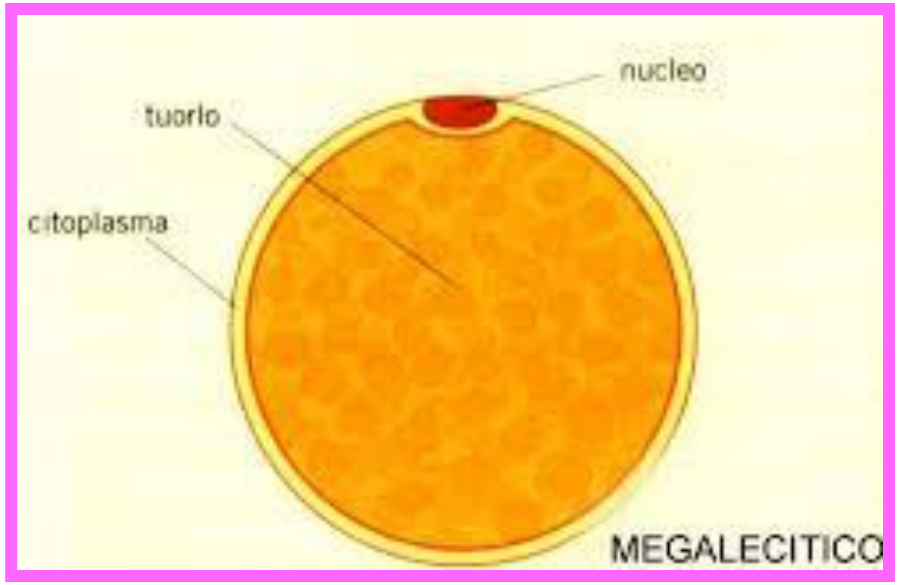
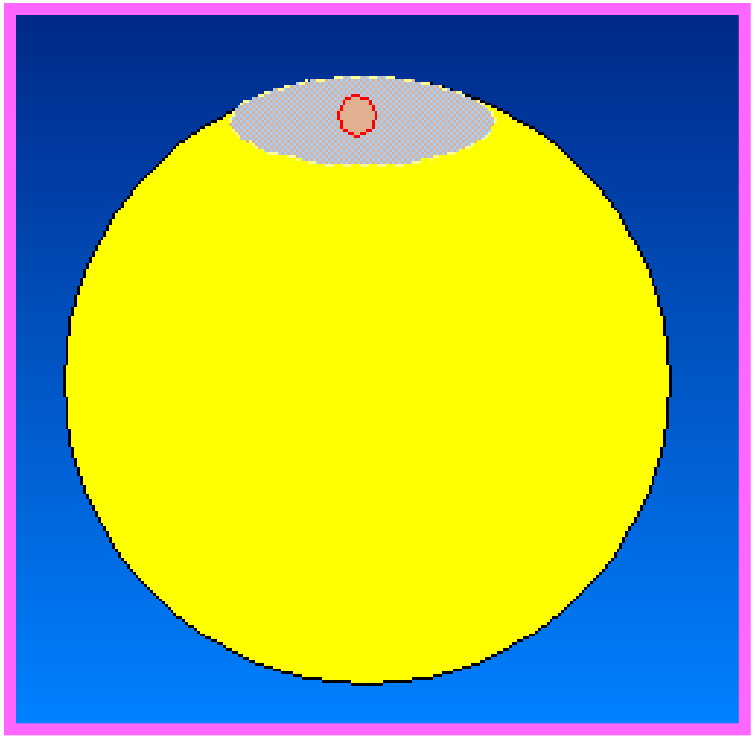
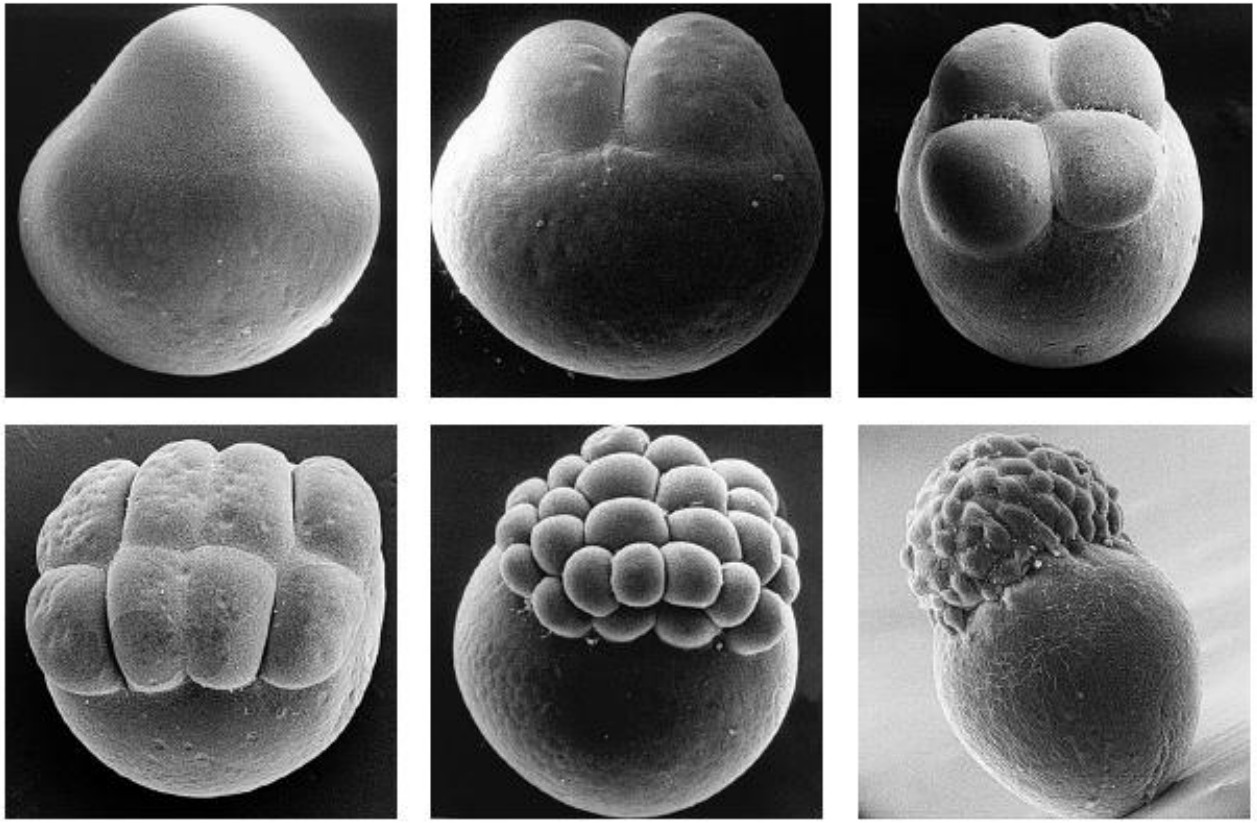
La segmentazione meroblastica

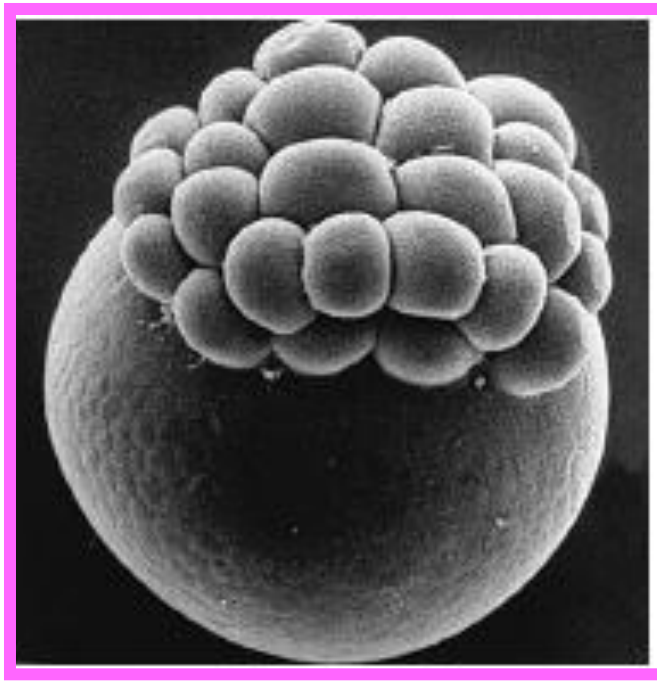


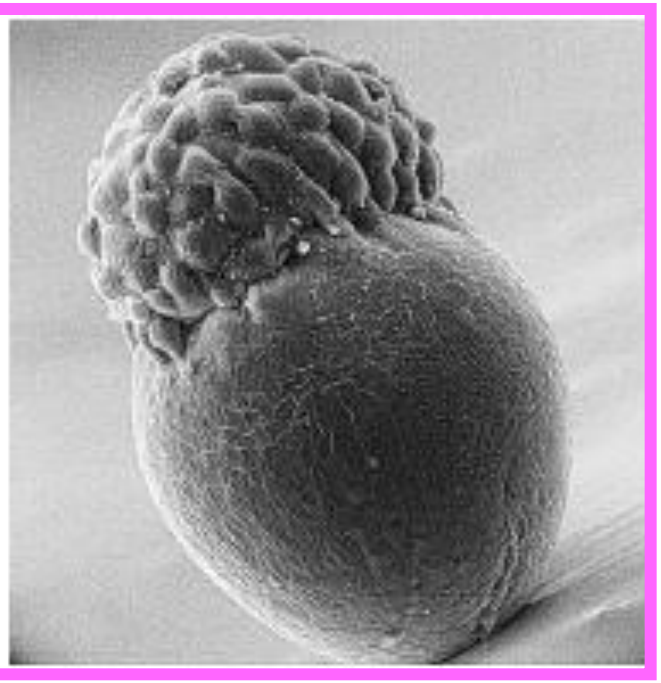


La segmentazione meroblastica discoidale: i pesci

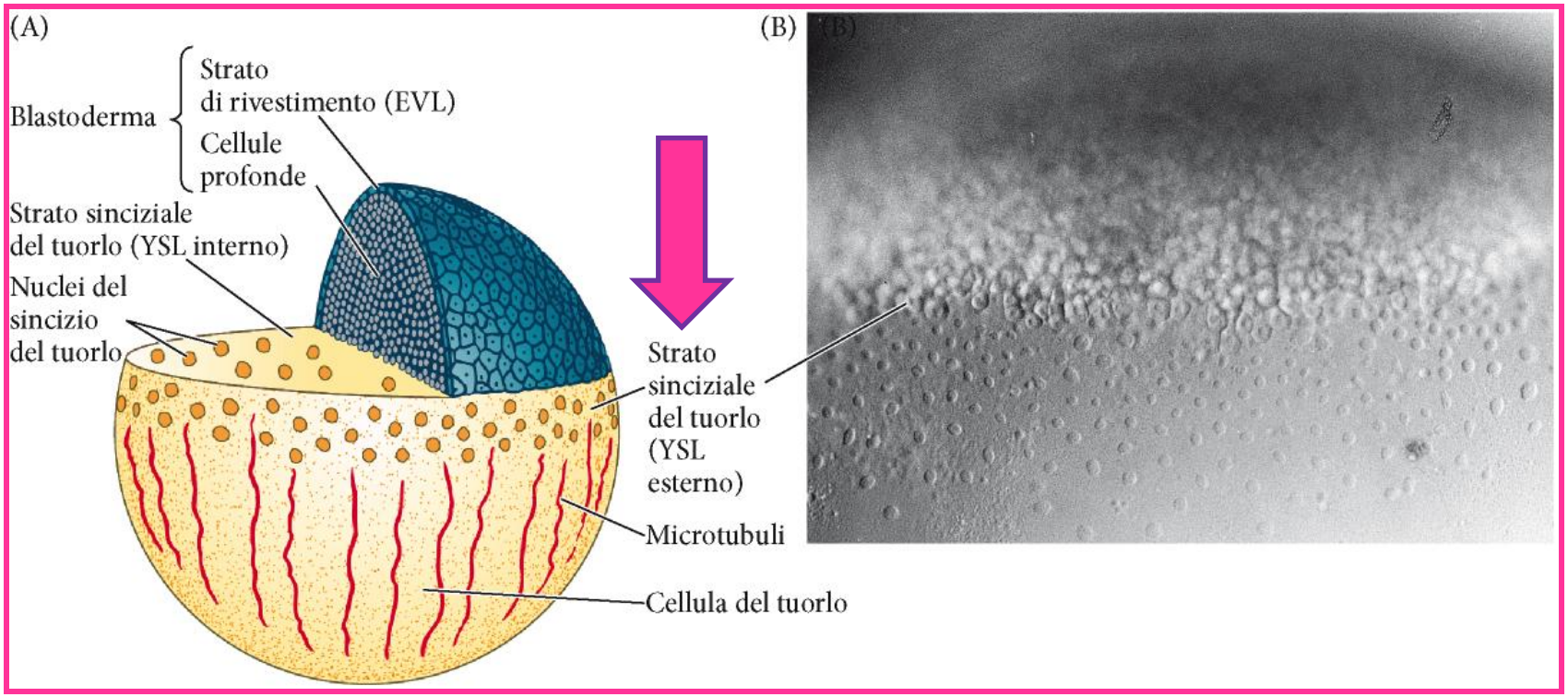
La segmentazione meroblastica discoidale: i pesci

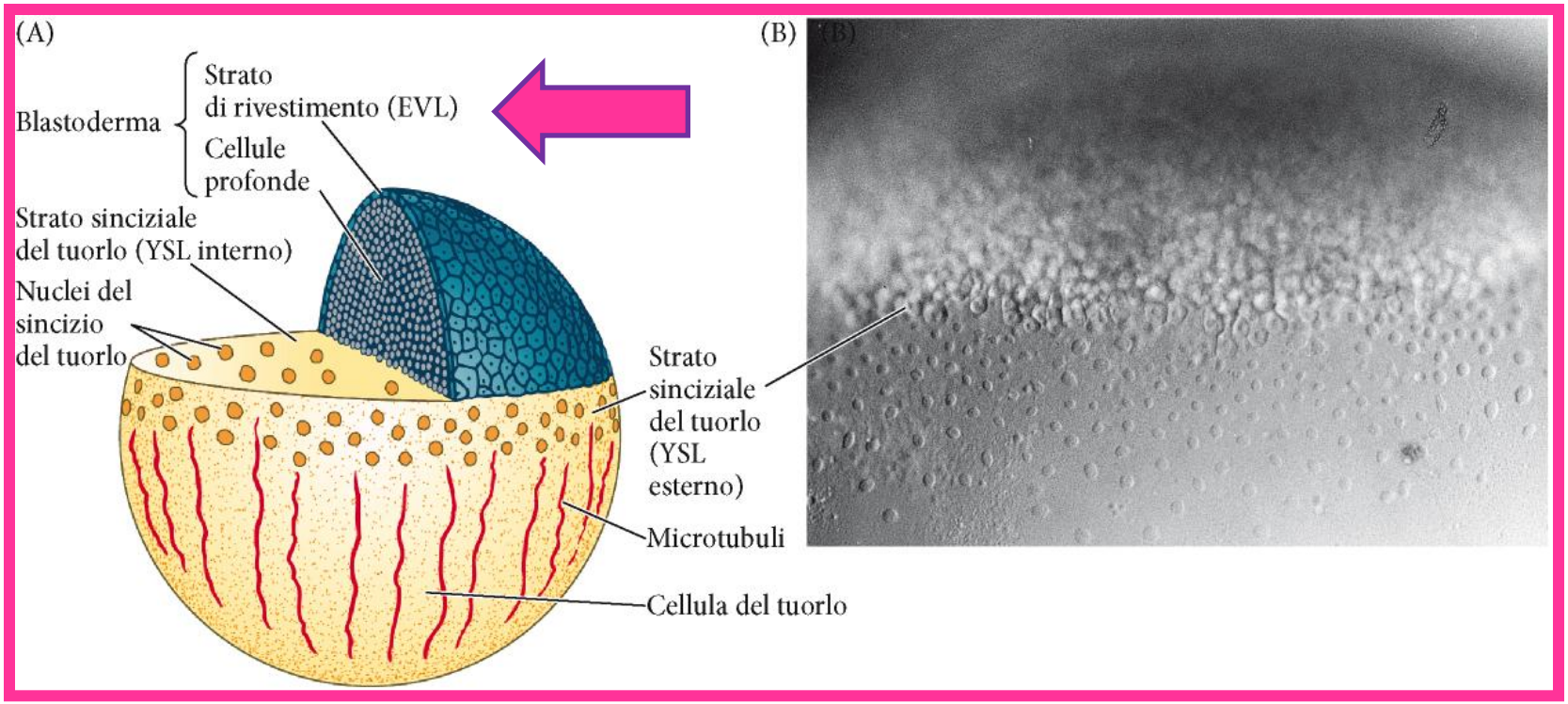


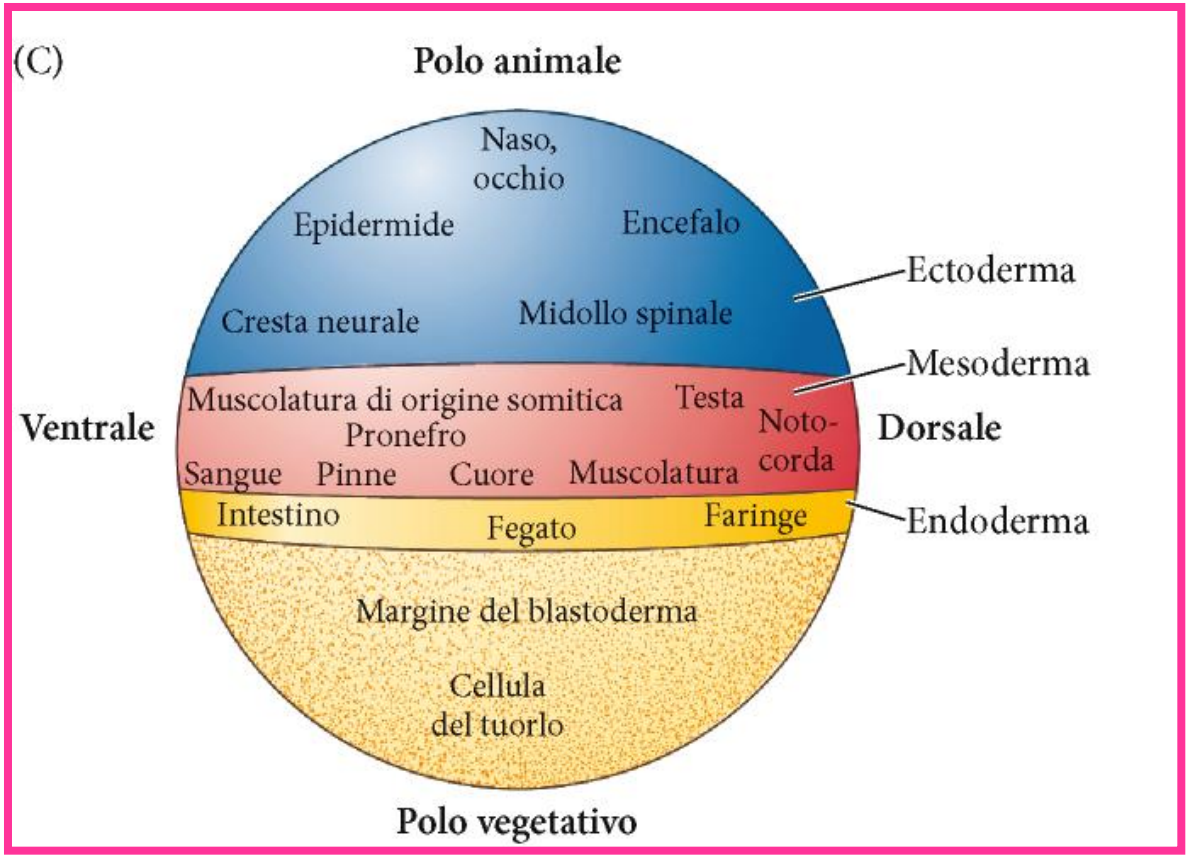




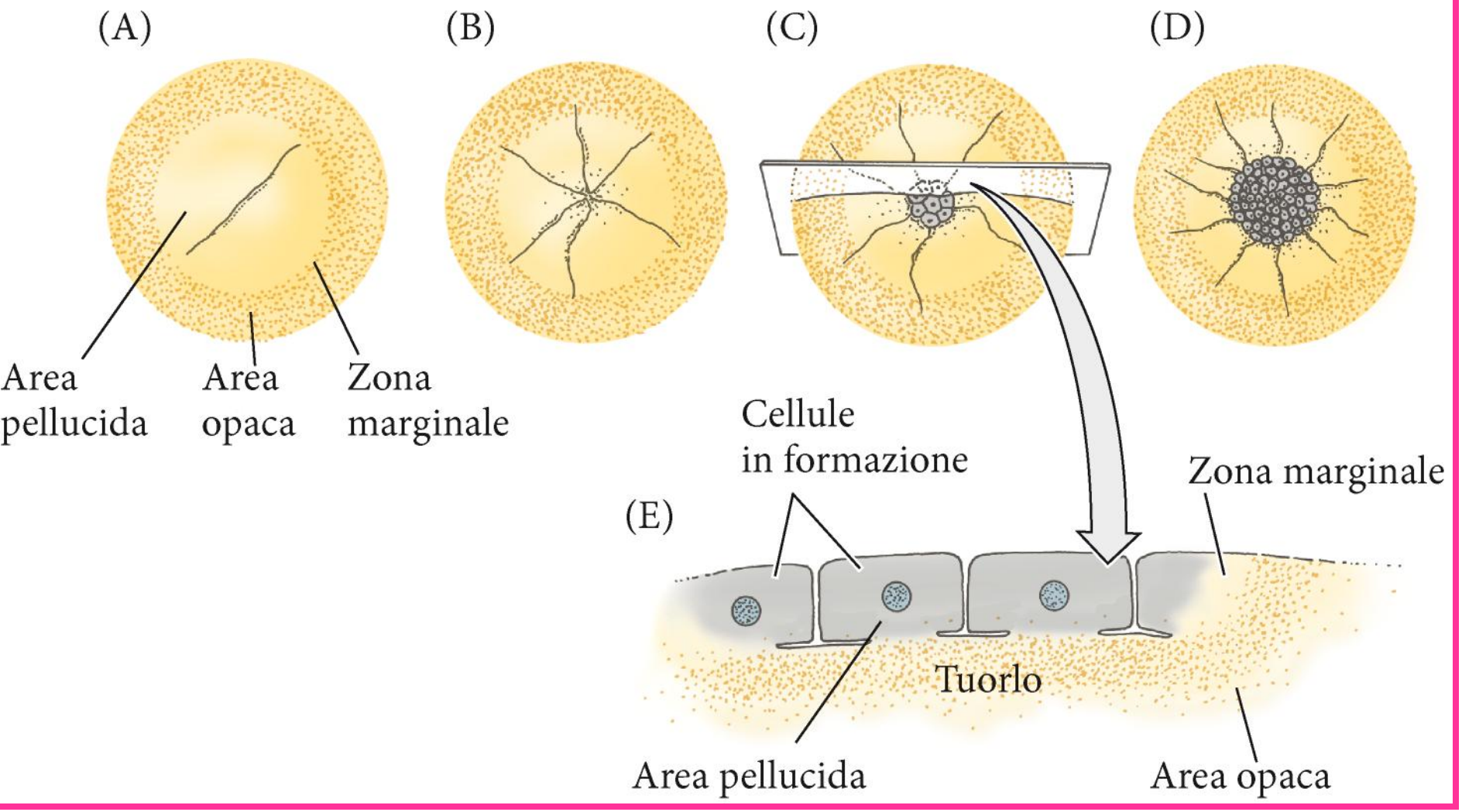
TRANSIZIONE DI BLASTULA INTERMEDIA

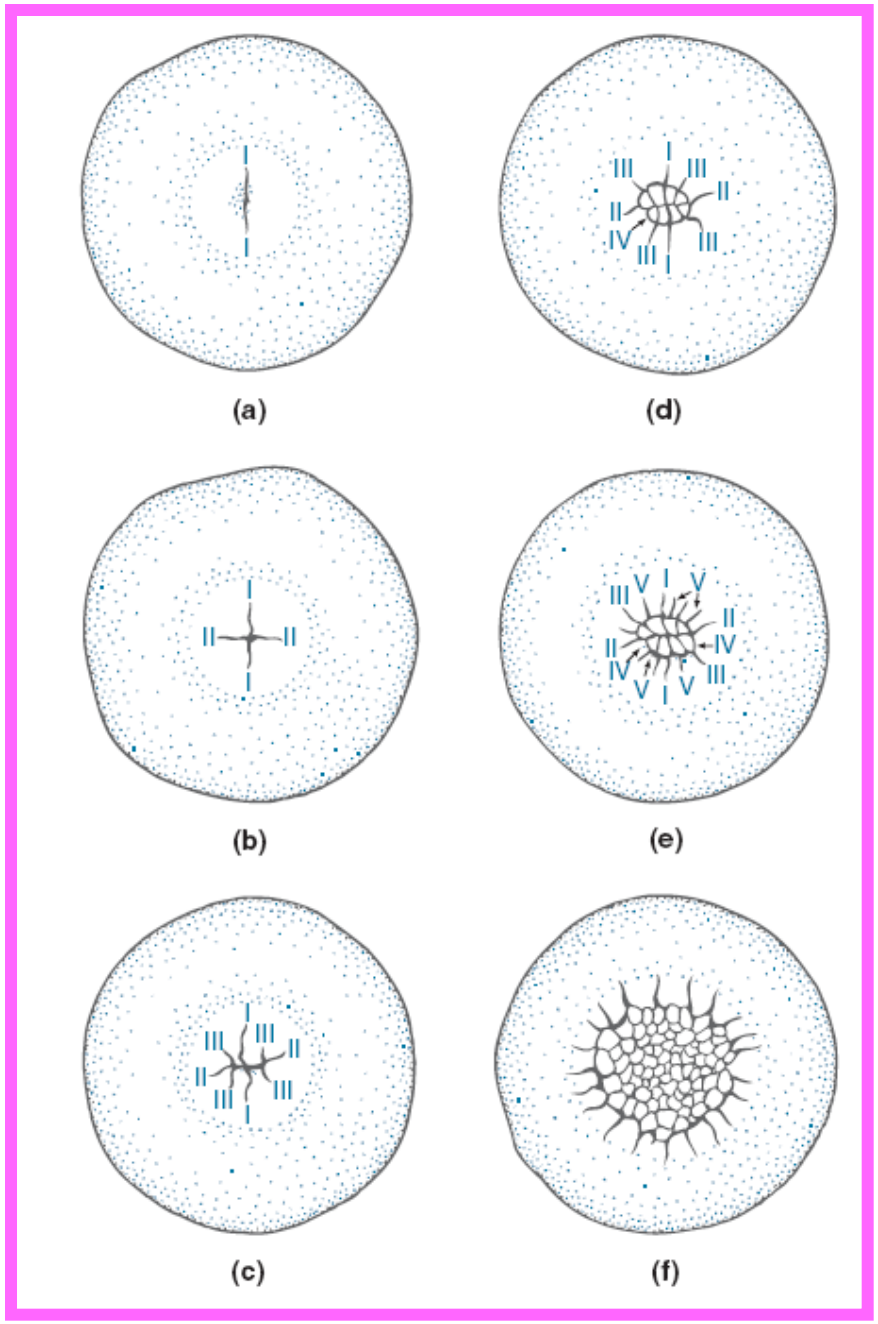

(A)
Blastoderma
Strato
di rivestimento (EVL)
Cellule
profonde
Strato sinciziale
del tuorlo (YSL interno)
Nuclei del
sincizio
del tuorlo
Strato
sinciziale
del tuorlo
(YSL
esterno)
Microtubuli
Cellula del tuorlo
(B)

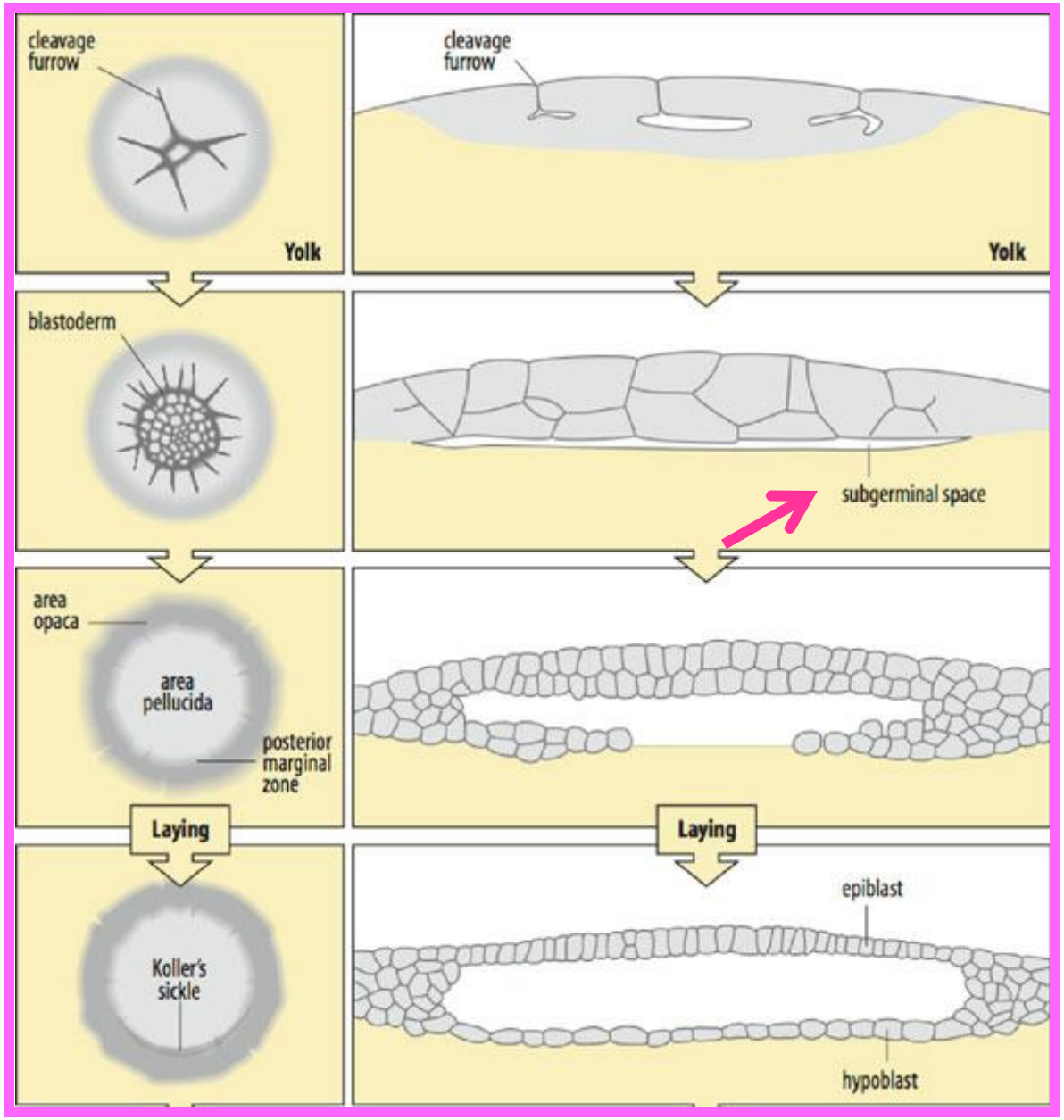

(A)
Blastoderma
Strato di rivestimento (EVL)
Cellule profonde
Strato sinciziale del tuorlo (YSL interno)
Nuclei del sincizio del tuorlo
Strato sinciziale del tuorlo (YSL esterno)
Microtubuli
Cellula del tuorlo
(B)

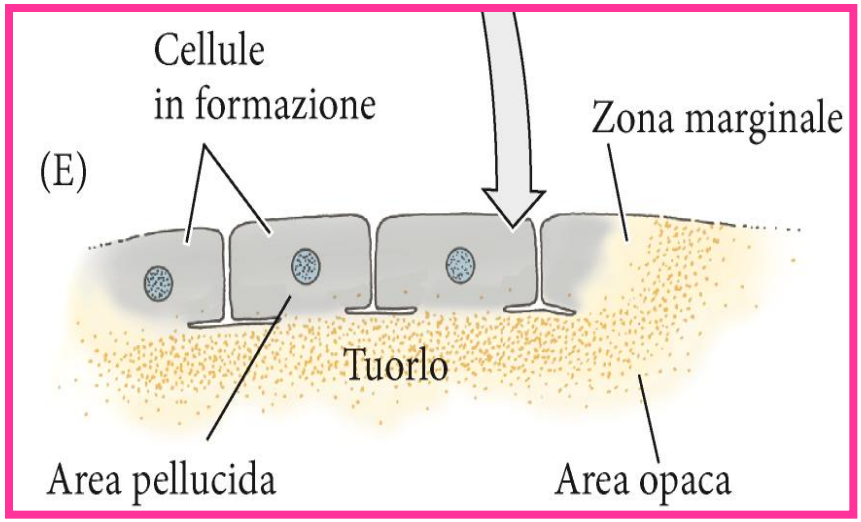

(C)
Polo animale
Naso,
occhio
Epidermide
Encefalo
Ectoderma
Cresta neurale
Midollo spinale
Mesoderma
Ventrale
Muscolatura di origine somitica
Testa
Pronefro
Noto-
corda
Dorsale
Sangue
Pinne
Cuore
Muscolatura
Intestino
Fegato
Faringe
Endoderma
Margine del blastoderma
Cellula
del tuorlo
Polo vegetativo

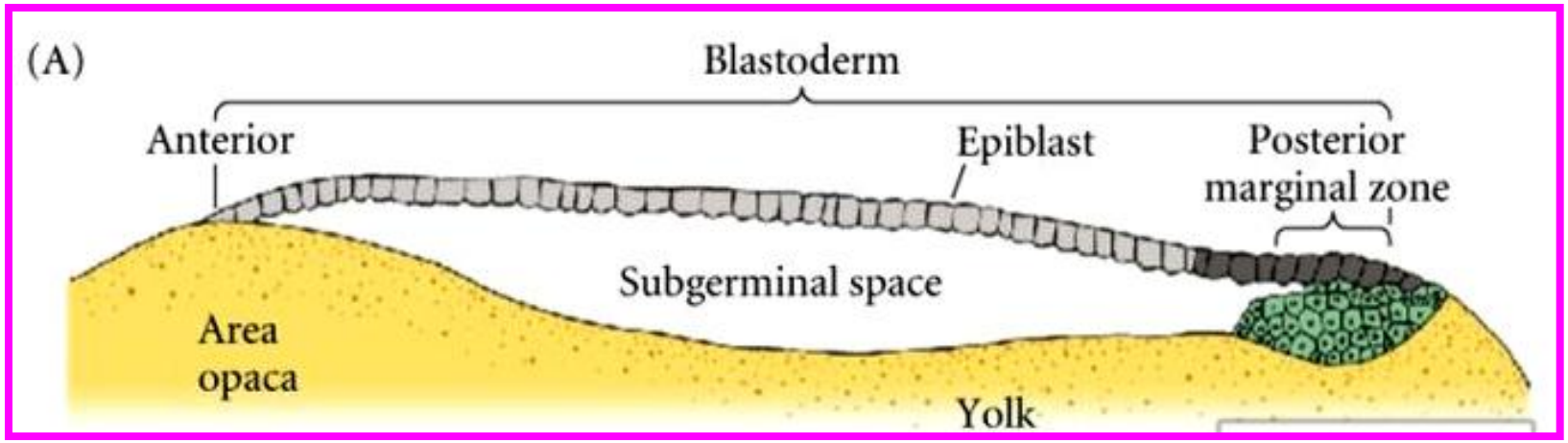
Segmentazione meroblastica discoidale: uccelli e rettili → sauropsidi

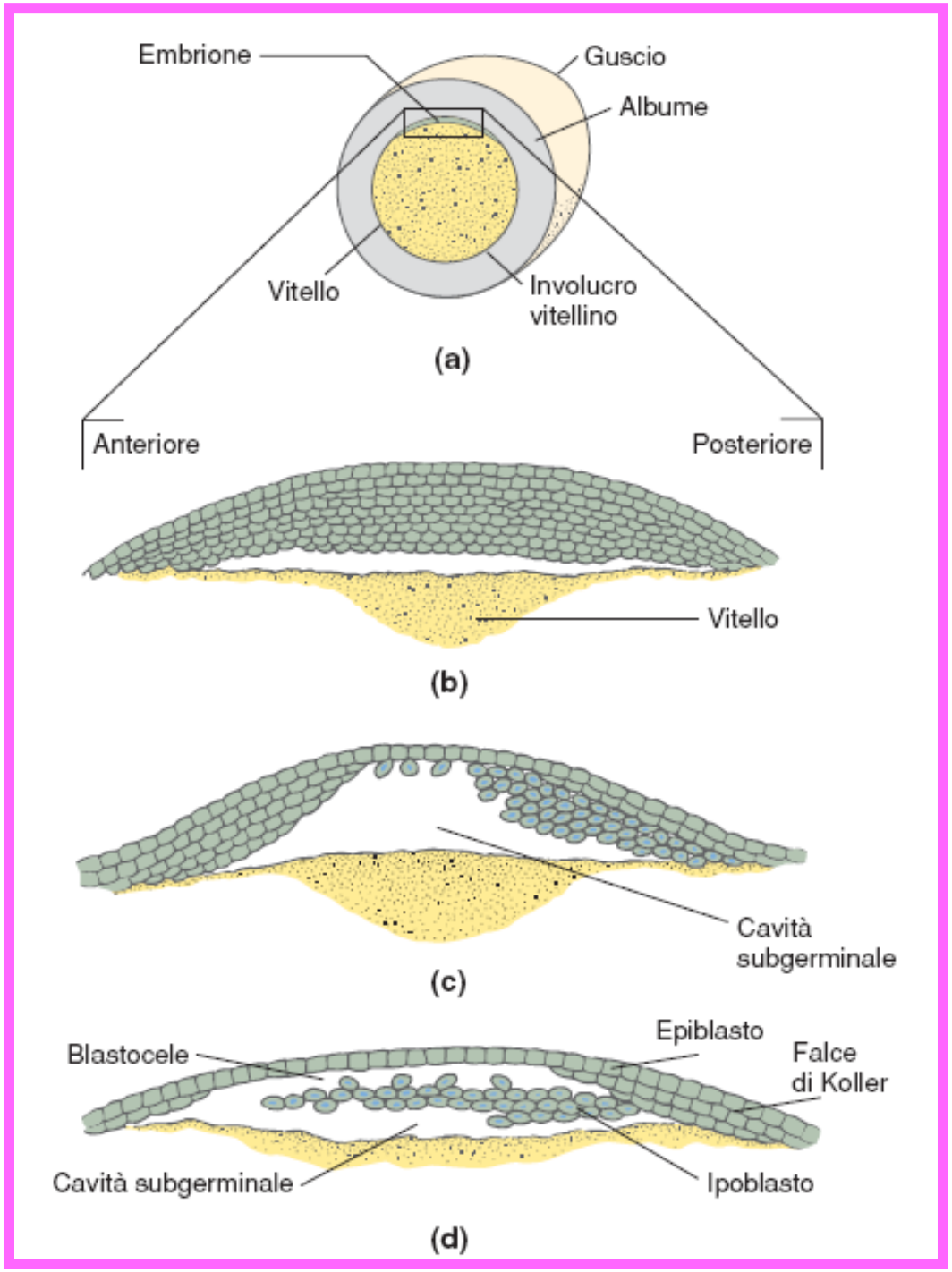


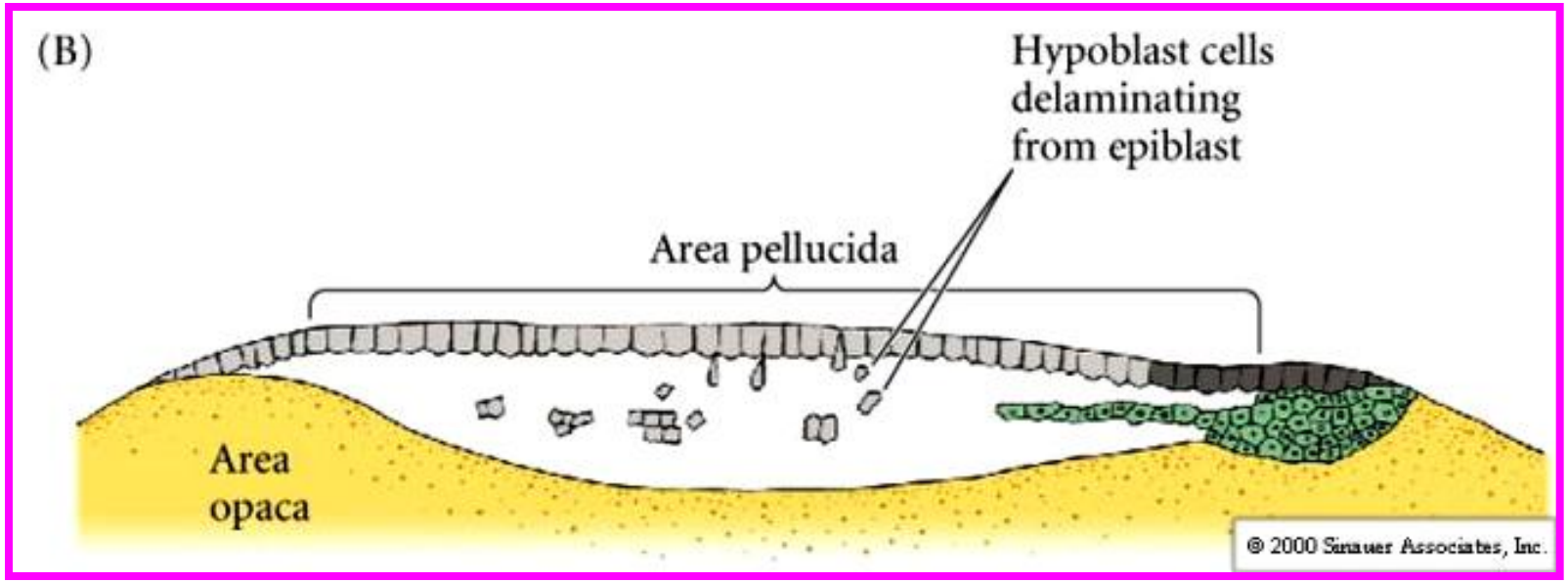

I
I
(a)
I
III
III
II
II
IV
III
I
(d)
I
II
II
I
(b)
III
V
I
V
II
II
IV
IV
V
I
V
III
(e)
I
III
III
II
II
III
III
I
(c)
(f)

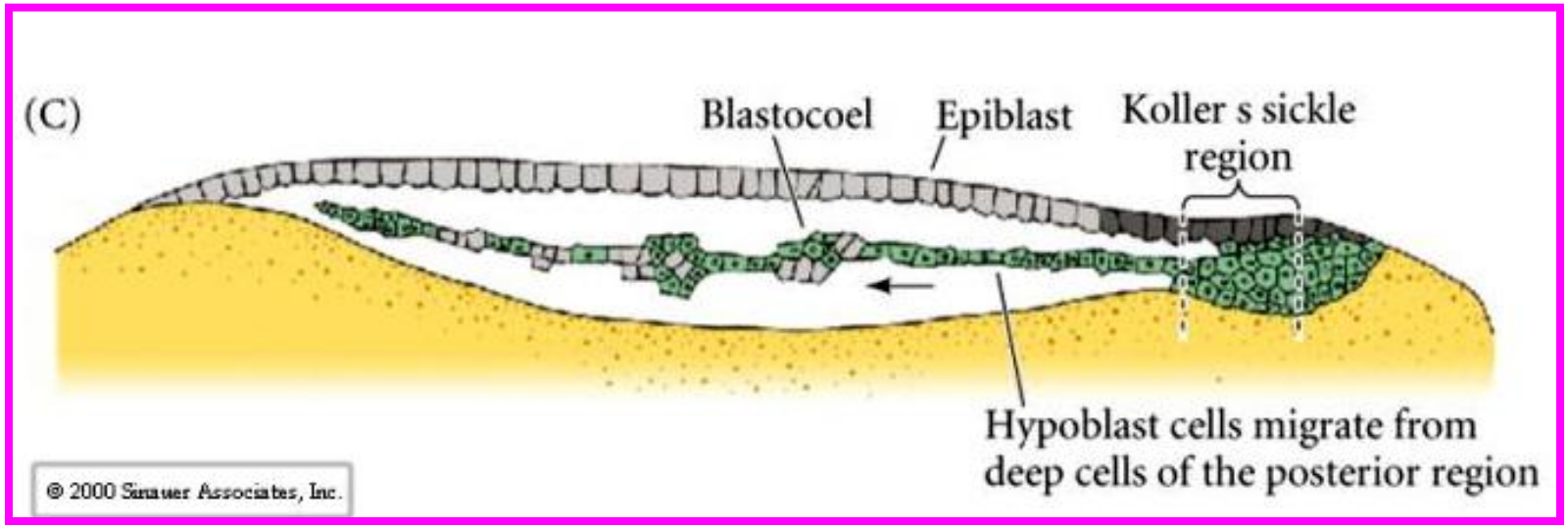

cleavage furrow
Yolk
cleavage furrow
Yolk
blastoderm
subgerminal space
area opaca
area pellucida
posterior marginal zone
Laying
Laying
epiblast
Koller's sickle
hypoblast

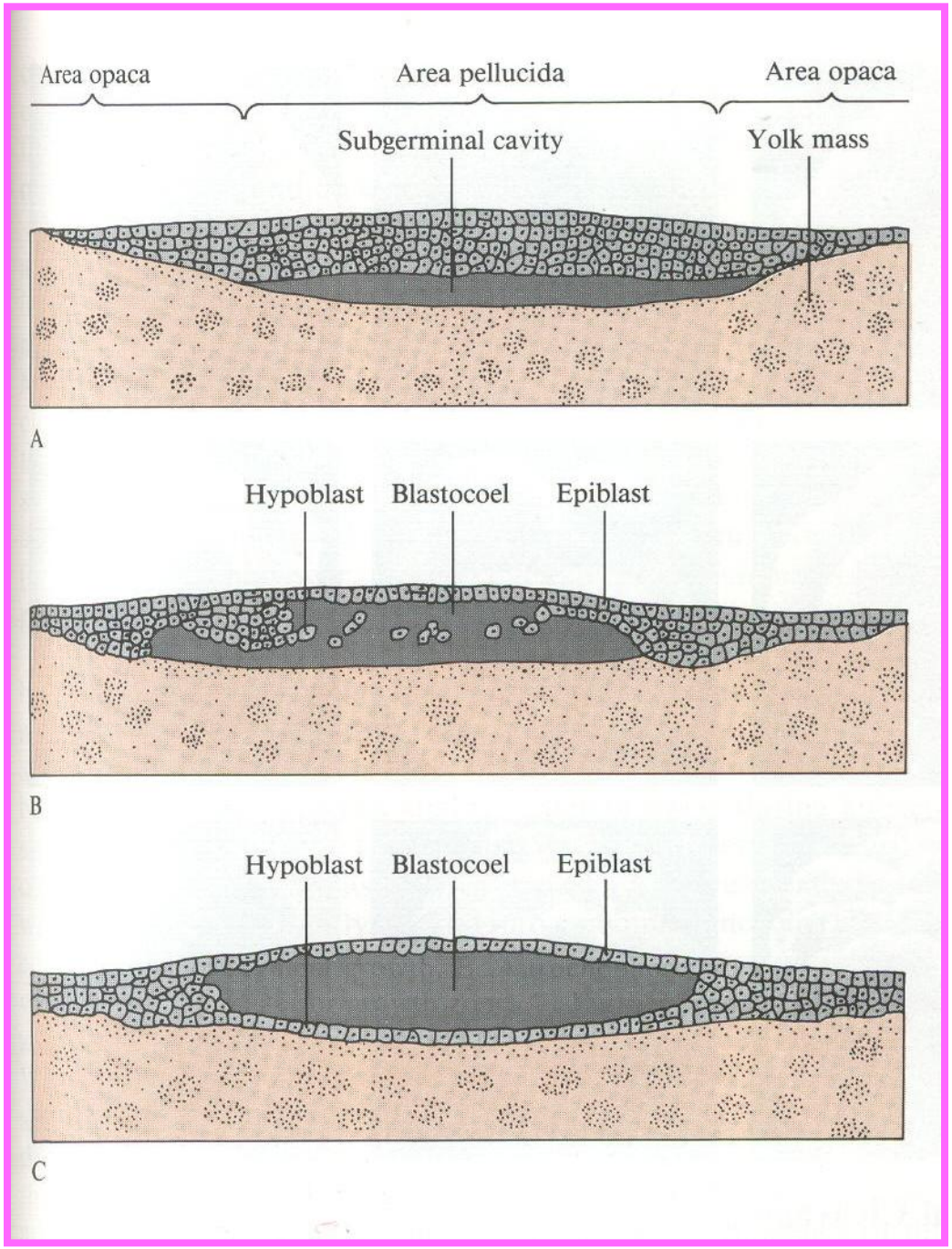

(E)
Cellule
in formazione
Zona marginale
Tuorlo
Area pellucida
Area opaca


(A)
Blastoderm
Anterior
Epiblast
Posterior
marginal zone
Subgerminal space
Area
opaca
Yolk

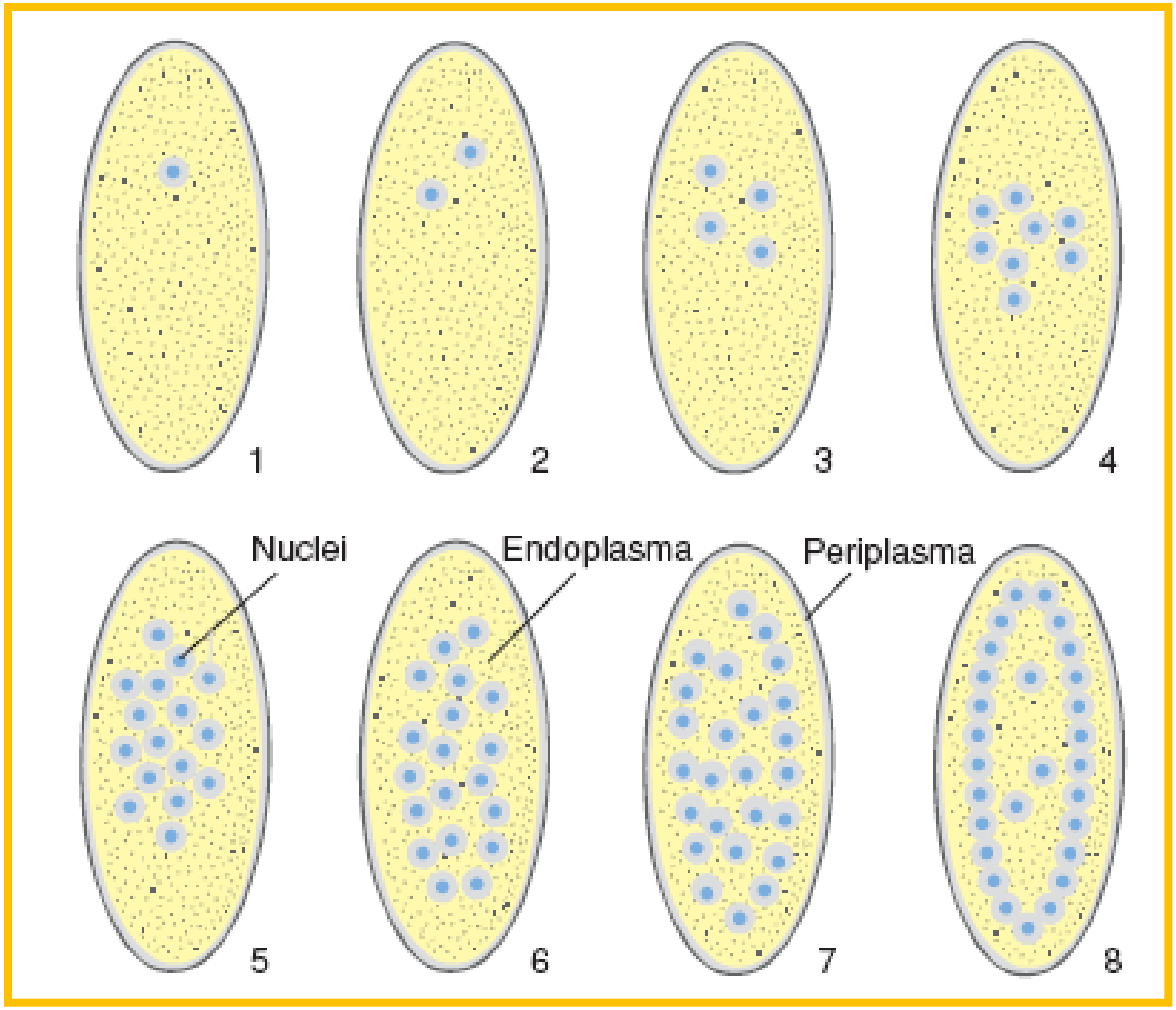

Embrione
Guscio
Albume
Vitello
Involucro vitellino
(a)
Anteriore
Posteriore
Vitello
(b)
Cavità subgerminale
(c)
Blastocele
Epiblasto
Falce di Koller
Cavità subgerminale
Ipoblasto
(d)

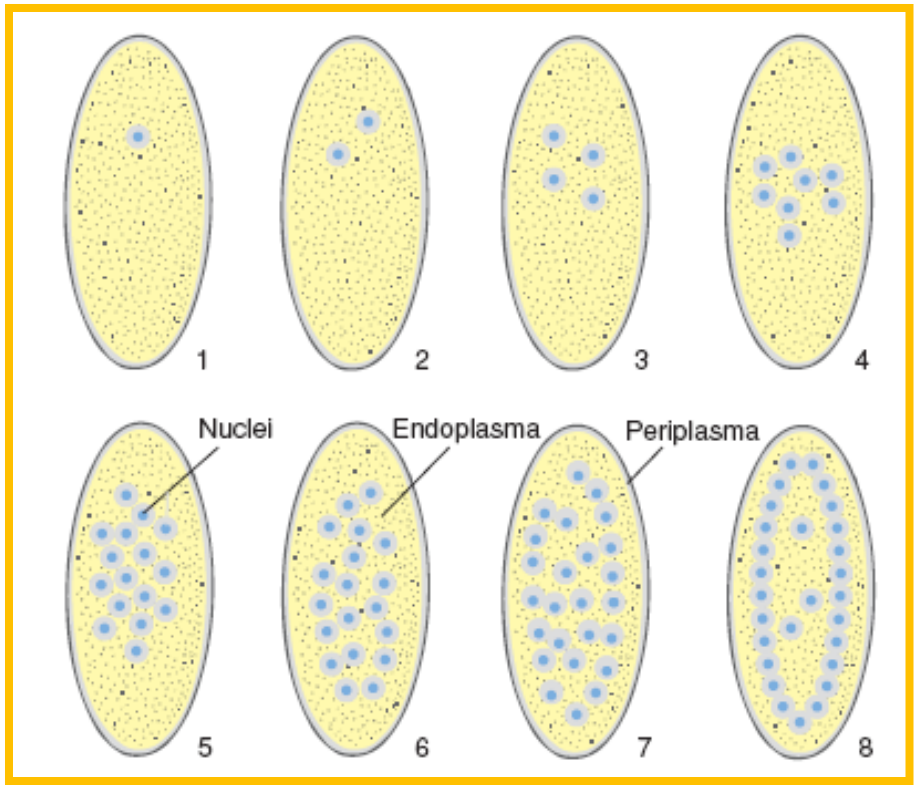

(B)
Hypoblast cells
delaminating
from epiblast
Area pellucida
Area
opaca
© 2000 Sinauer Associates, Inc.

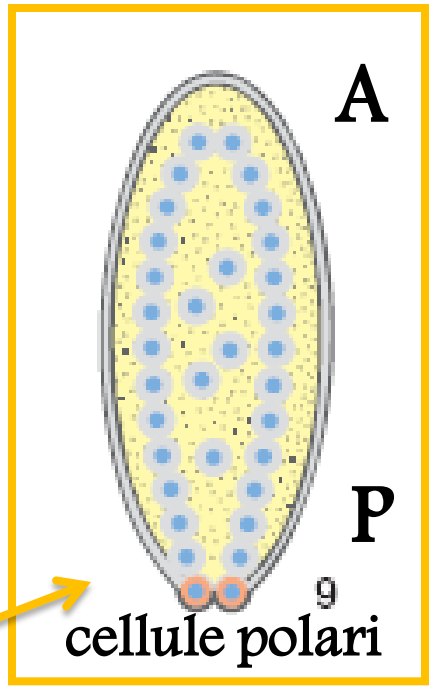

(C)
Blastocoel
Epiblast
Koller s sickle
region
Hypoblast cells migrate from
deep cells of the posterior region
© 2000 Sinauer Associates, Inc.

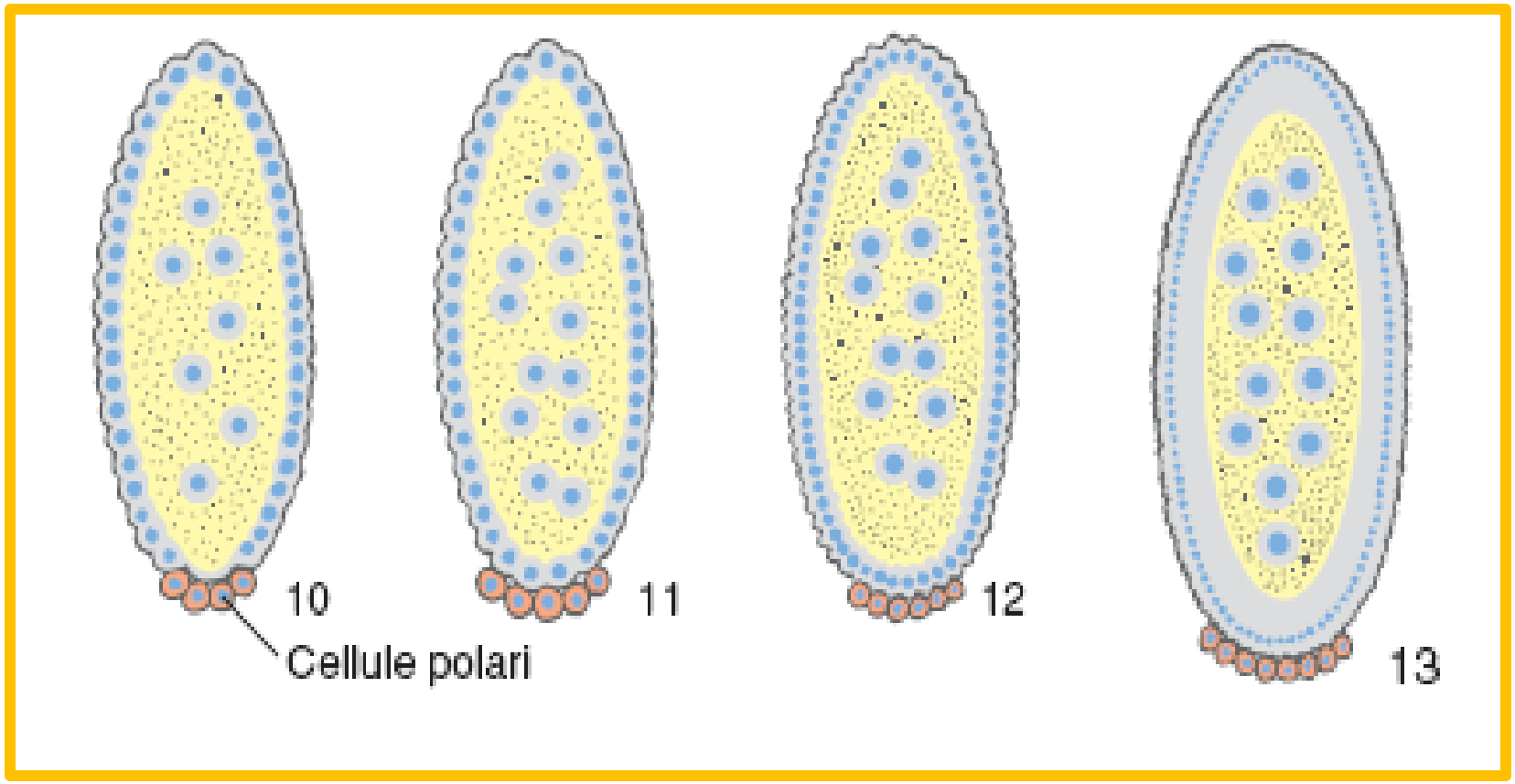

Area opaca
Area pellucida
Area opaca
Subgerminal cavity
Yolk mass
A
Hypoblast
Blastocoel
Epiblast
B
Hypoblast
Blastocoel
Epiblast
C

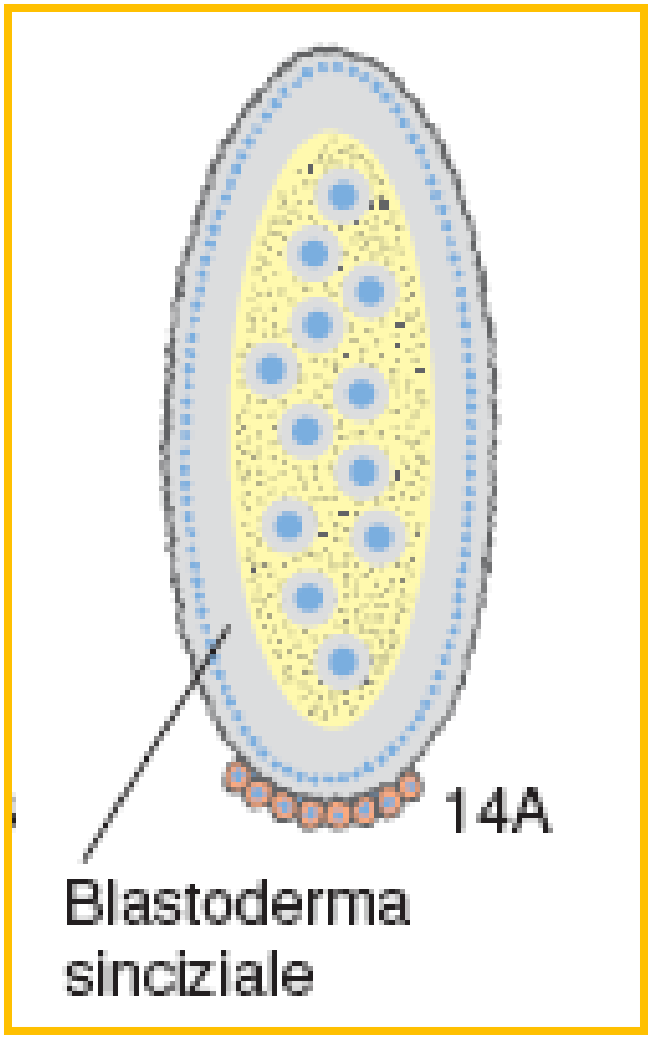
Segmentazione meroblastica superficiale

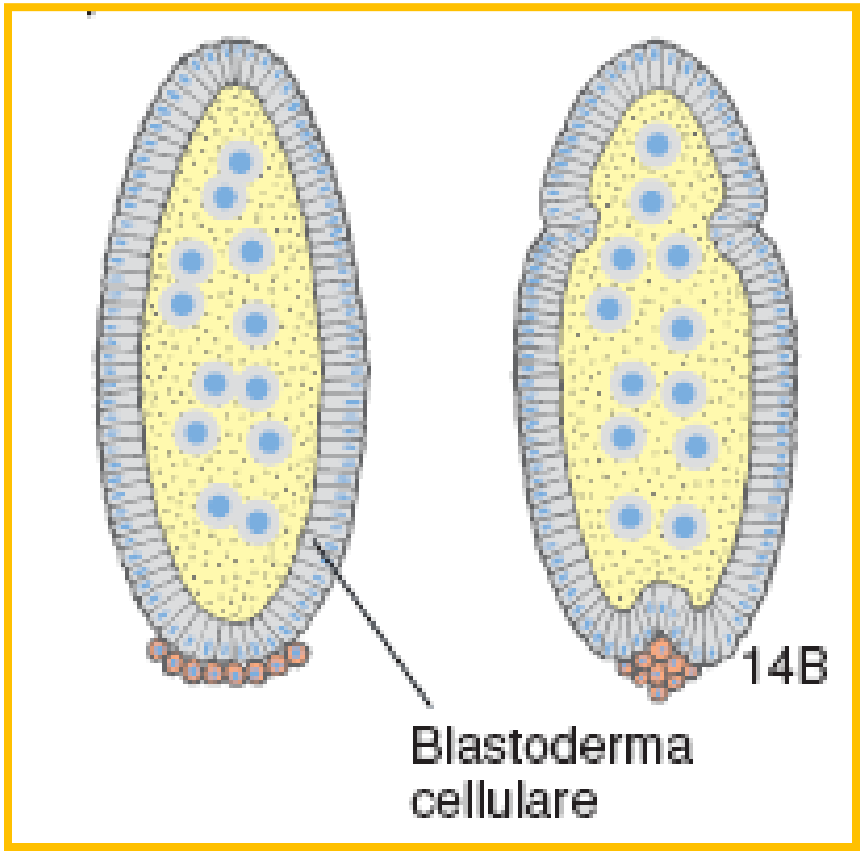



1
2
3
4
Nuclei
Endoplasma
Periplasma
5
6
7
8

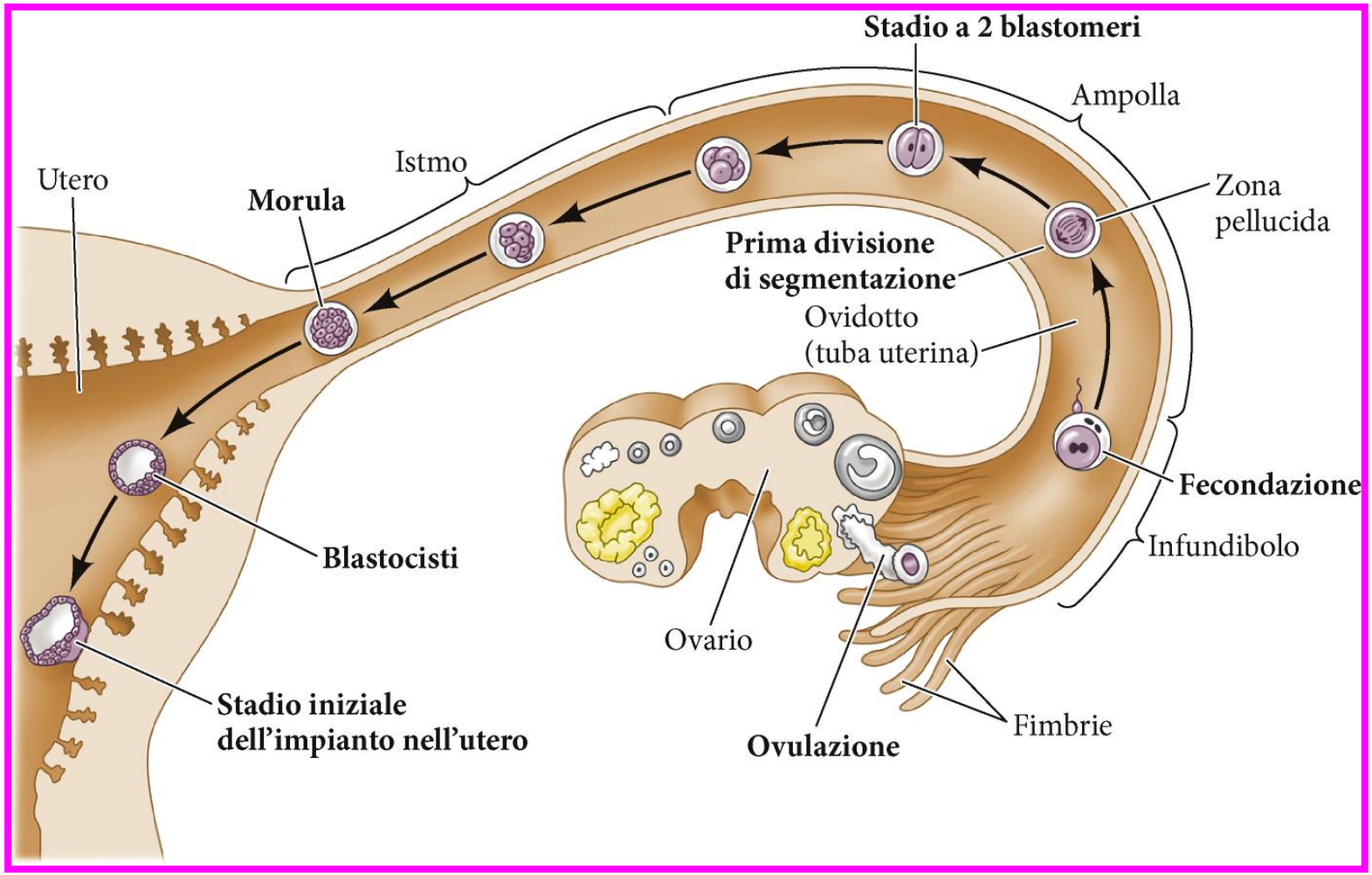

A
P
9
cellule polari


10
11
12
13
Cellule polari

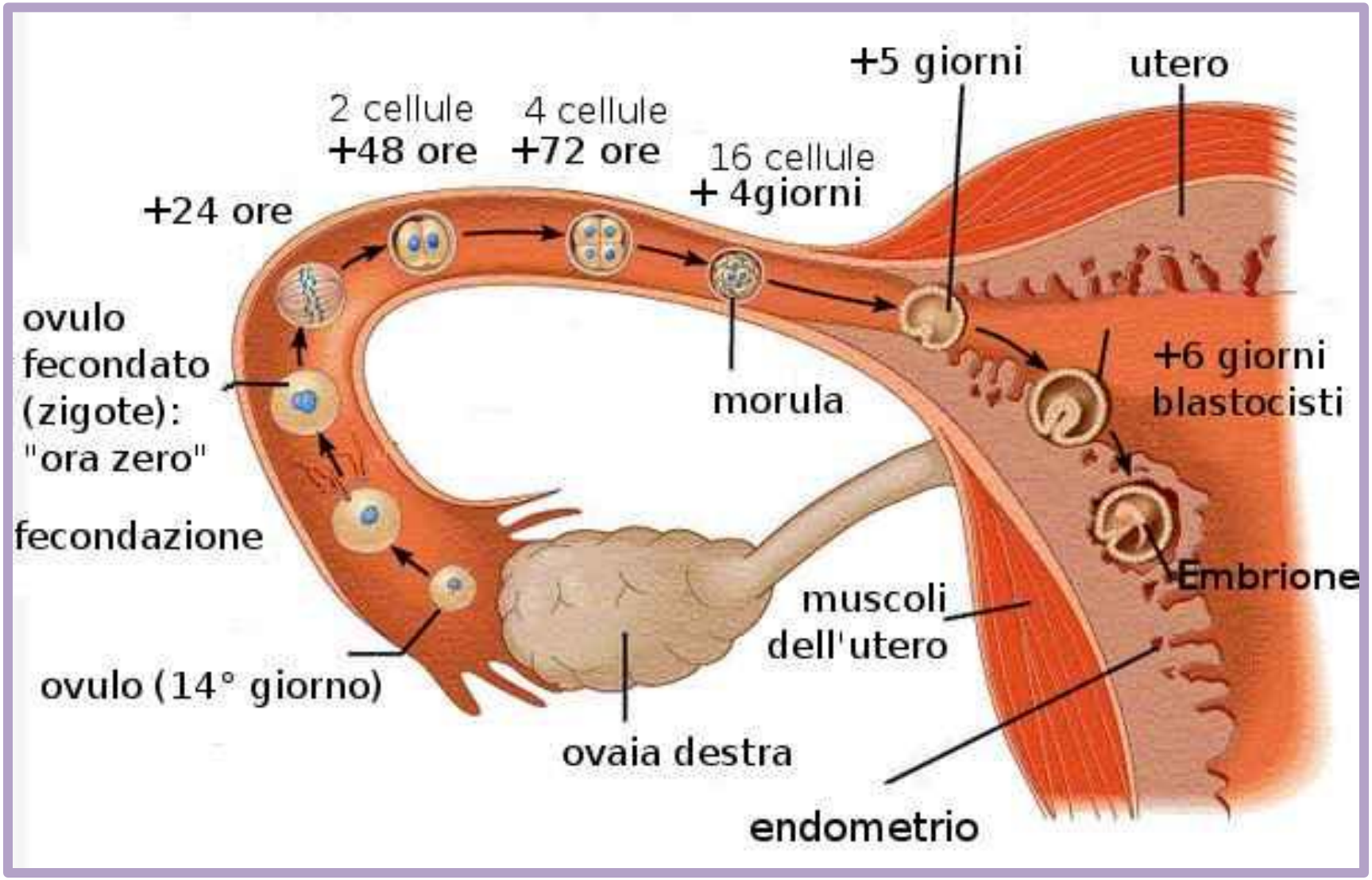

14A
Blastoderma
sinciziale

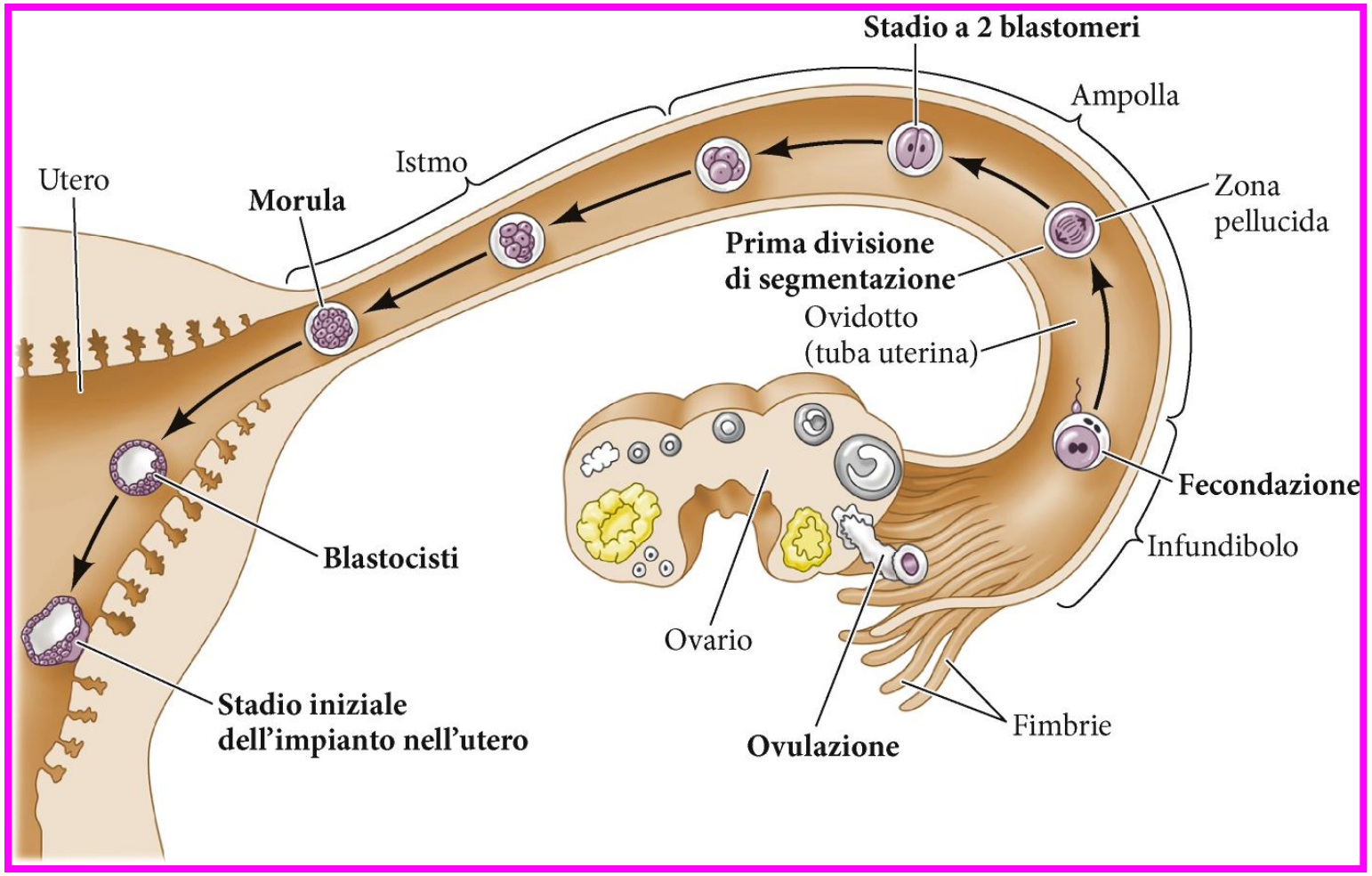

14B
Blastoderma
cellulare

Segmentazione oloblastica rotazionale: mammiferi

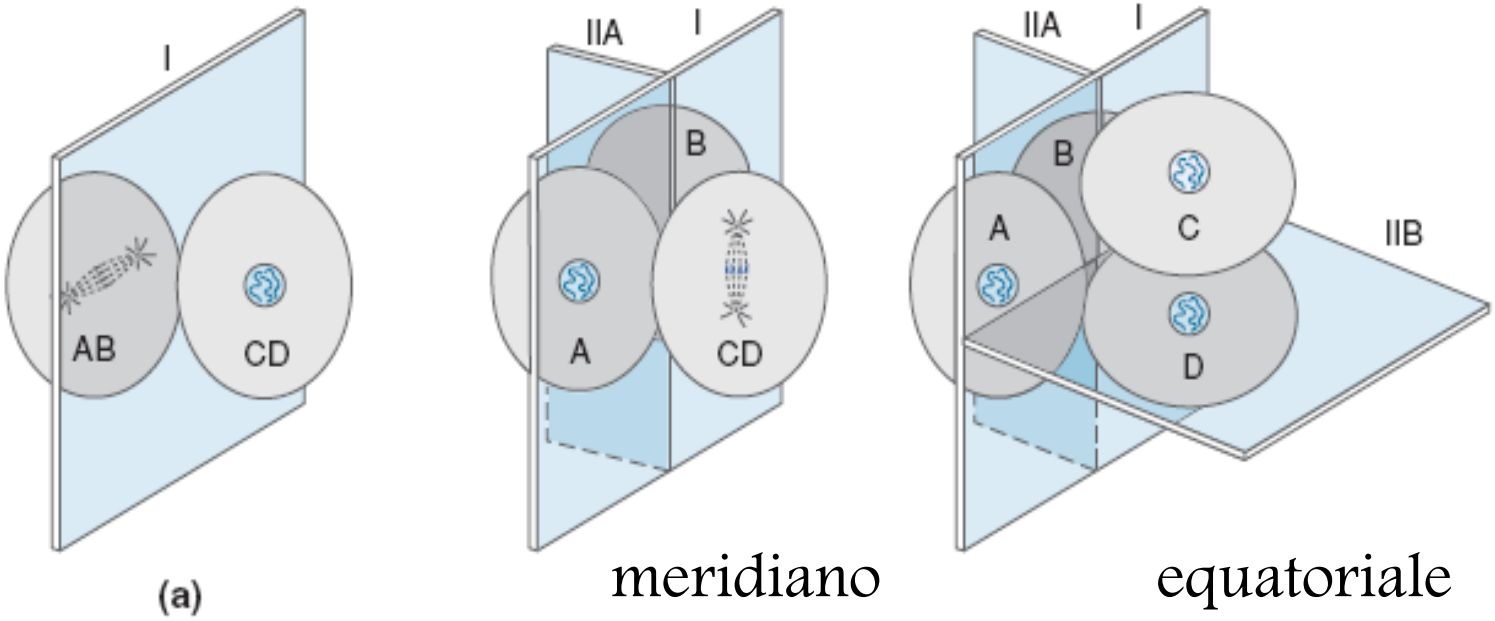


La segmentazione dei mammiferi è sorprendentemente diversa dalla maggior parte degli altri tipi di divisione cellulare...

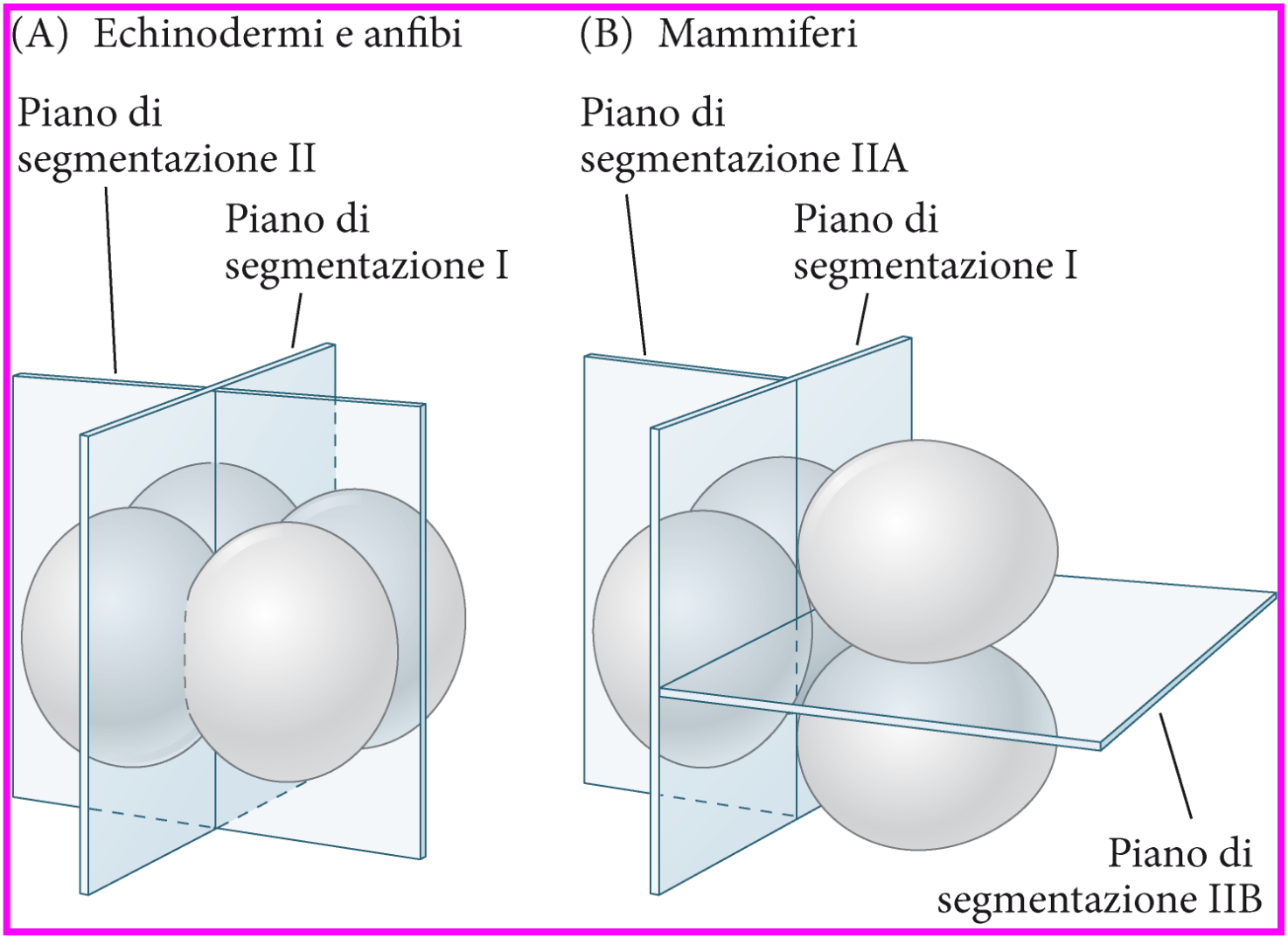

+5 giorni
utero
2 cellule
+48 ore
4 cellule
+72 ore
16 cellule
+ 4giorni
+24 ore
ovulo
fecondato
(zigote):
"ora zero"
morula
+6 giorni
blastocisti
fecondazione
Embrione
muscoli
dell'utero
ovulo (14° giorno)
ovaia destra
endometrio



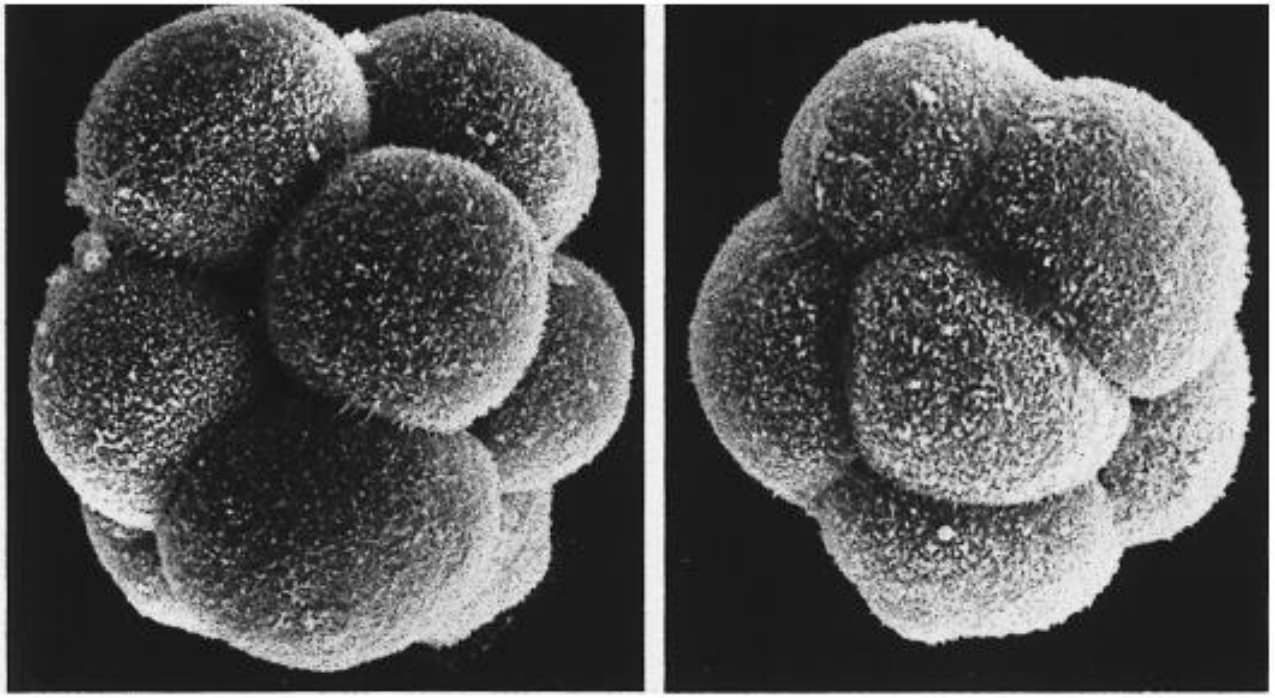
Le prime divisioni avvengono mentre l'embrione viaggia verso l'utero.


I
AB
CD
(a)
IIA
I
B
A
CD
meridiano
IIA
I
B
A
C
IIB
D
equatoriale

La natura UNICA della segmentazione dei mammiferi

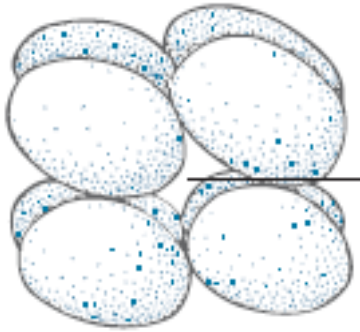


La compattazione



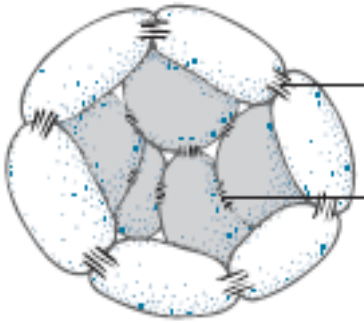
(a) (b)

Figura 5.11 Fotografia al microscopio elettronico a scansione di embrione di topo allo stadio di 8 blastomeri. **(a)** Prima della compattazione. **(b)** Dopo la compattazione. La superficie dei blastomeri è caratterizzata dalla presenza di numerosi microvilli.



Spazio intercellulare

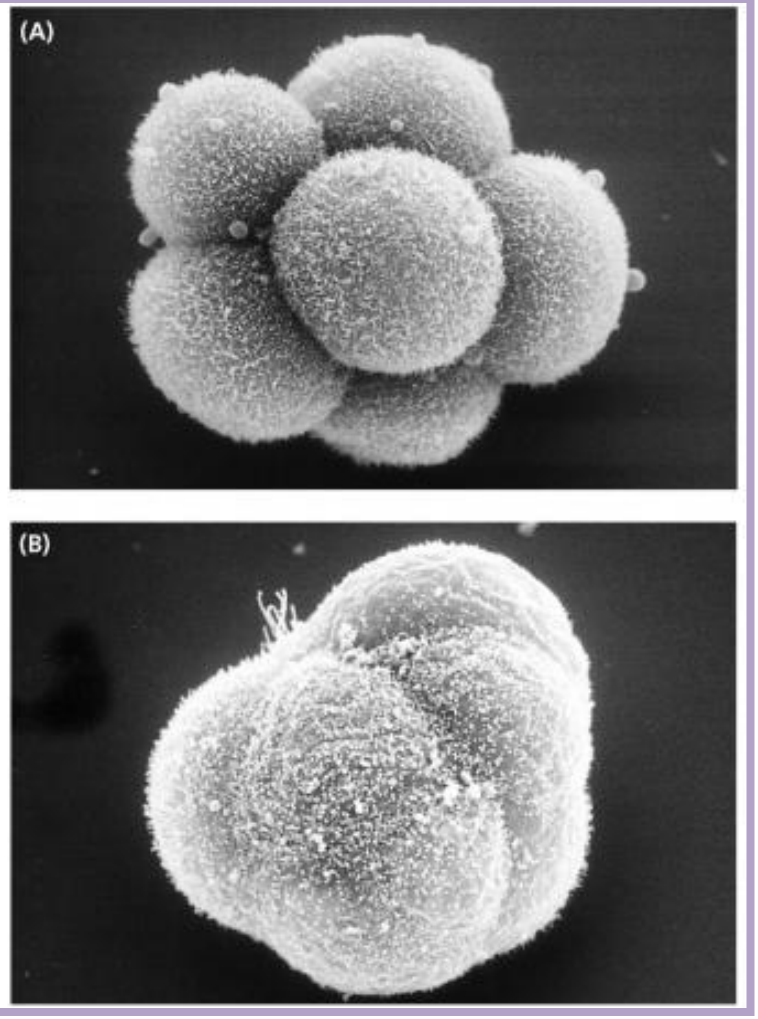
(a) Stadio a 8 blastomeri

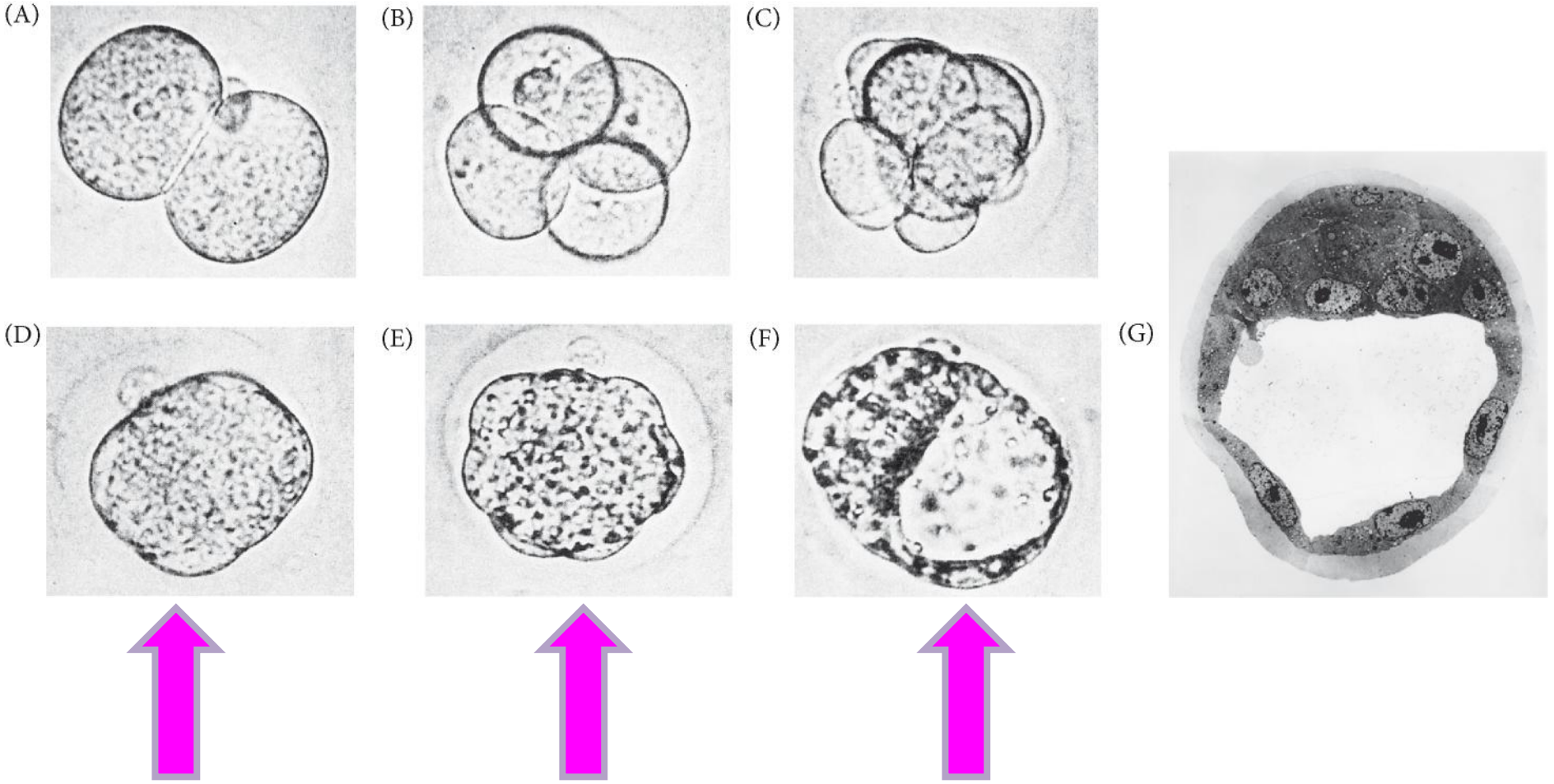


Giunzione stretta

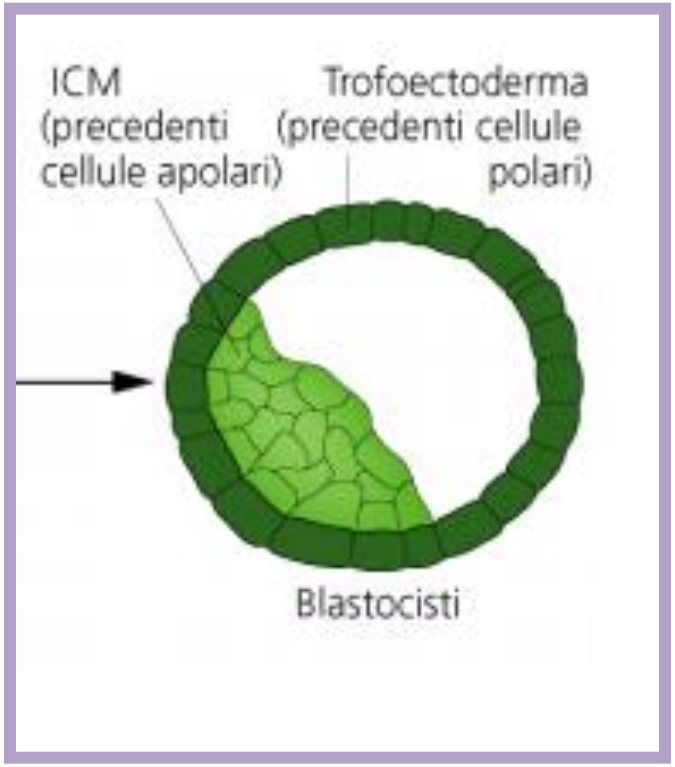
Giunzione serrata

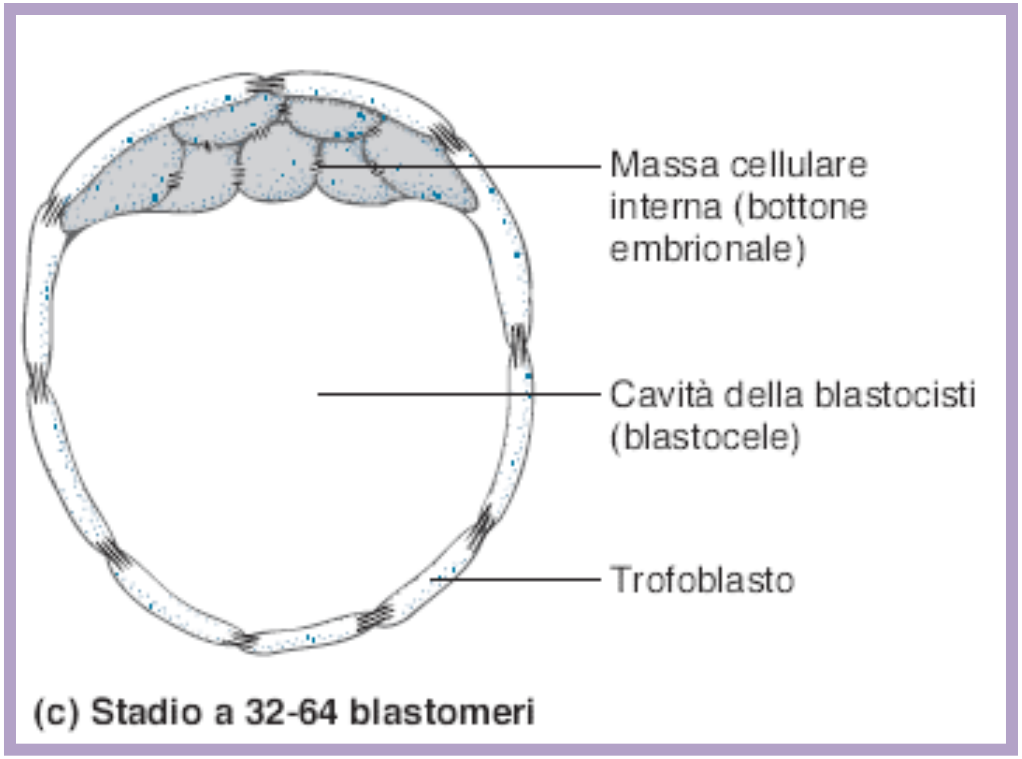
(b) Stadio a 16 blastomeri





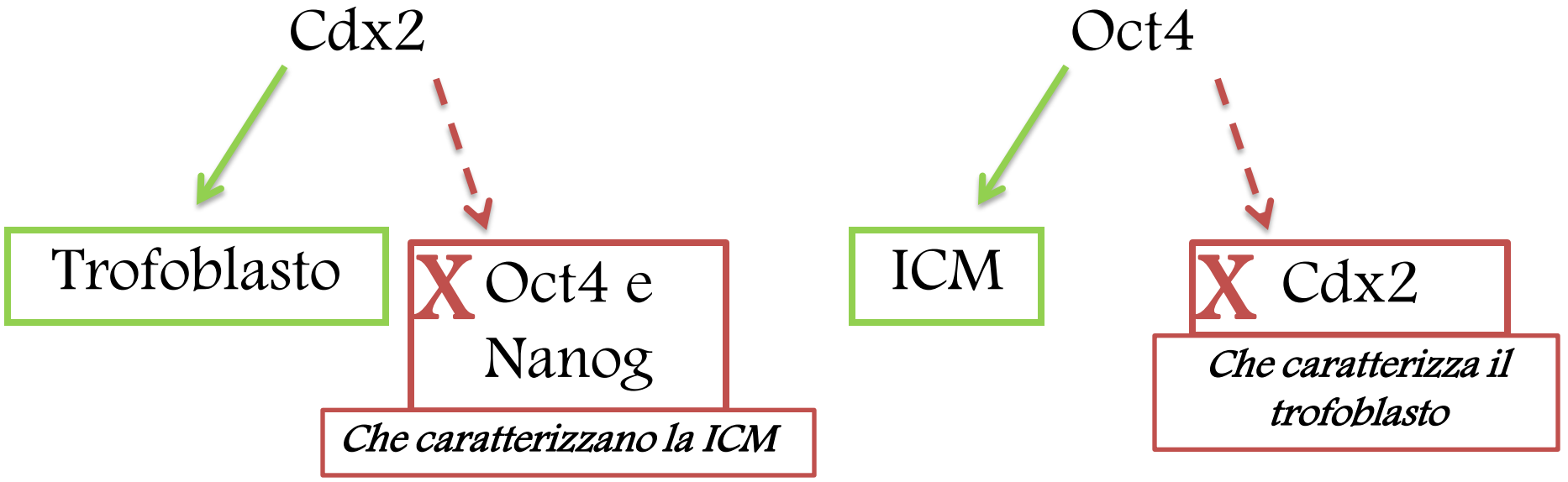
Compattazione **Morula** **Blastocisti**

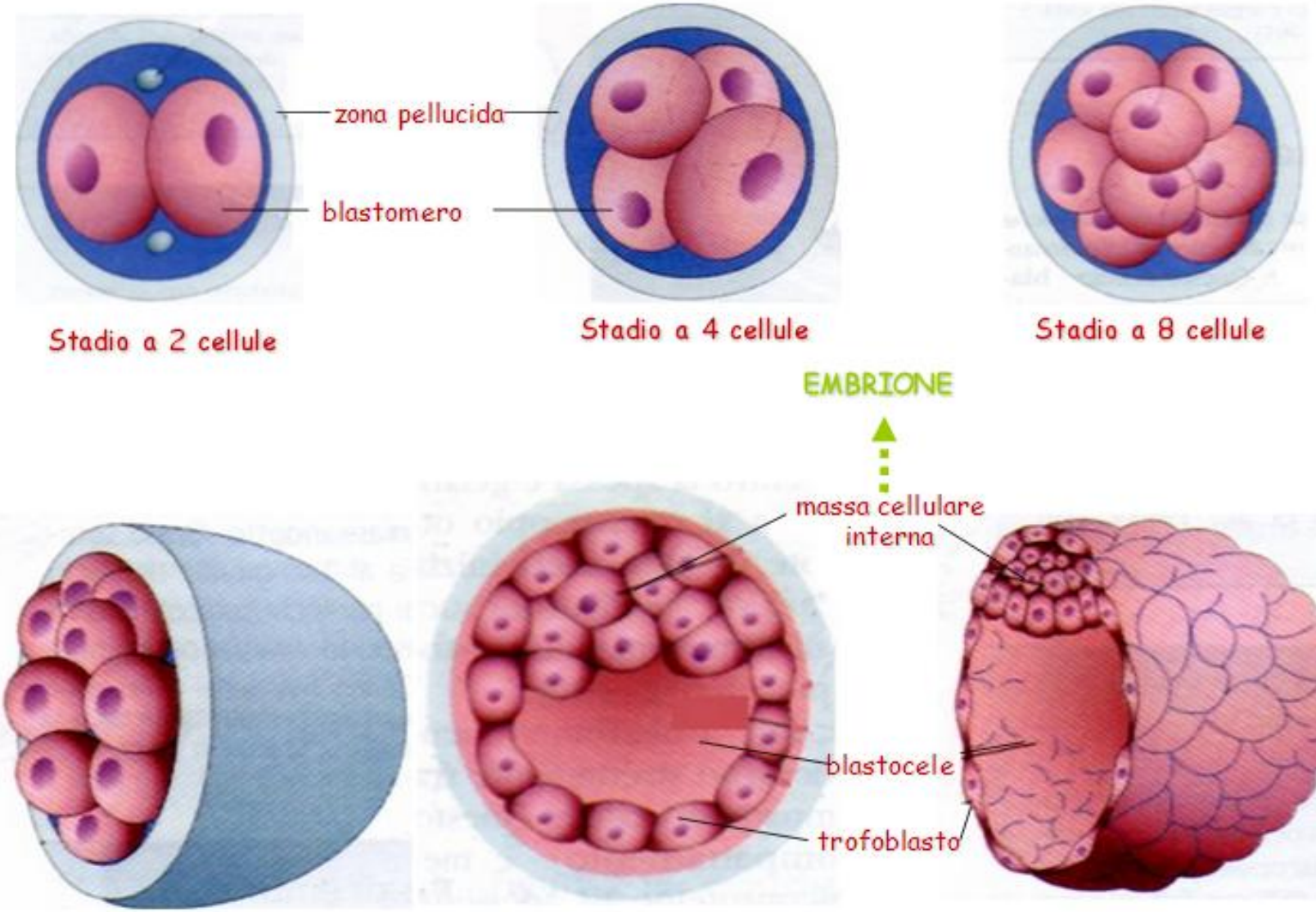




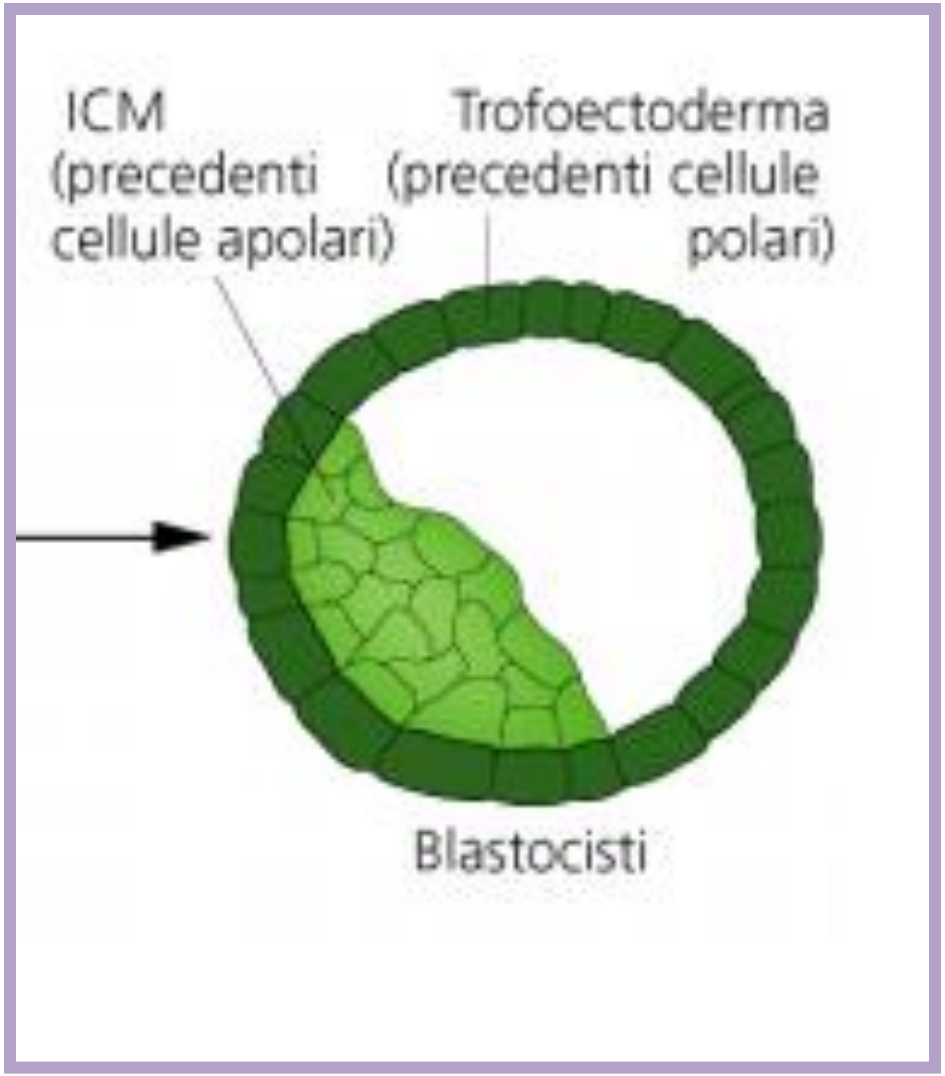
(c) Stadio a 32-64 blastomeri

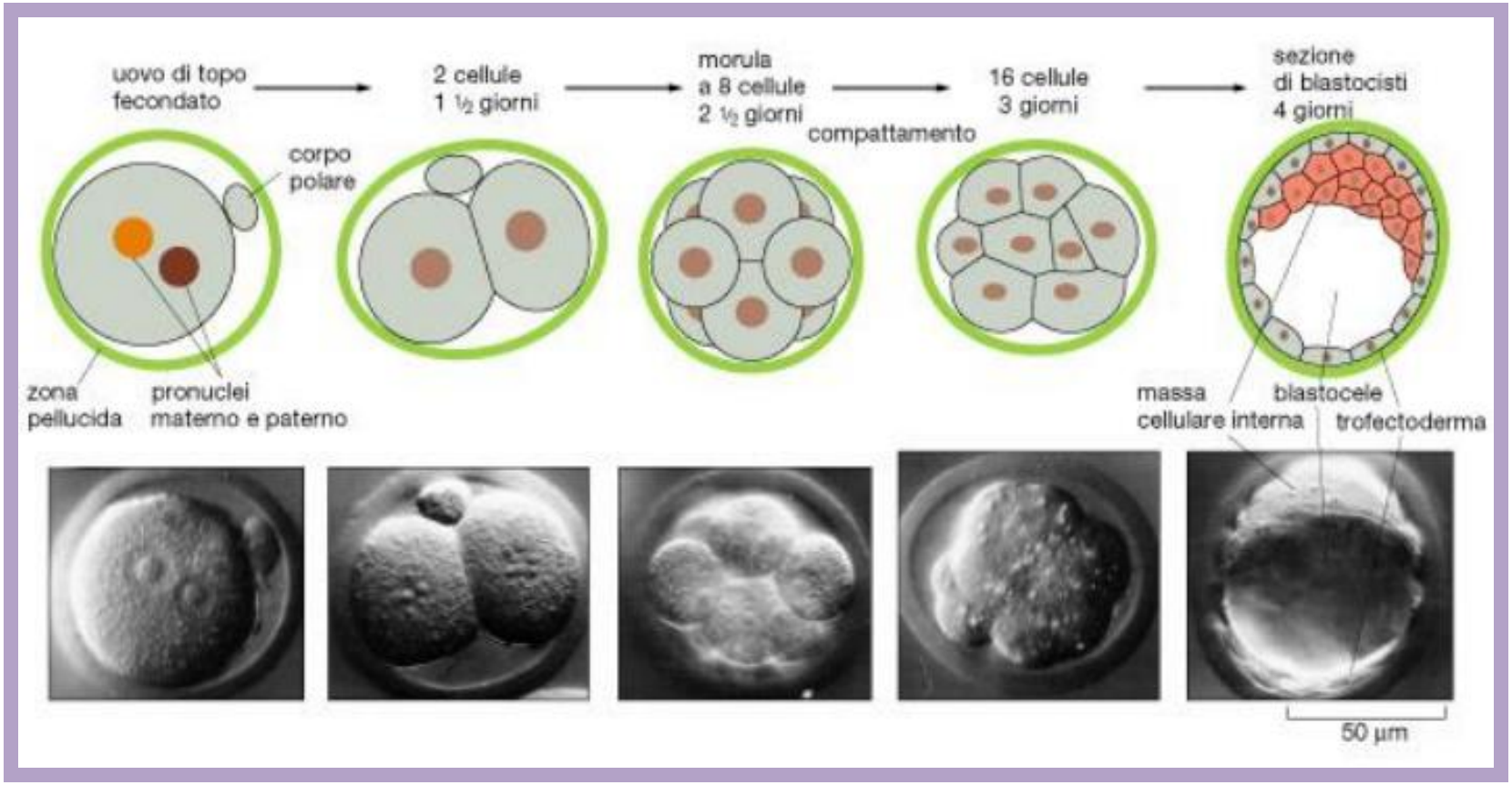
ICM o trofoblasto? La prima decisione che dobbiamo prendere nella nostra vita...

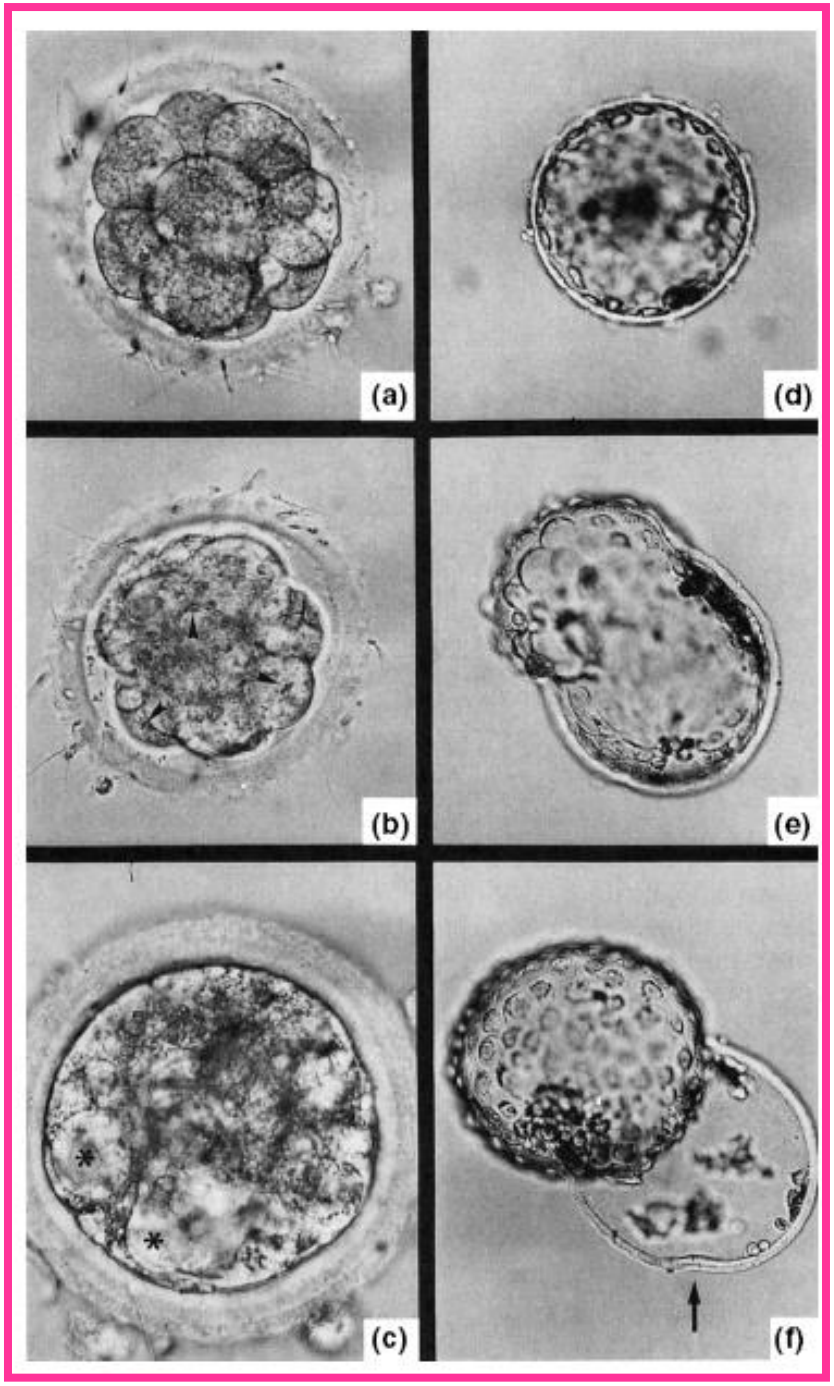



zona pellucida
blastomero
Stadio a 2 cellule
Stadio a 4 cellule
Stadio a 8 cellule
EMBRIONE
massa cellulare interna
blastocele
trofoblasto
Stadio a 12-16 cellule
- MORULA -
Stadio a 32-64 cellule
- BLASTOCISTI -
- BLASTOCISTI -

Cavitazione

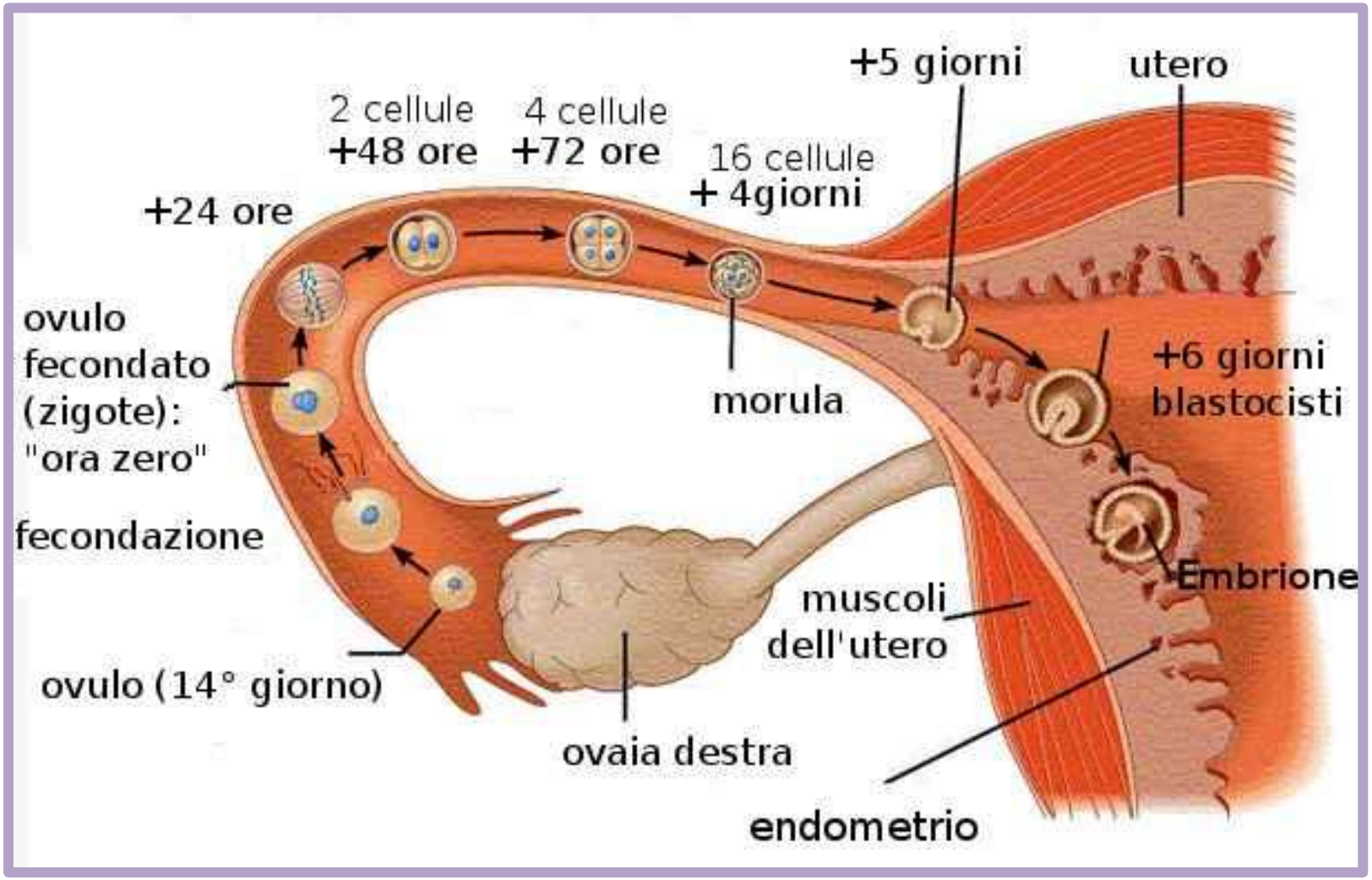



uovo di topo fecondato
2 cellule 1 ½ giorni
morula a 8 cellule 2 ½ giorni
compattamento
16 cellule 3 giorni
sezione di blastocisti 4 giorni
corpo polare
zona pellucida
pronuclei materno e paterno
massa cellulare interna
blastocele
trofectoderma
50 µm


(a)
(d)
(b)
(e)
(c)
(f)

Estrusione dalla zona pellucida

La blastocisti deve annidarsi nell'utero



L'impianto

Estrogeno
Progesterone dal CL

aderiscono

L-selectina sul trofoblasto → **polisaccaridi** dell'utero

SUCCESSIVAMENTE

Integrine dal trofoblasto si legano → **Fibronectina e laminina** dell'utero

P-caderine

- trofoblasto
- endometrio

} Aiutano ad ancorare l'embrione all'utero

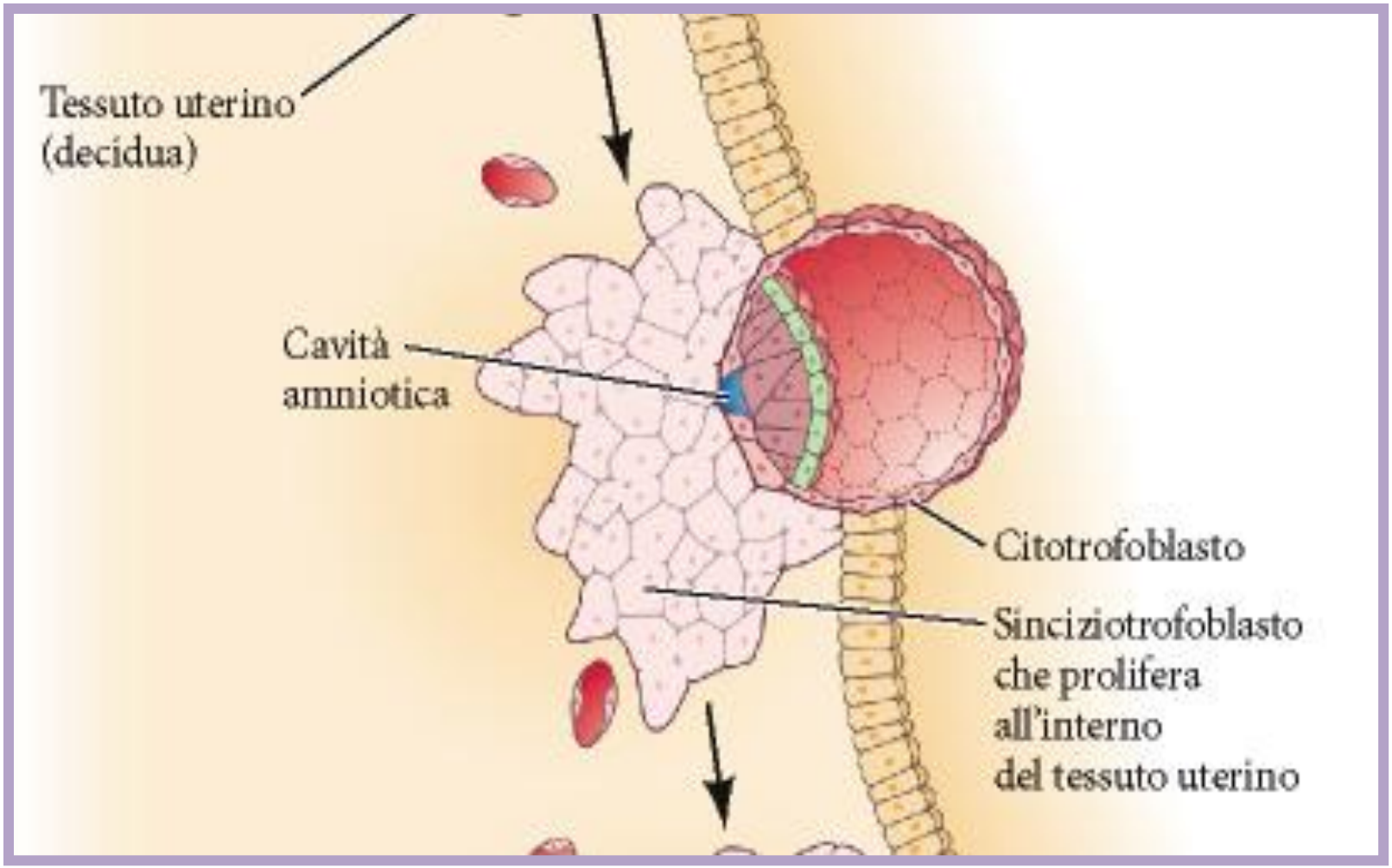
L'impianto

Stimola il trofoblasto

Wnt
(trofoblasto ed endometrio)

Collagenasi, stromalisina e l'attivatore del plasminogeno

Digeriscono la matrice extracellulare del tessuto uterino, consentendo alla blastocisti di annidarsi all'interno della parete uterina


Tessuto uterino
(decidua)
Cavità
amniotica
Citotrofoblasto
Sinciziotrofoblasto
che prolifera
all'interno
del tessuto uterino