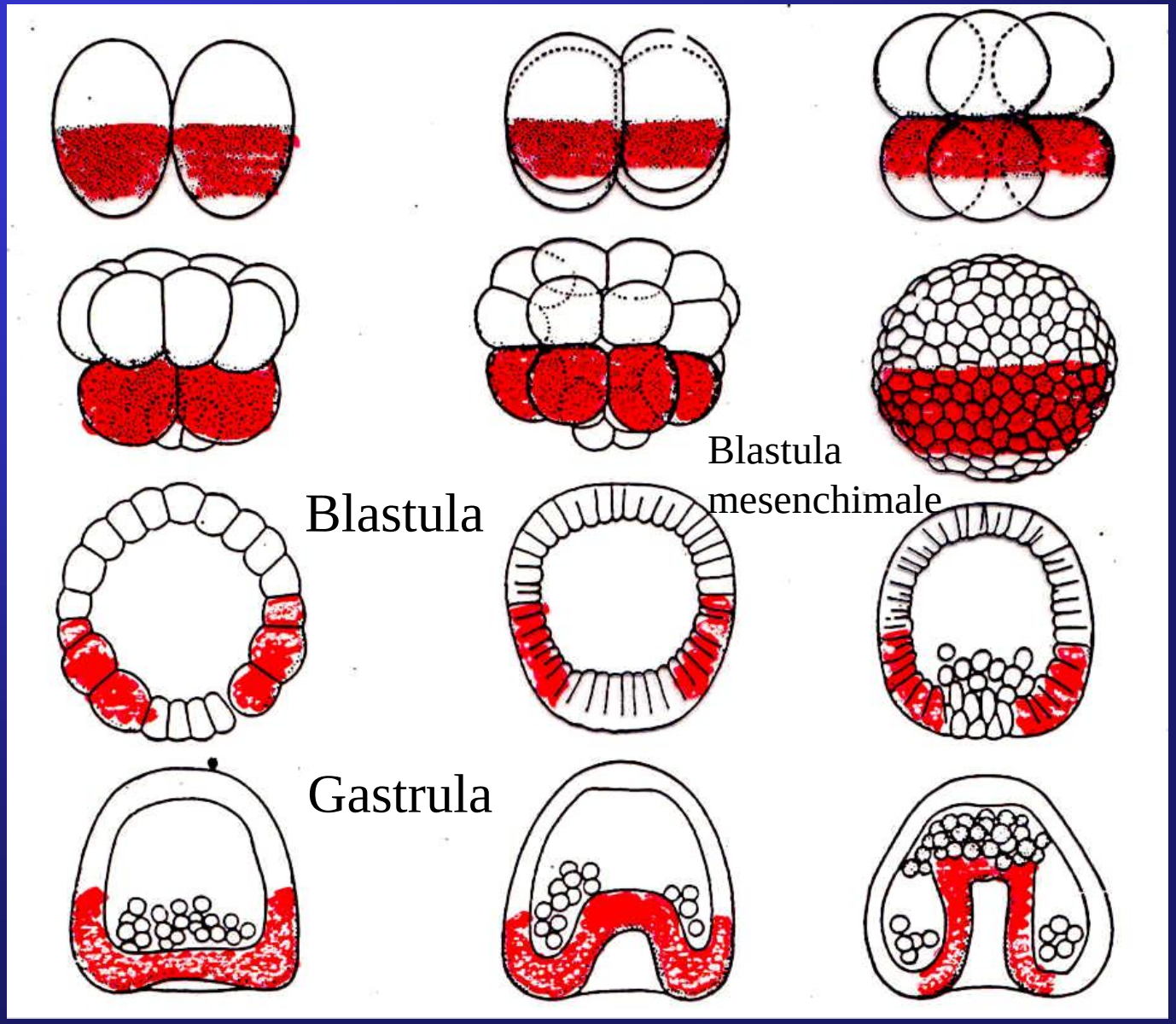
Mesenchima primario


Blastula

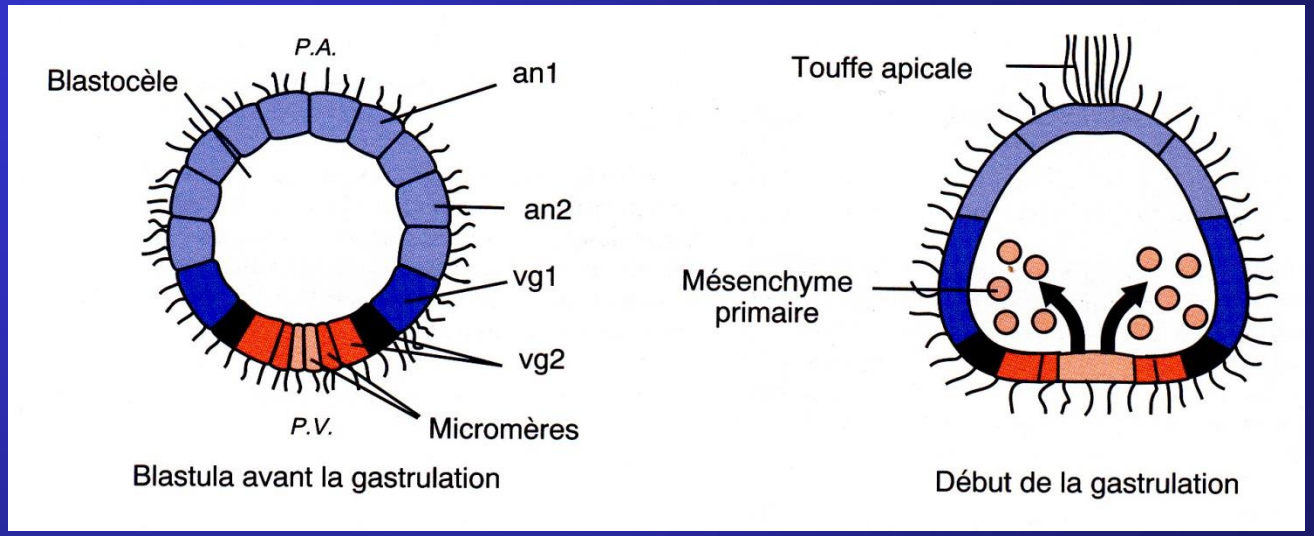

(A)
(B) Membrana di fecondazione
(C)
(D)
(E)
Micromeri
(F)

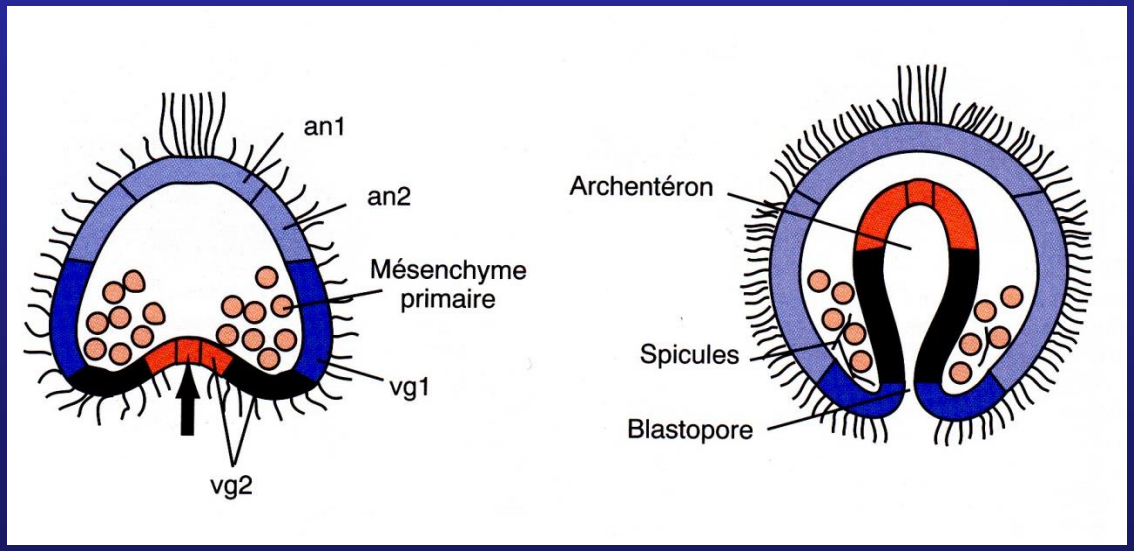
- *Formazione blastocele*
- Alta affinità tra i blastomeri
- Deposizione di proteoglicani nella cavità blastocelica, richiamo di acqua, formazione di matrice densa e viscosa
- Forza che determina il progressivo allontanamento dei blastomeri.

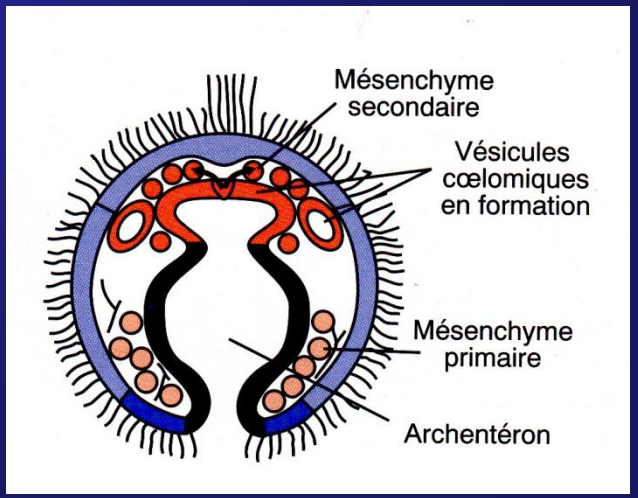



Blastula
Blastula mesenchimale
Gastrula

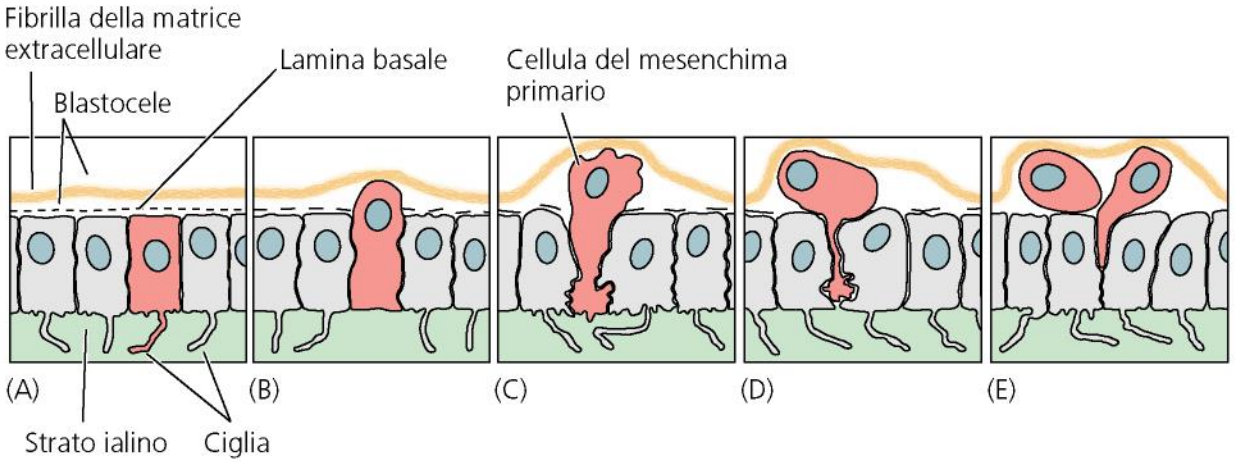
Gastrulazione



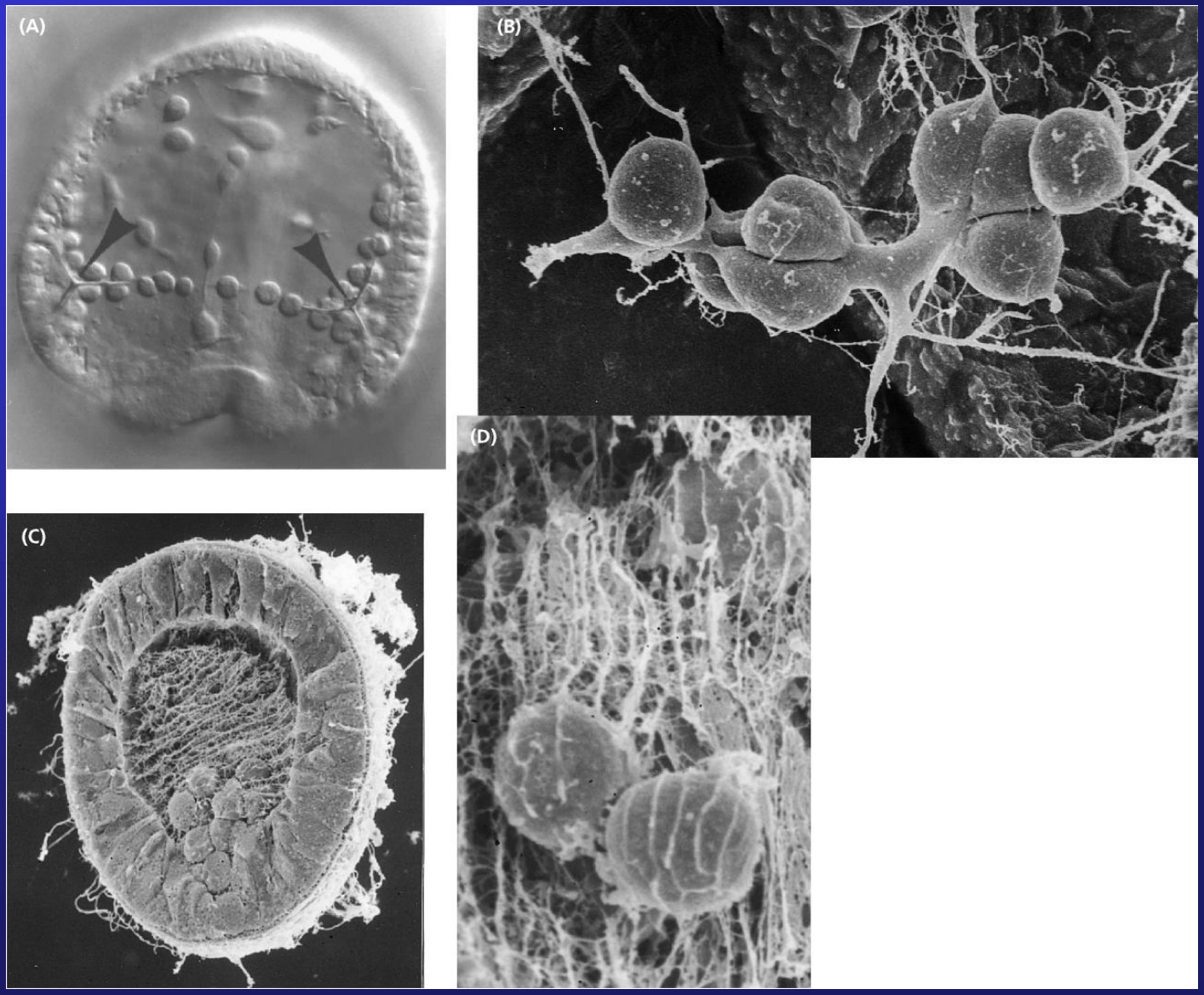


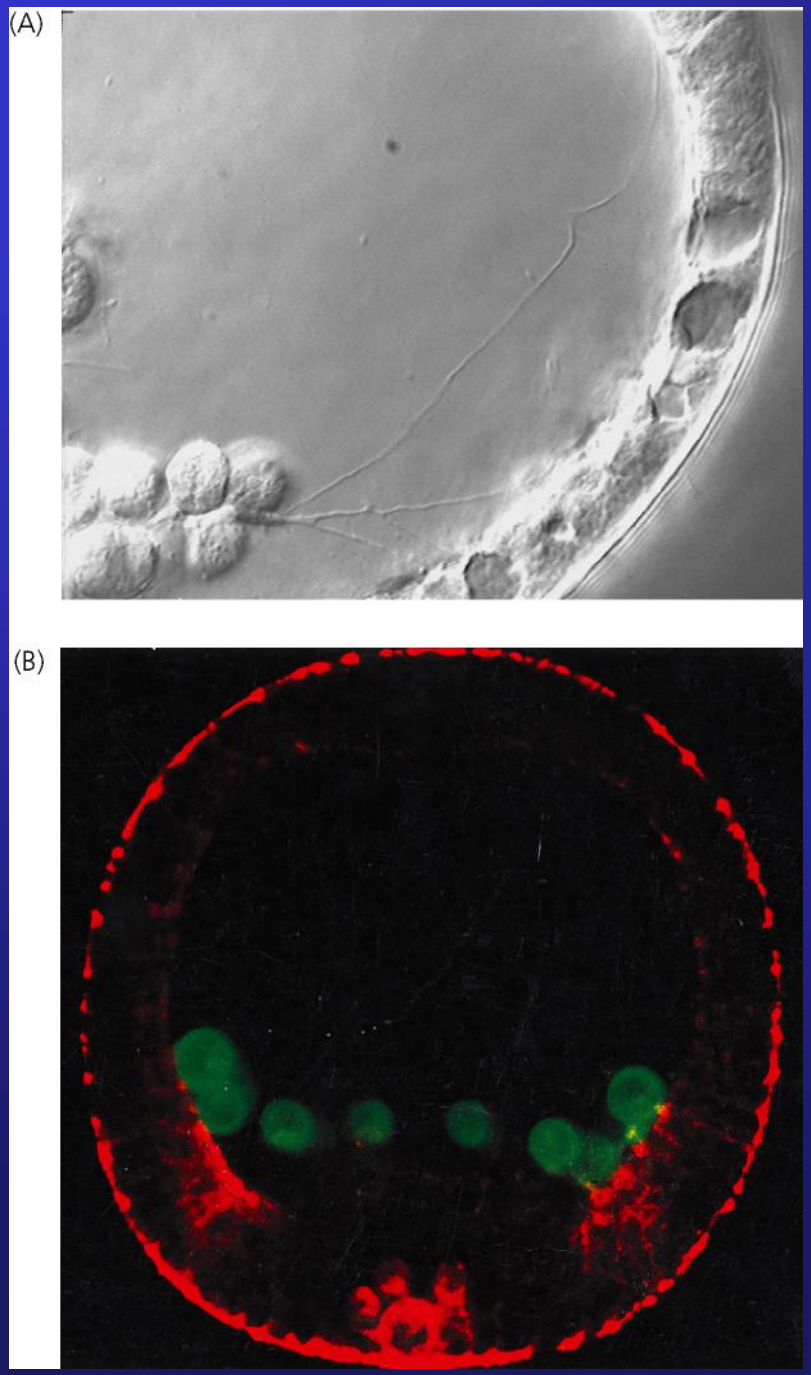


Immigrazione



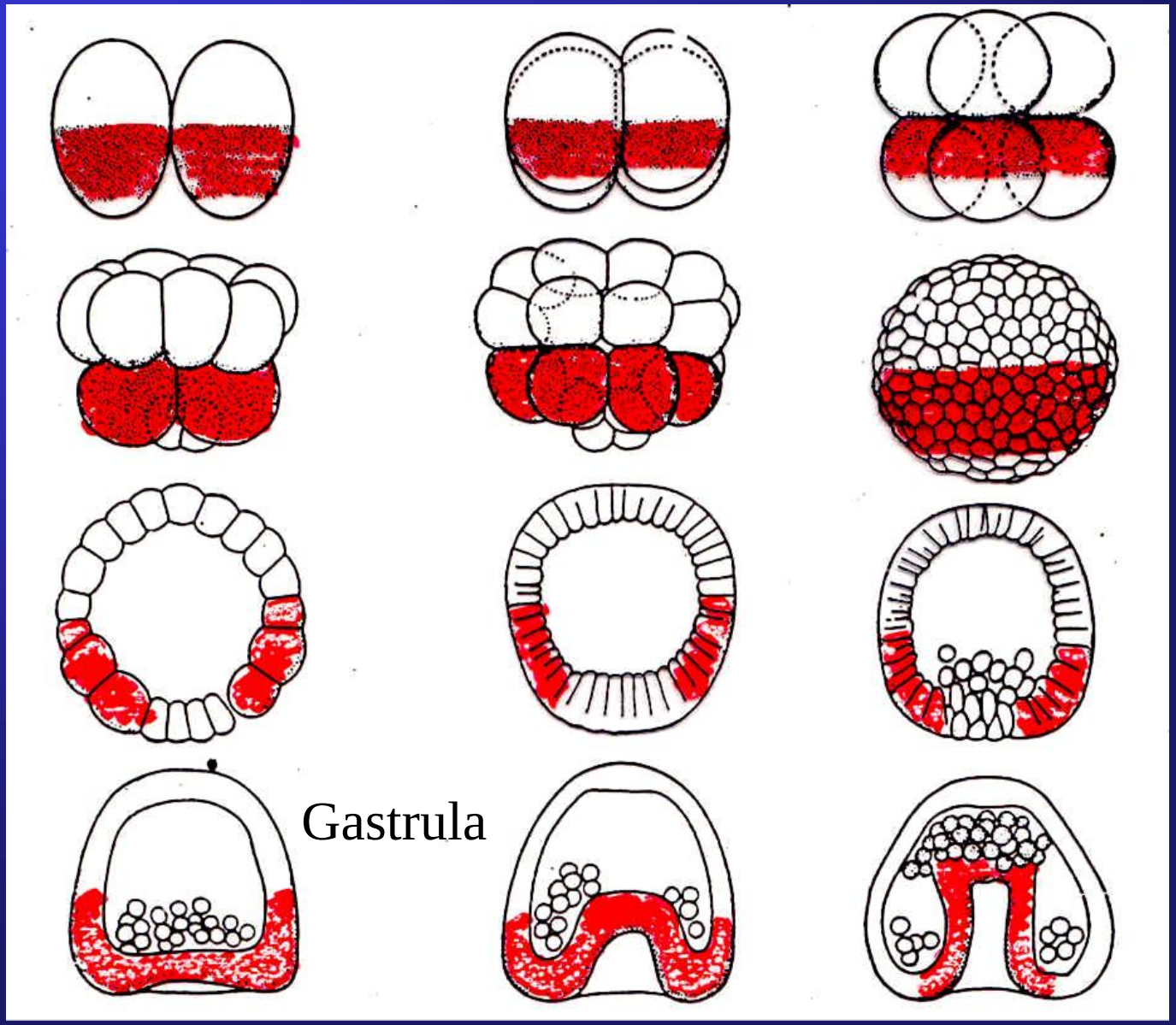
-Variata affinità tra i blastomeri
-Aumentata affinità per le proteine del blastocele

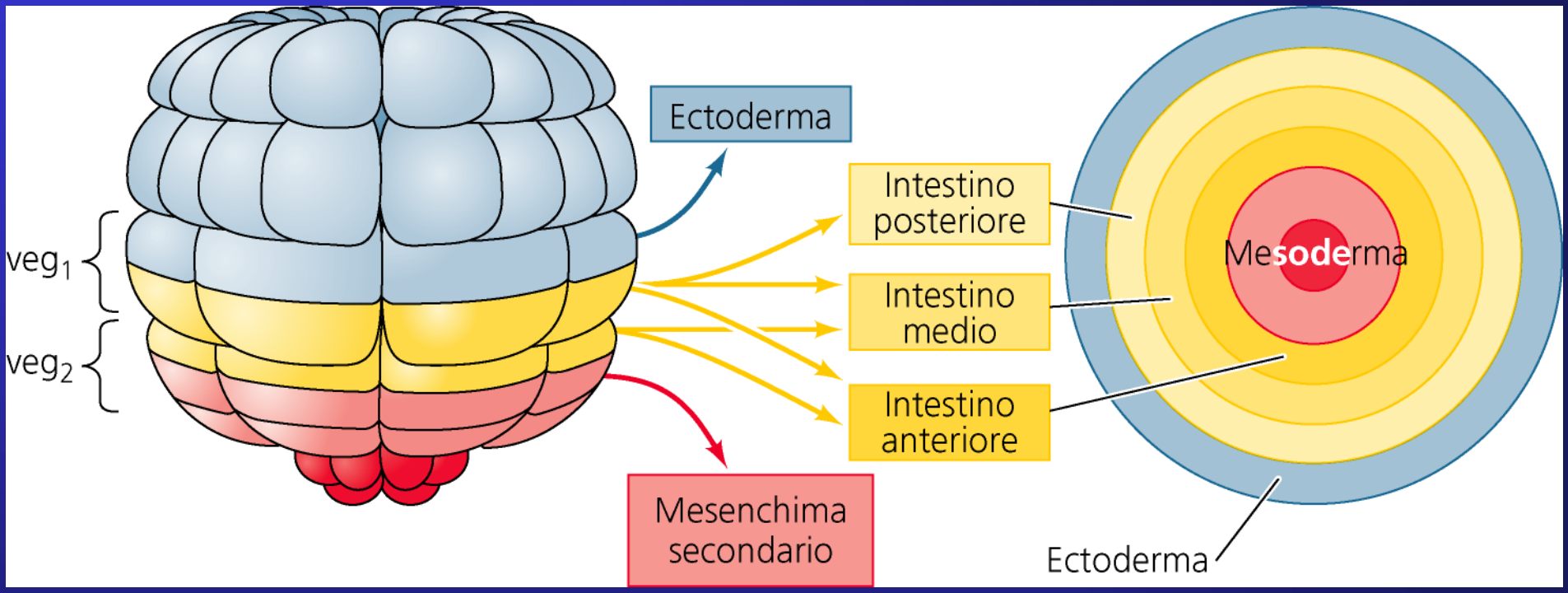

(A)
(B)
(C)
(D)



Mesenchima primario

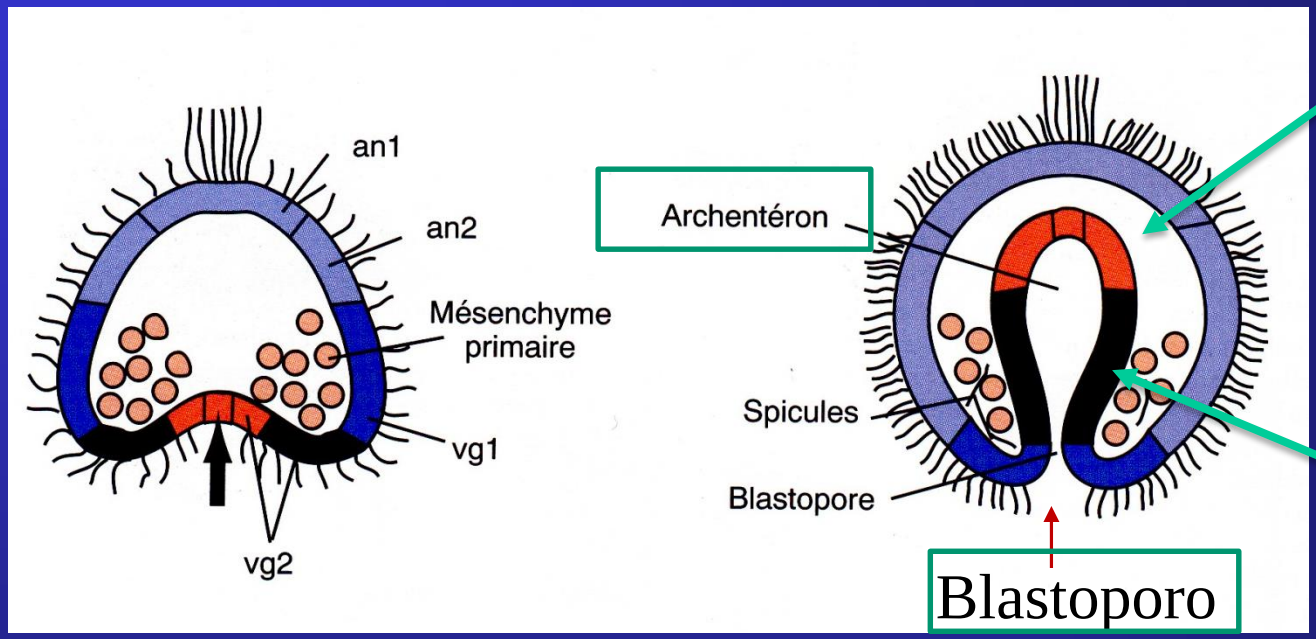
Scheletro calcareo della larva


Gastrula



Le cellule derivate dai macromeri che formeranno mesoendoderma entrano in gastrulazione attraverso un movimento di embolia

Mesenchima secondario

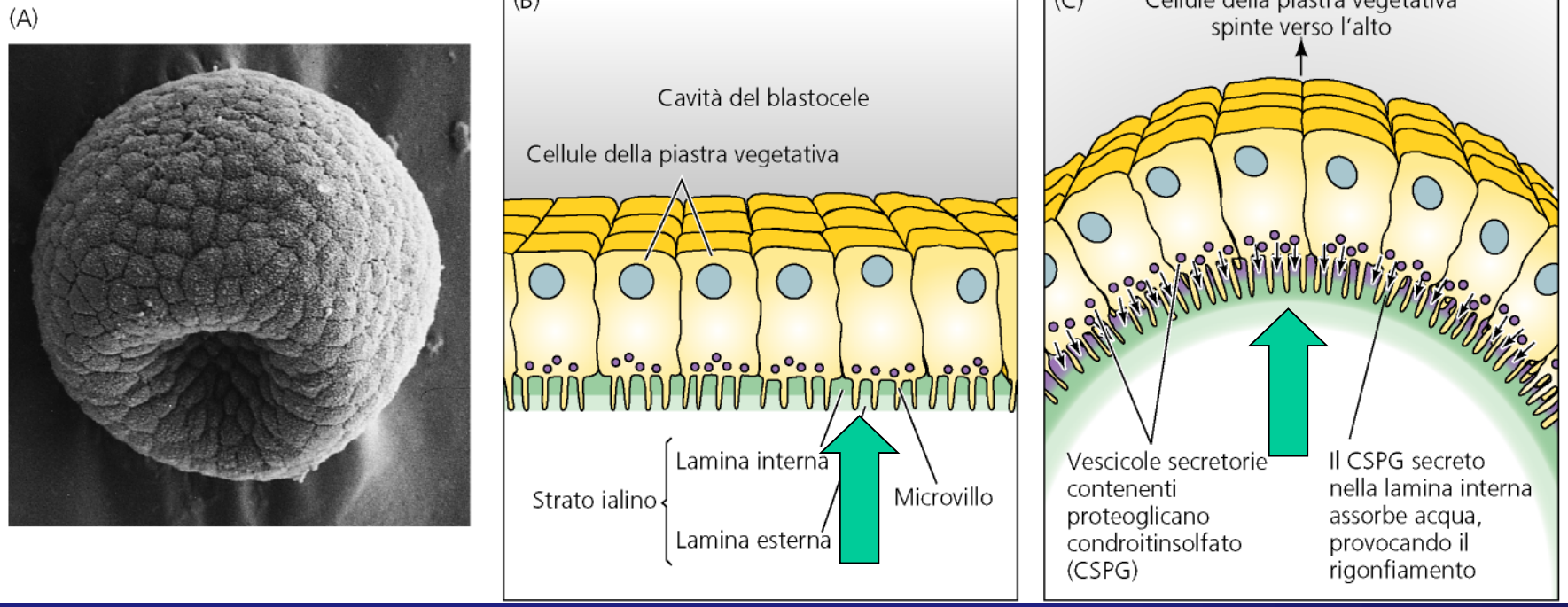


Endoderma

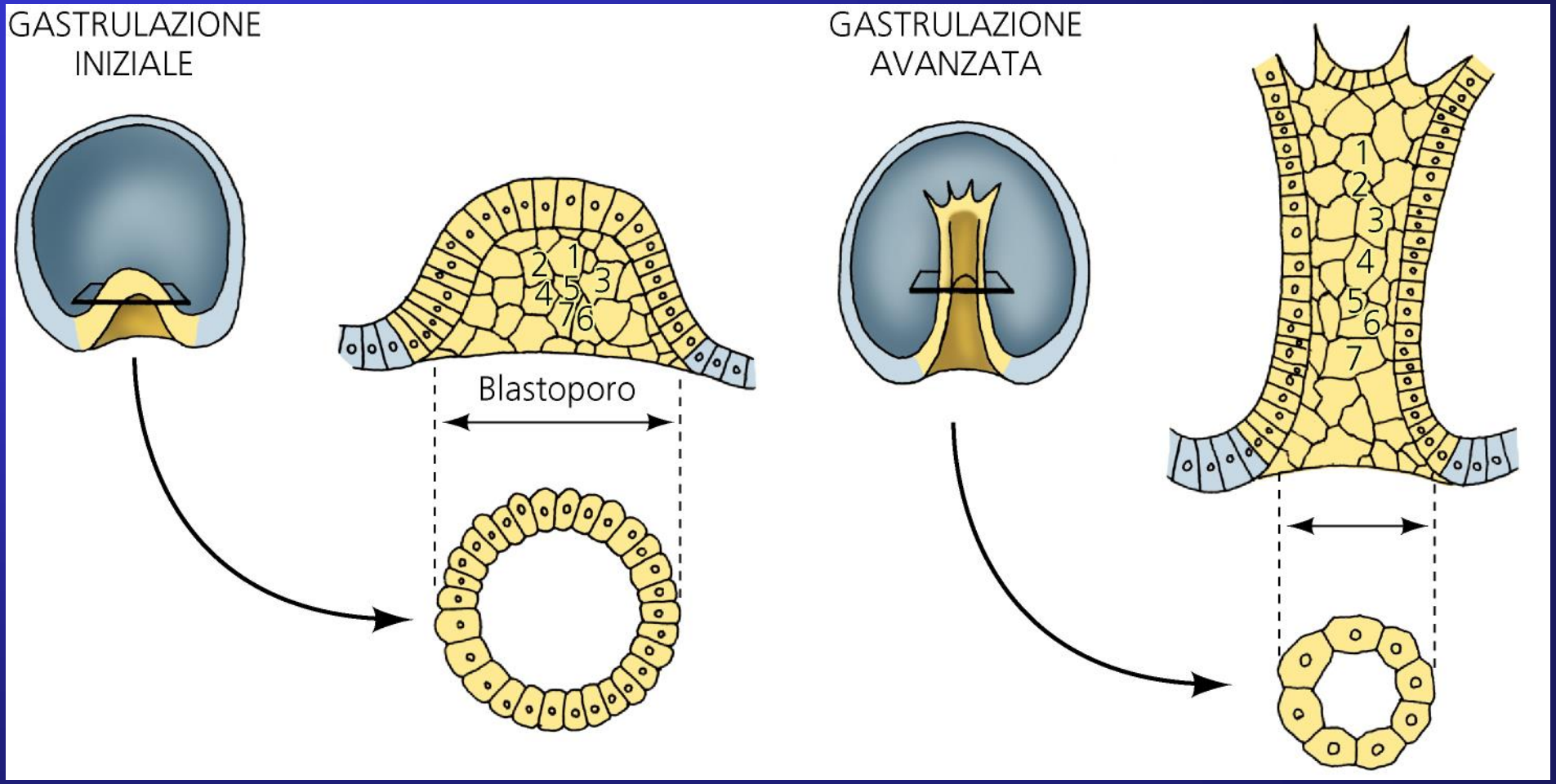
Invaginazione delle cellule derivate dai macromeri

Derivate dalle veg2: mesenchima secondario e intestino anteriore

Derivate dalle veg1: Intestino medio e posteriore



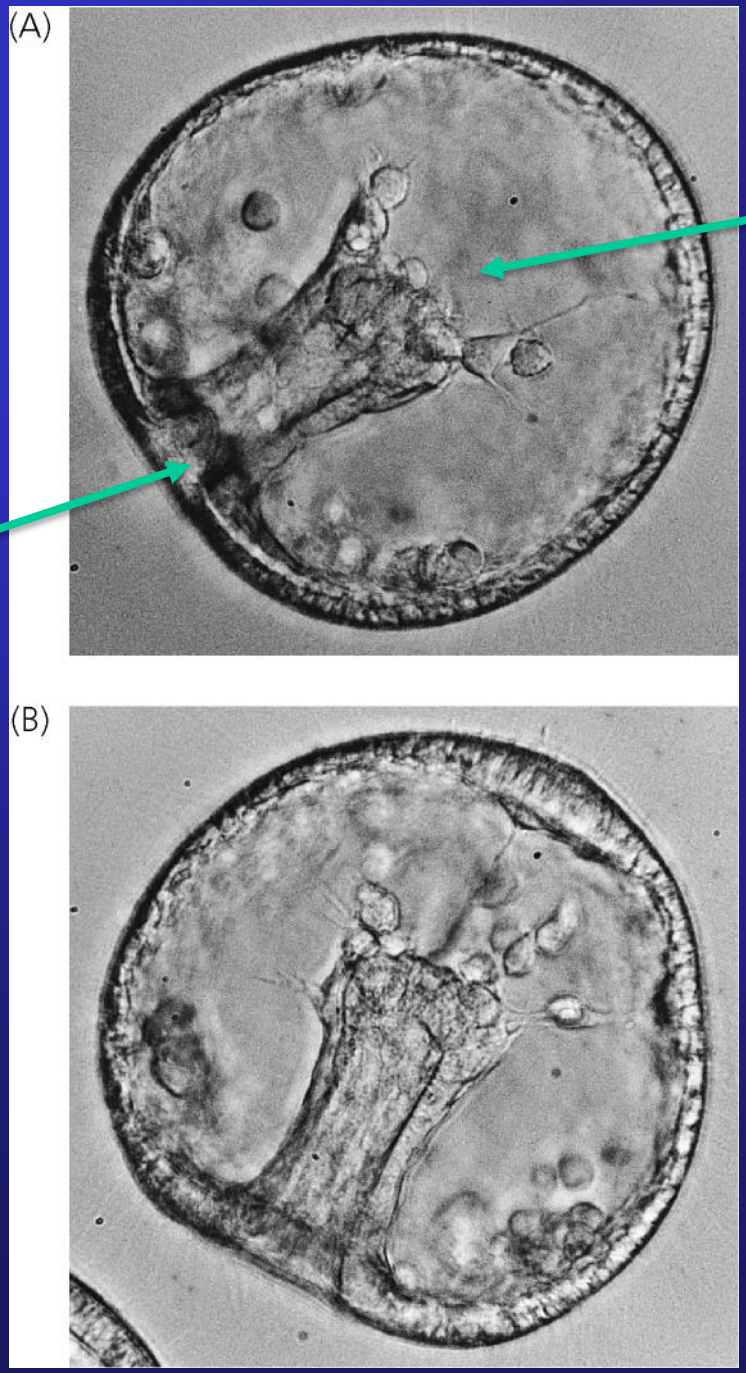
-perdità adesività dei blastomeri alla proteina ialina
-aumento adesività per proteine del blastocele
-deposizione di proteoglicani nello strato ialino
-rigonfiamento dello strato ialino

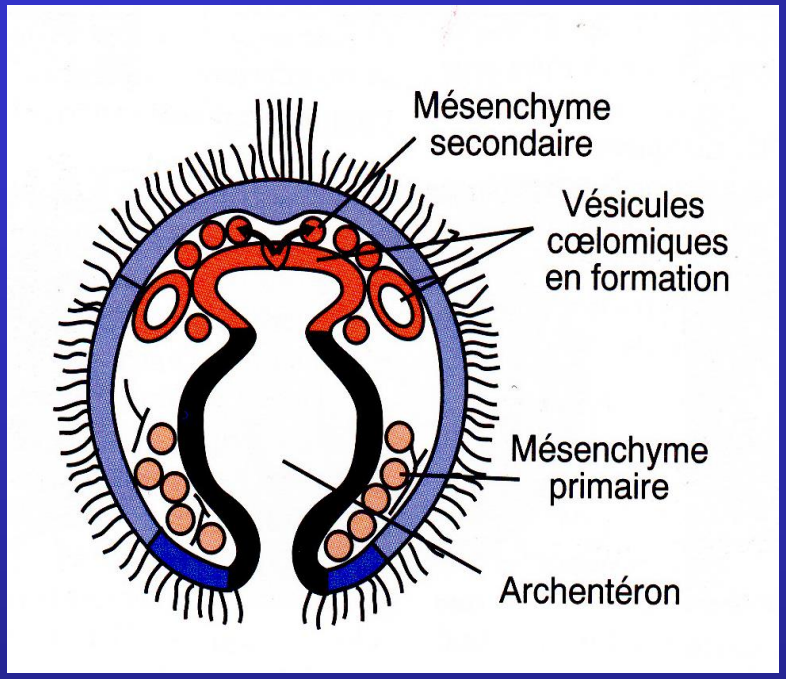


Formazione dell'archenteron

Mesenchima secondario

Blastoporo



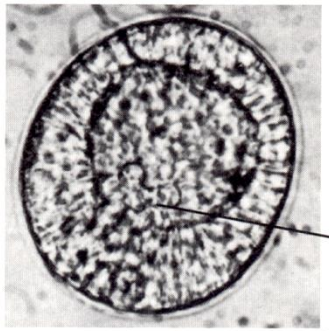


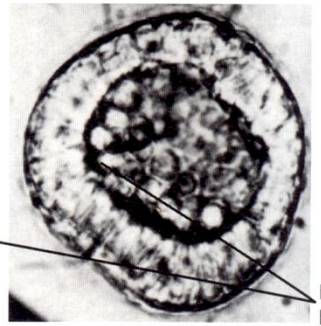
Mesenchima secondario

Contribuisce alla formazione del contatto tra archenteron e la regione dello stomodeo (bocca)

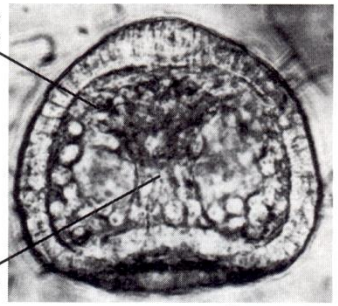
Vescicole celomatiche

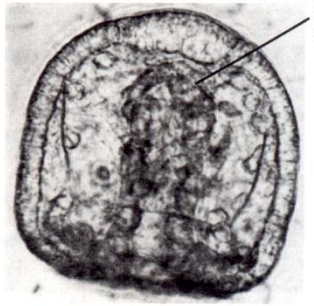
Blastula nageuse



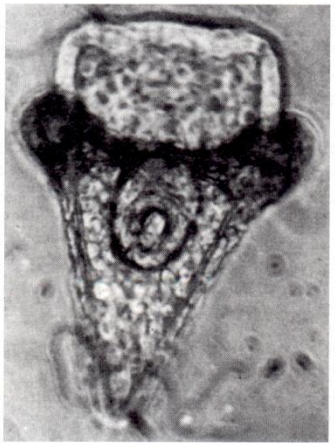


Gastrula avec mésenchyme primaire

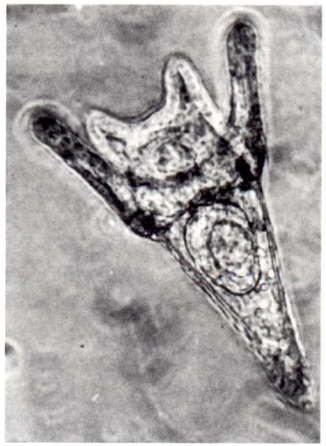


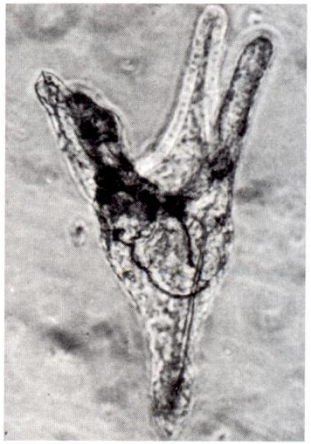


Gastrula avec archentéron et mésenchyme secondaire



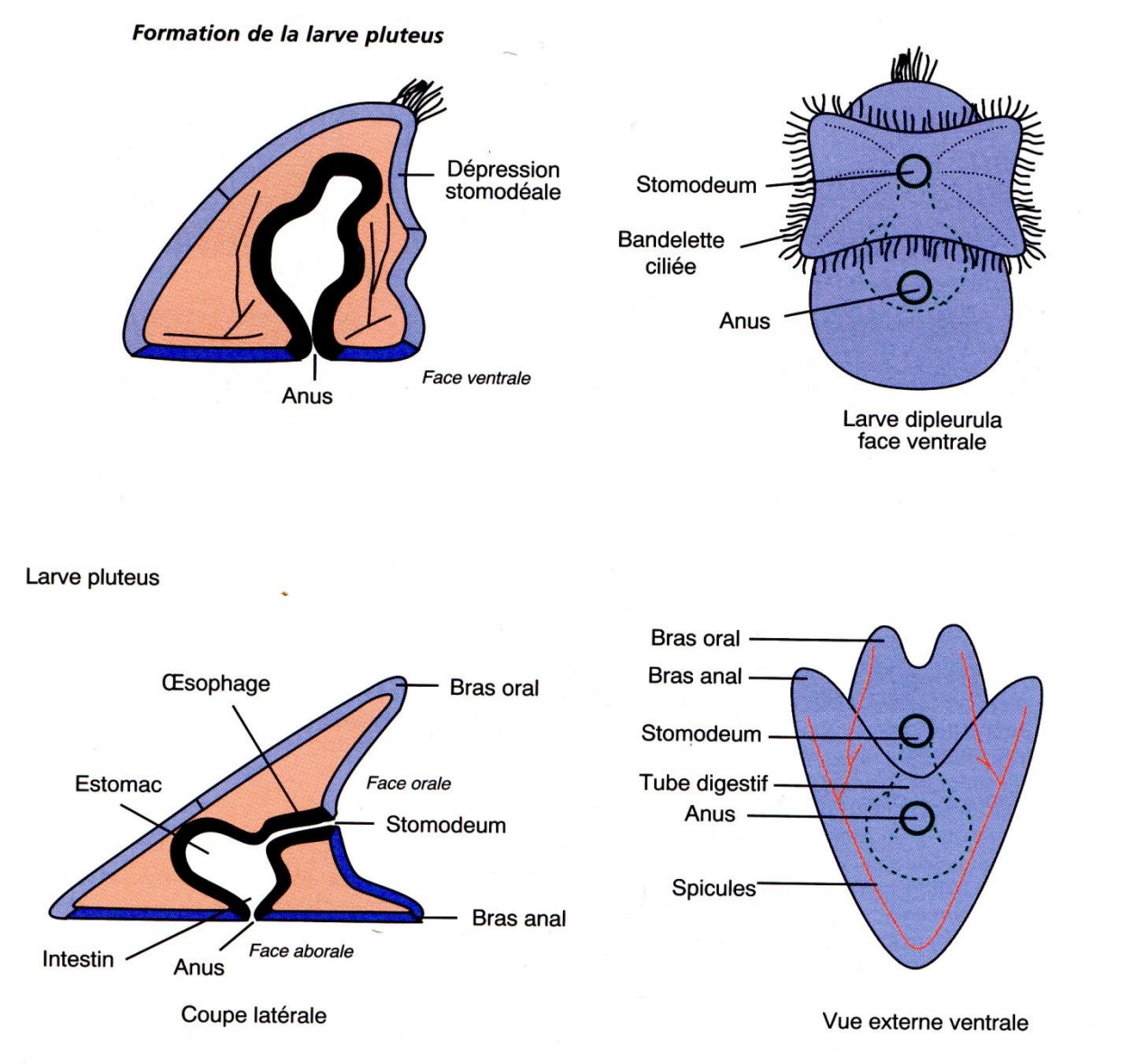
Jeune pluteus
vue ventrale

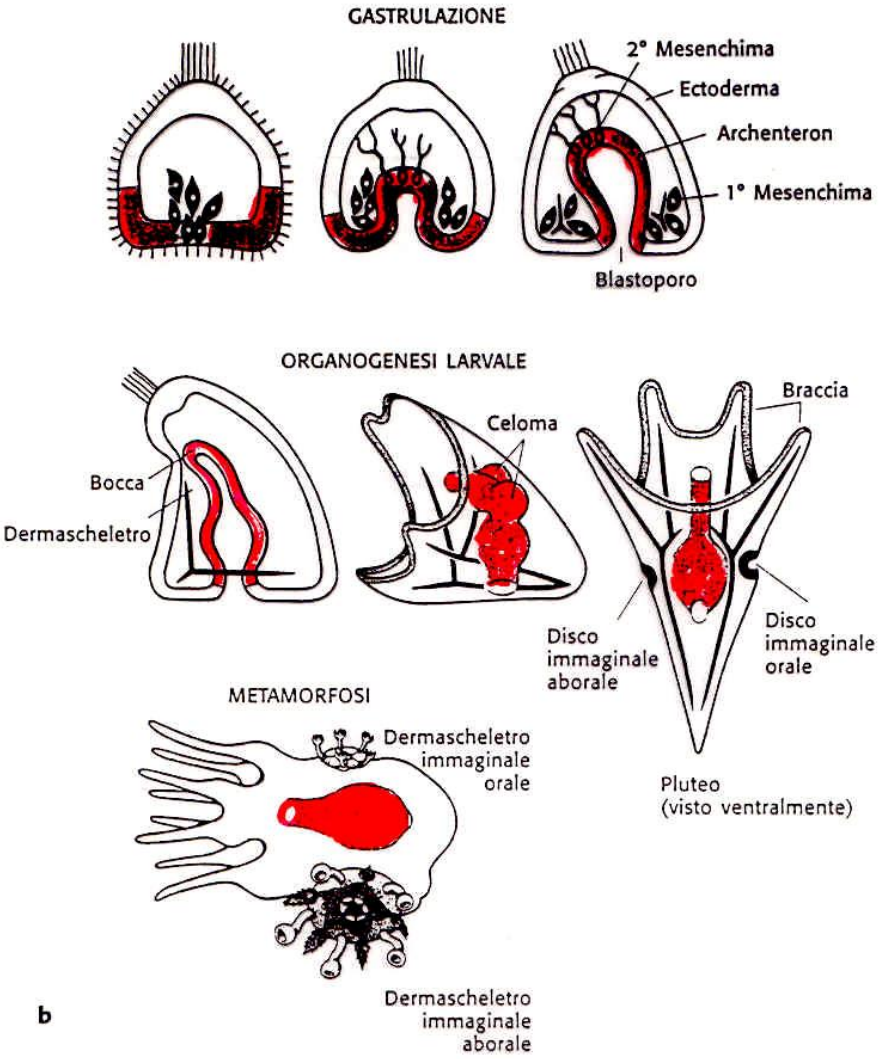




Pluteus âgées en vues ventrale et latérale

Sviluppo indiretto Larva PLUTEO





Sviluppo dell'embrione di riccio di mare. Parte seconda: dalla gastrulazione all'inizio della metamorfosi. La gastrulazione avviene in diverse fasi e produce la cavità interna con cellule dalle quali si originano gli organi interni. La larva risultante è chiamata pluteo. È rappresentato uno solo degli stadi che partono dalla metamorfosi della larva, a simmetria bilaterale, per arrivare al riccio di mare adulto, a simmetria pentaraggiata.

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