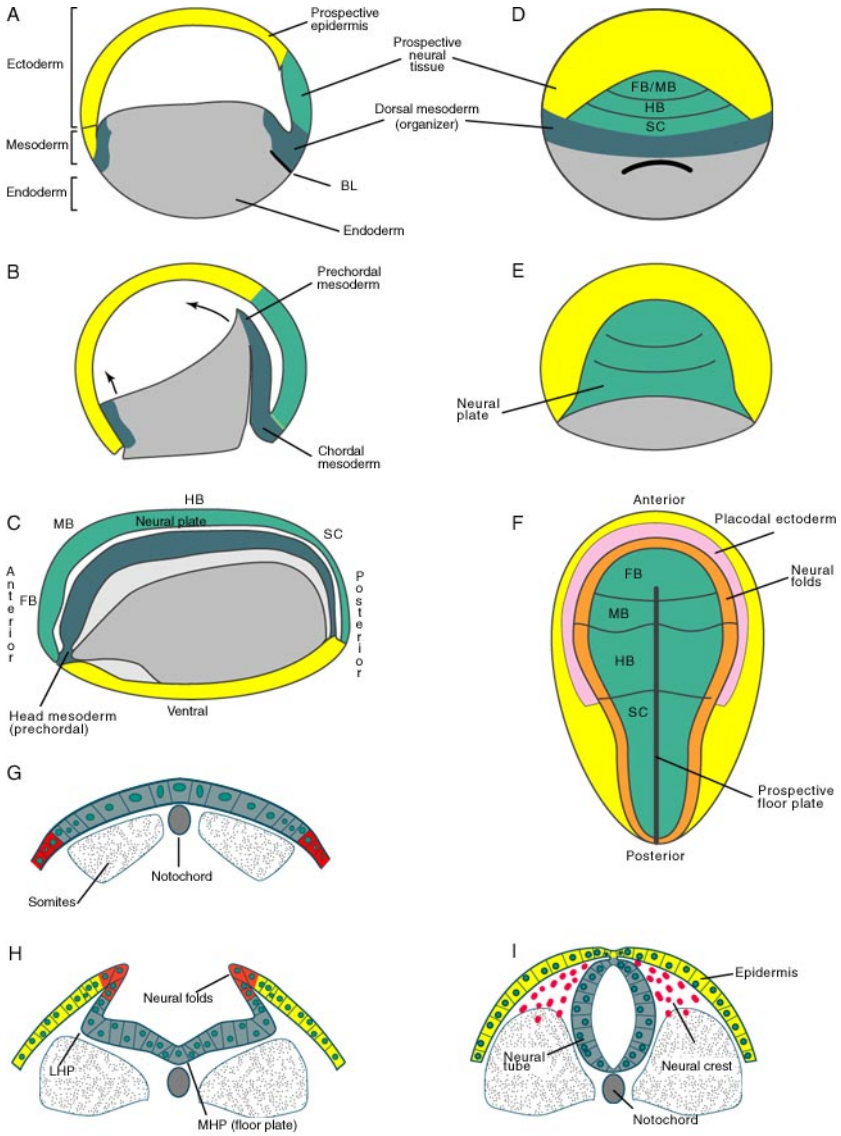
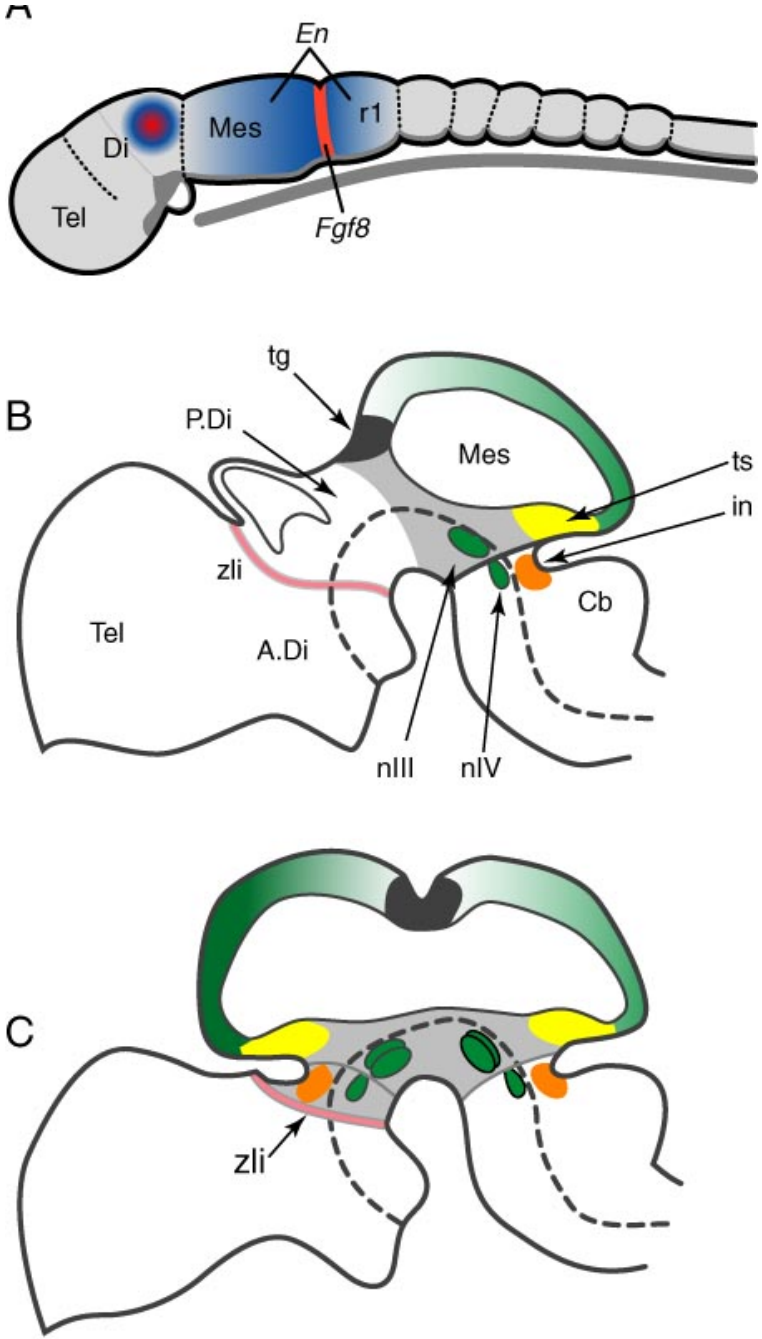
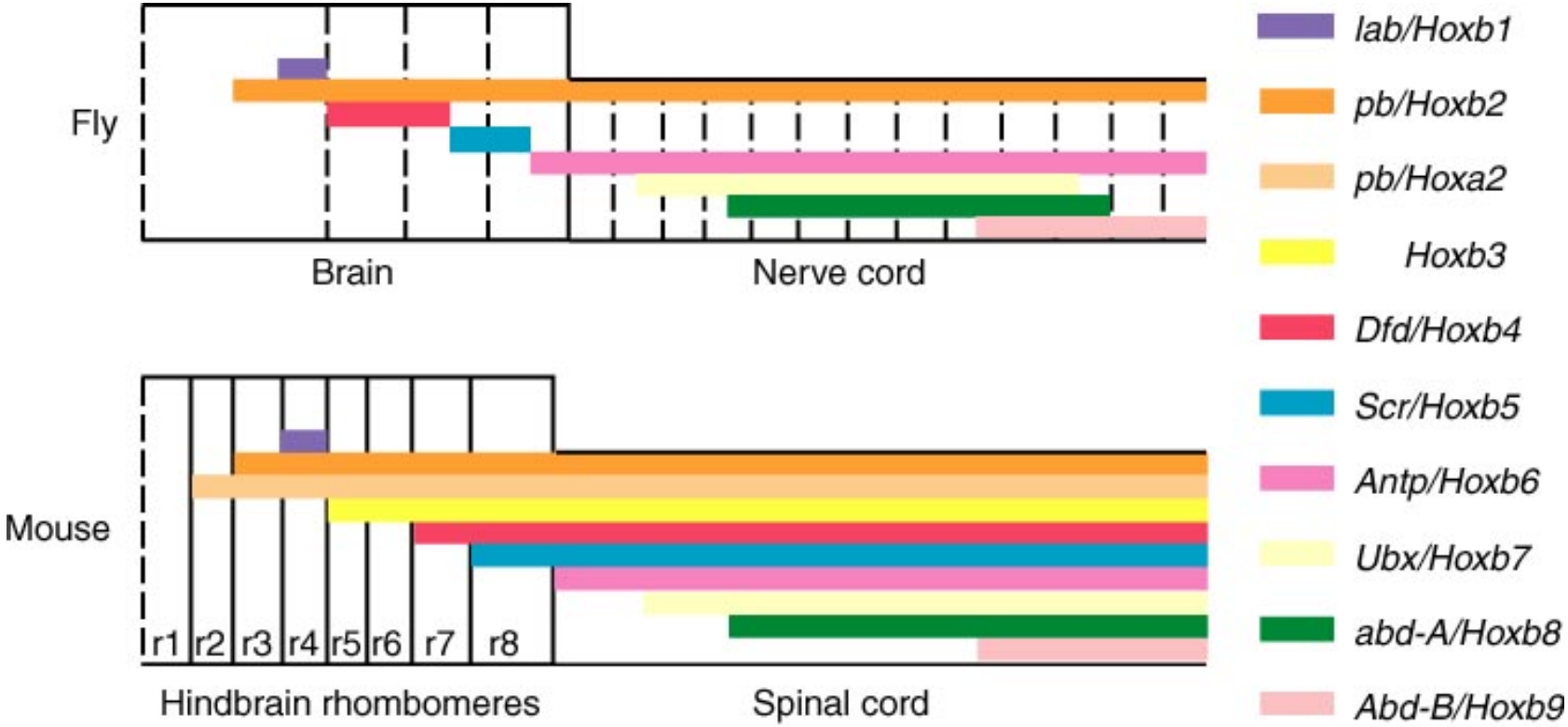
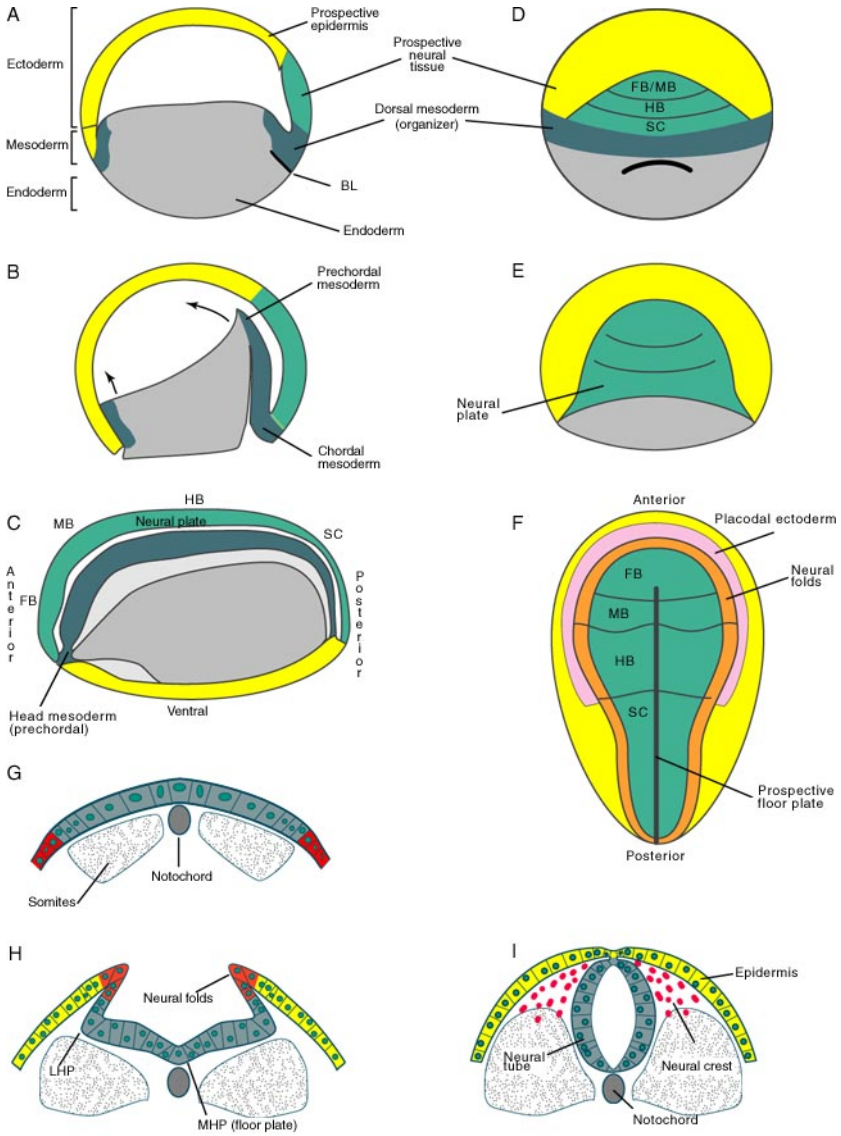
Neural Induction

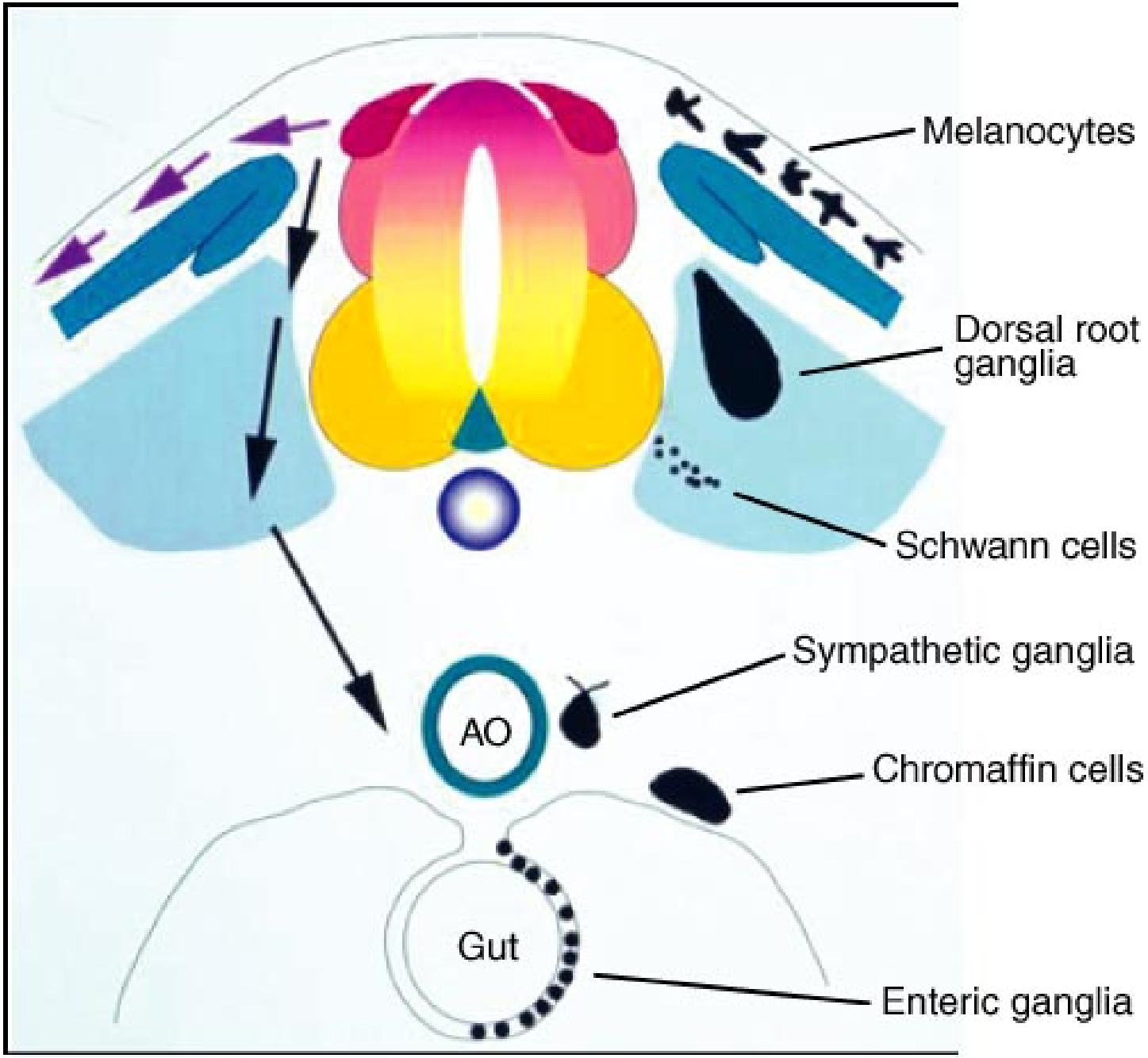




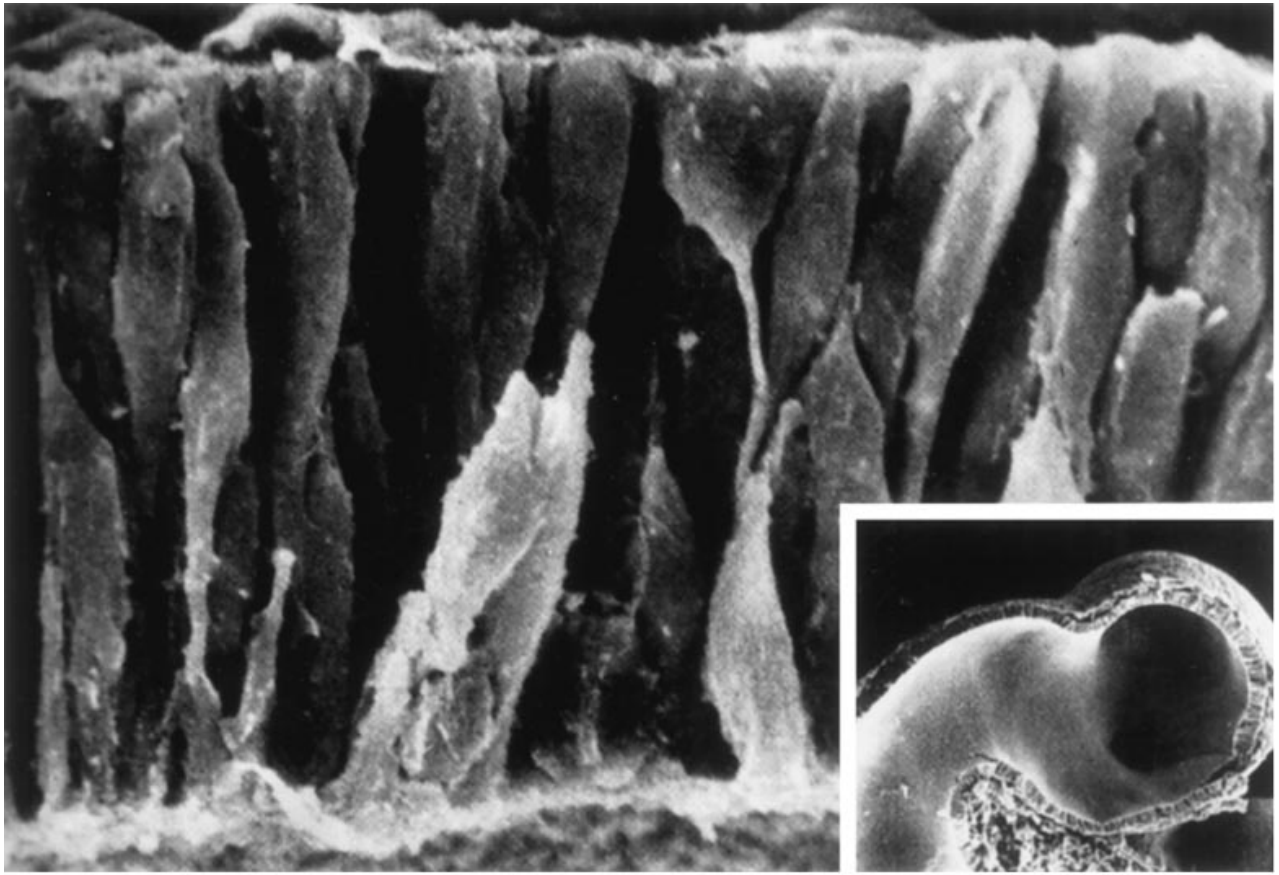


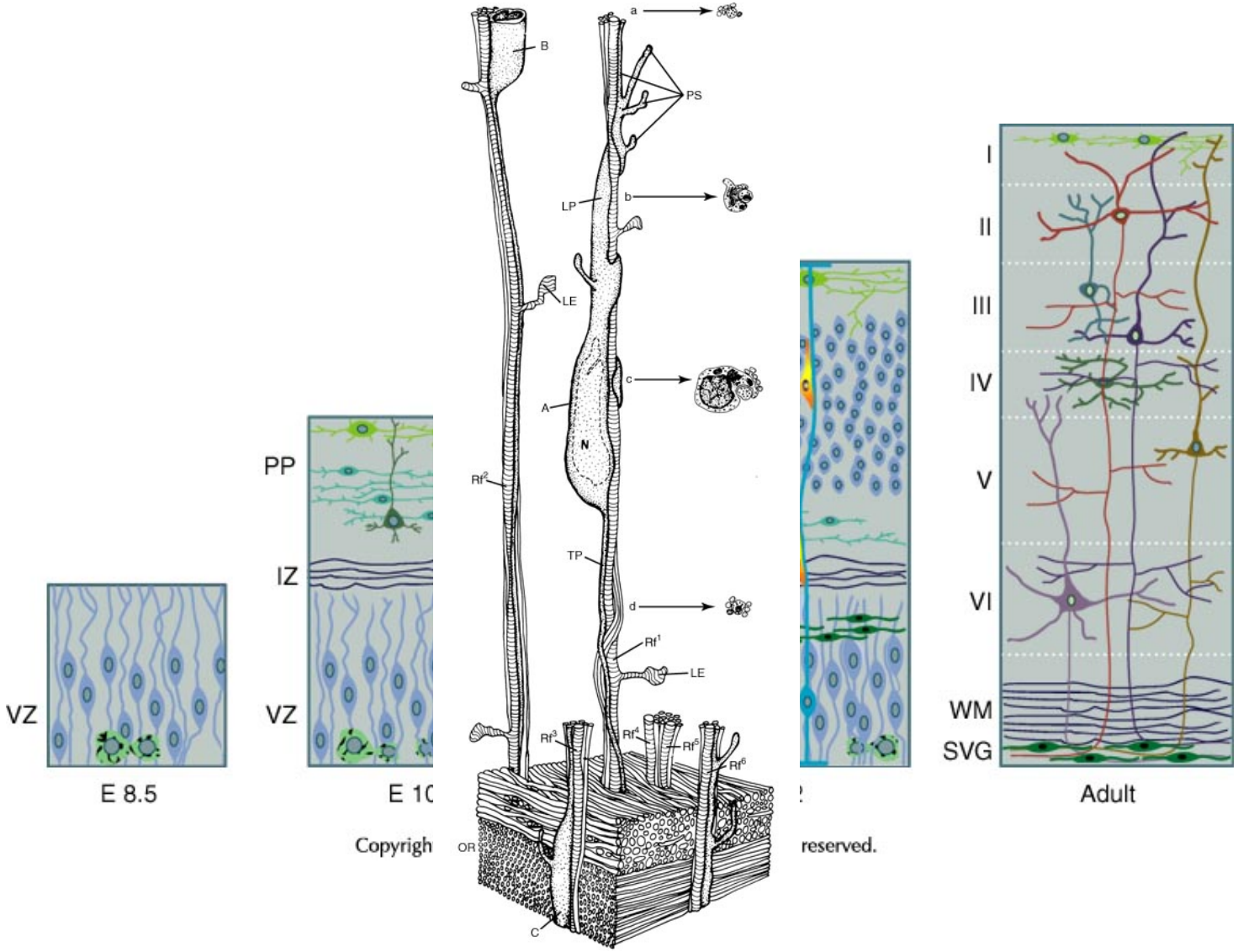
Neurogenesis

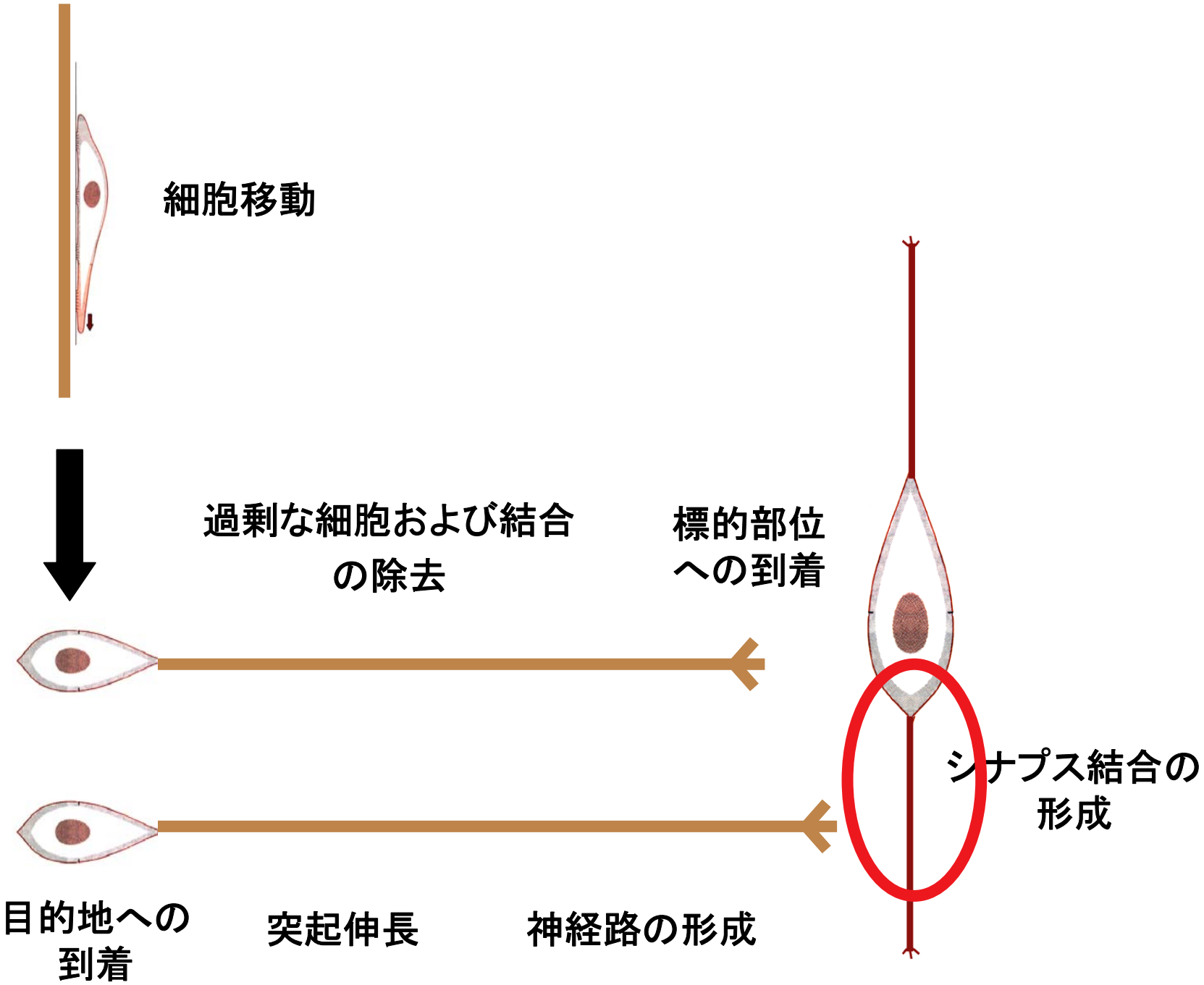



Melanocytes
Dorsal root ganglia
Schwann cells
Sympathetic ganglia
AO
Chromaffin cells
Gut
Enteric ganglia

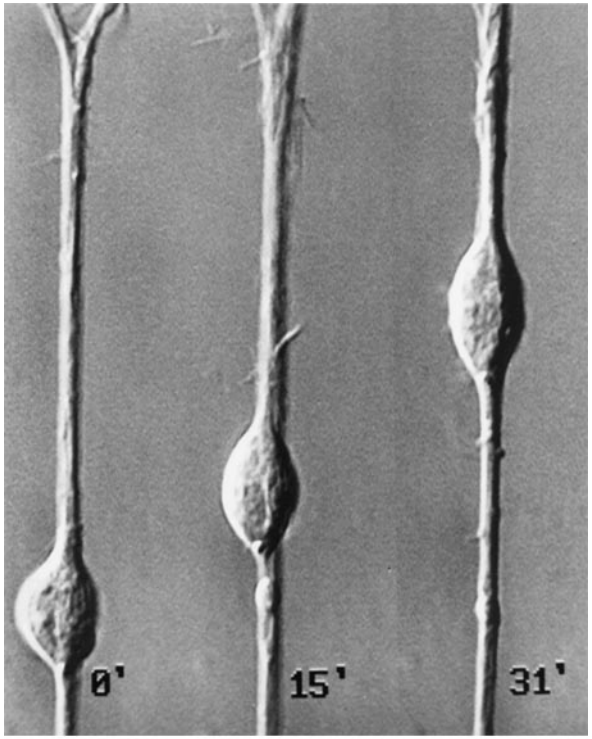
Pseudostratified columnar epithelium in the ventricular zone



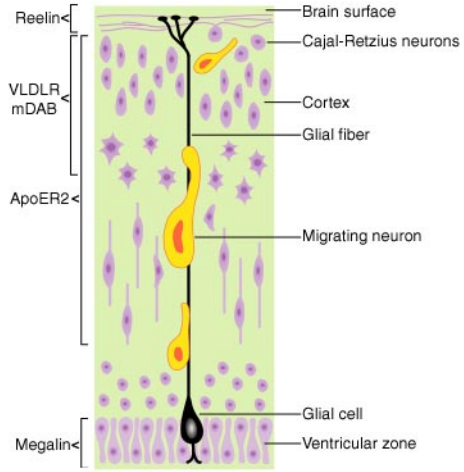



細胞移動
過剰な細胞および結合
の除去
標的部位
への到着
シナプス結合の
形成
目的地への
到着
突起伸長
神経路の形成

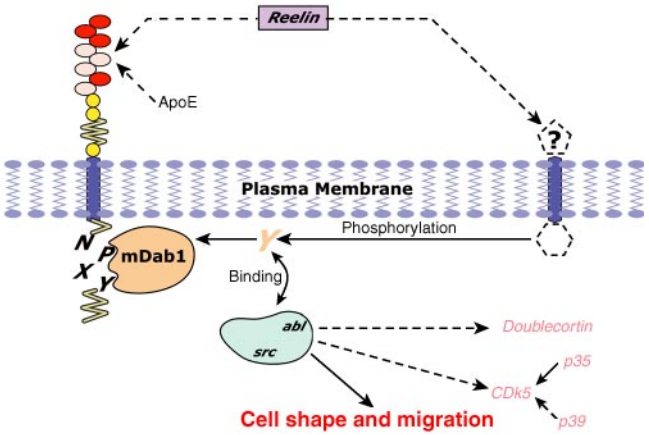
Cell migration



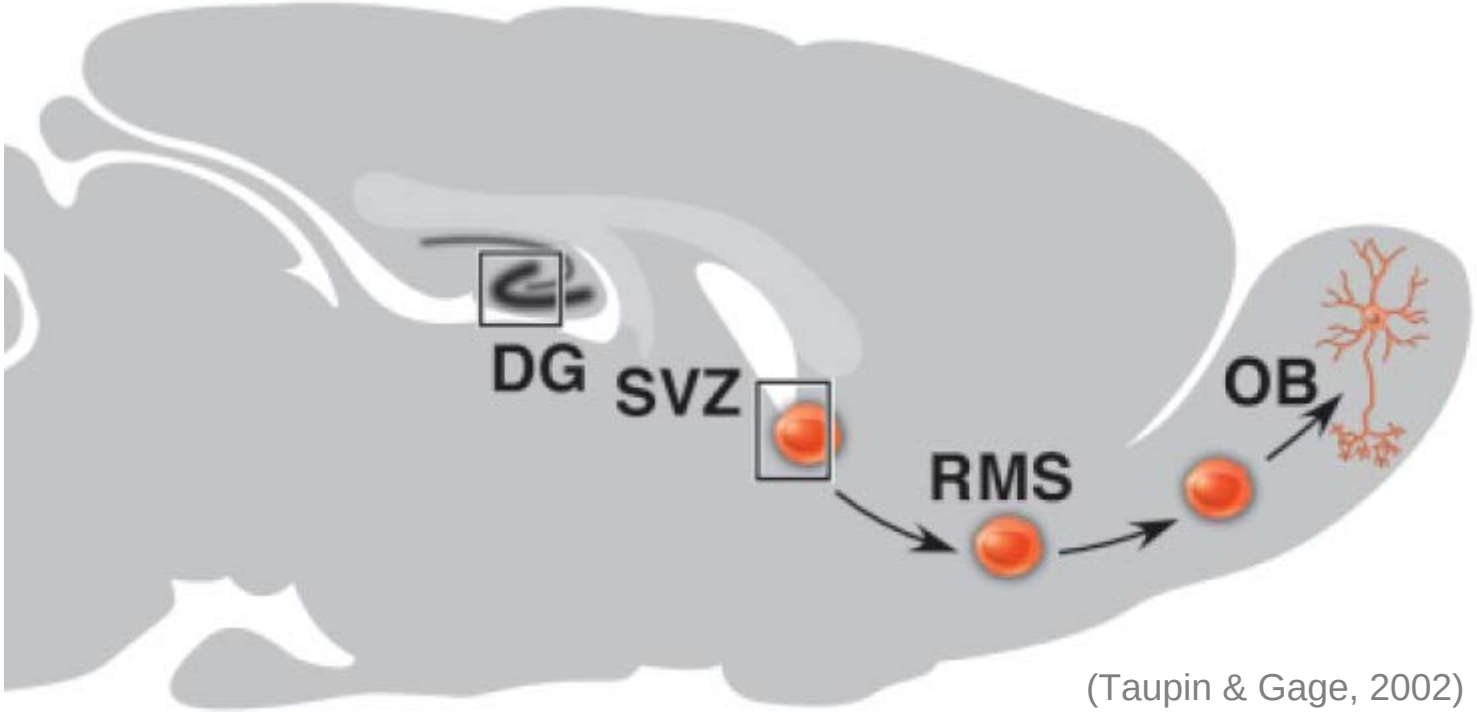
A



B



成体ラット脳における神経新生



(Taupin & Gage, 2002)

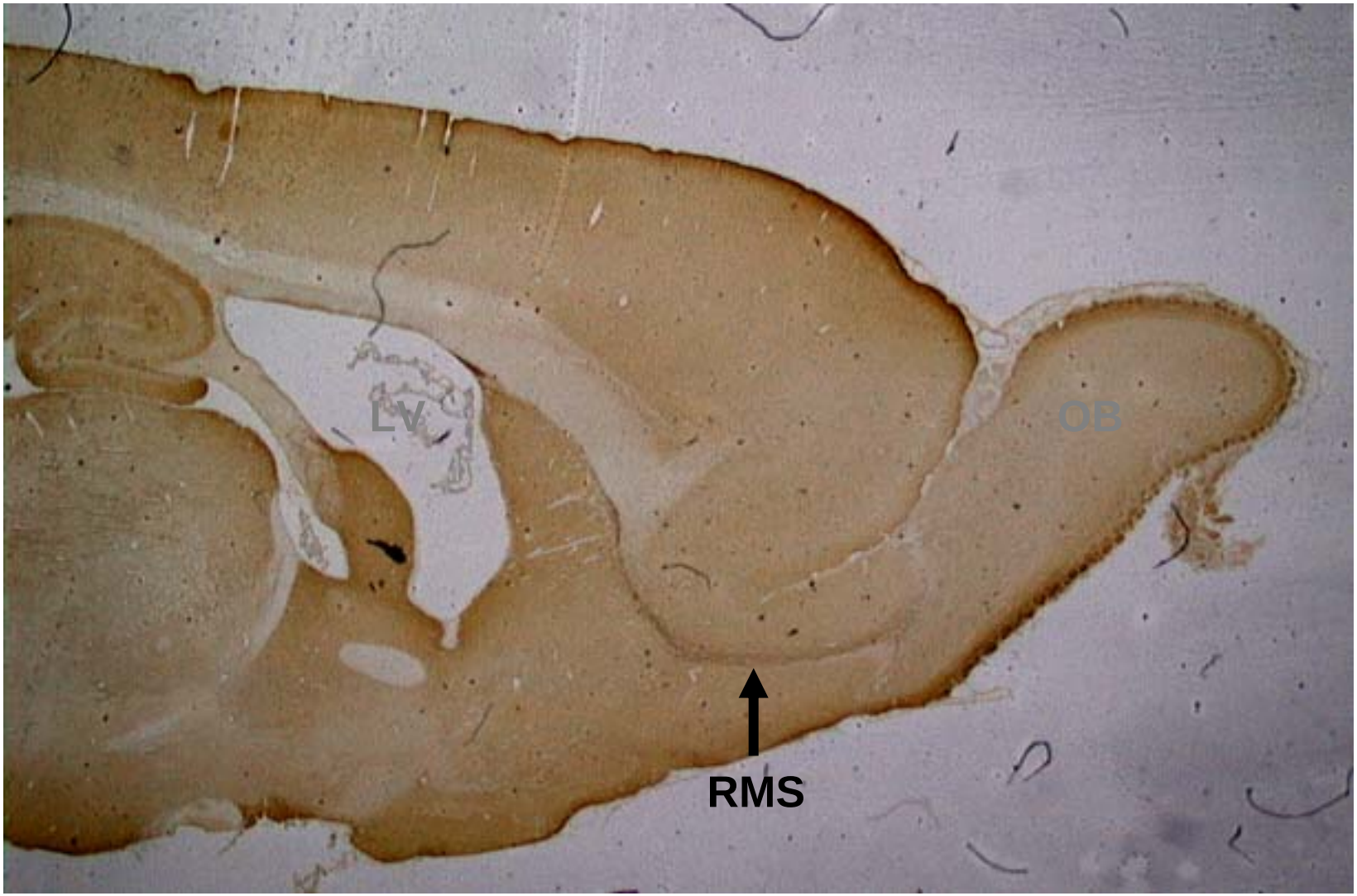
DG: Dentate Gyrus（歯状回）

SVZ: Subventricular Zone（脳室下帯）

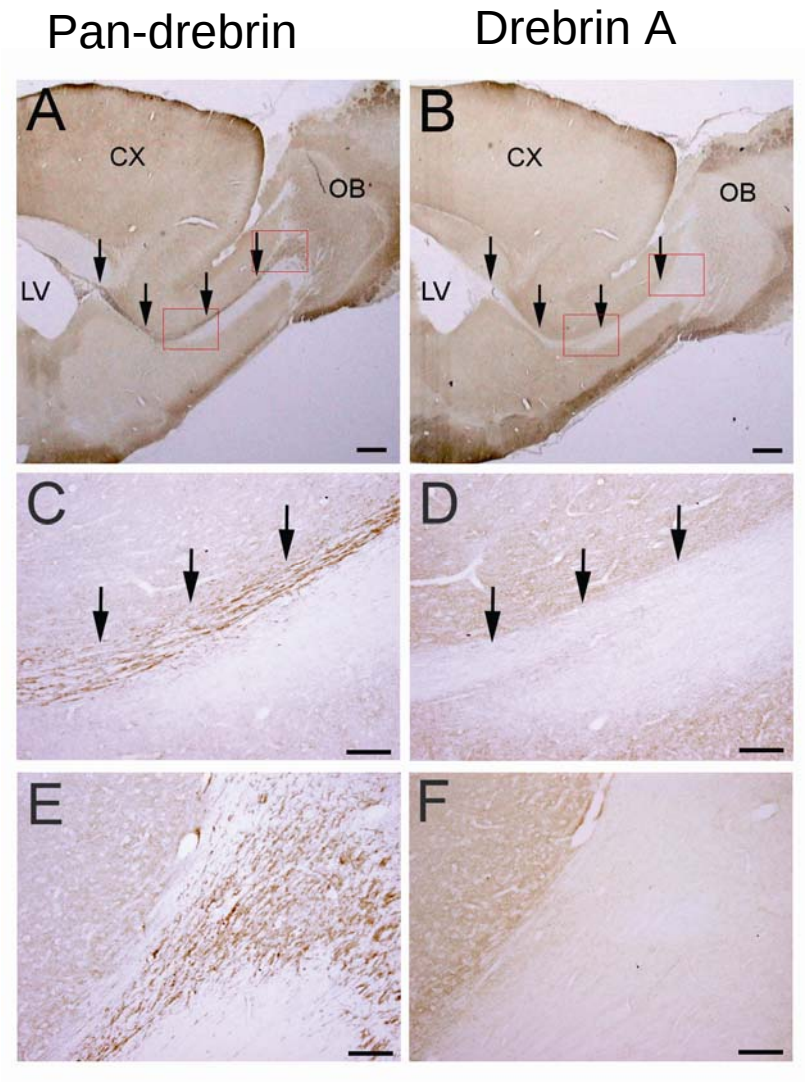
RMS: Rostral Migratory Stream

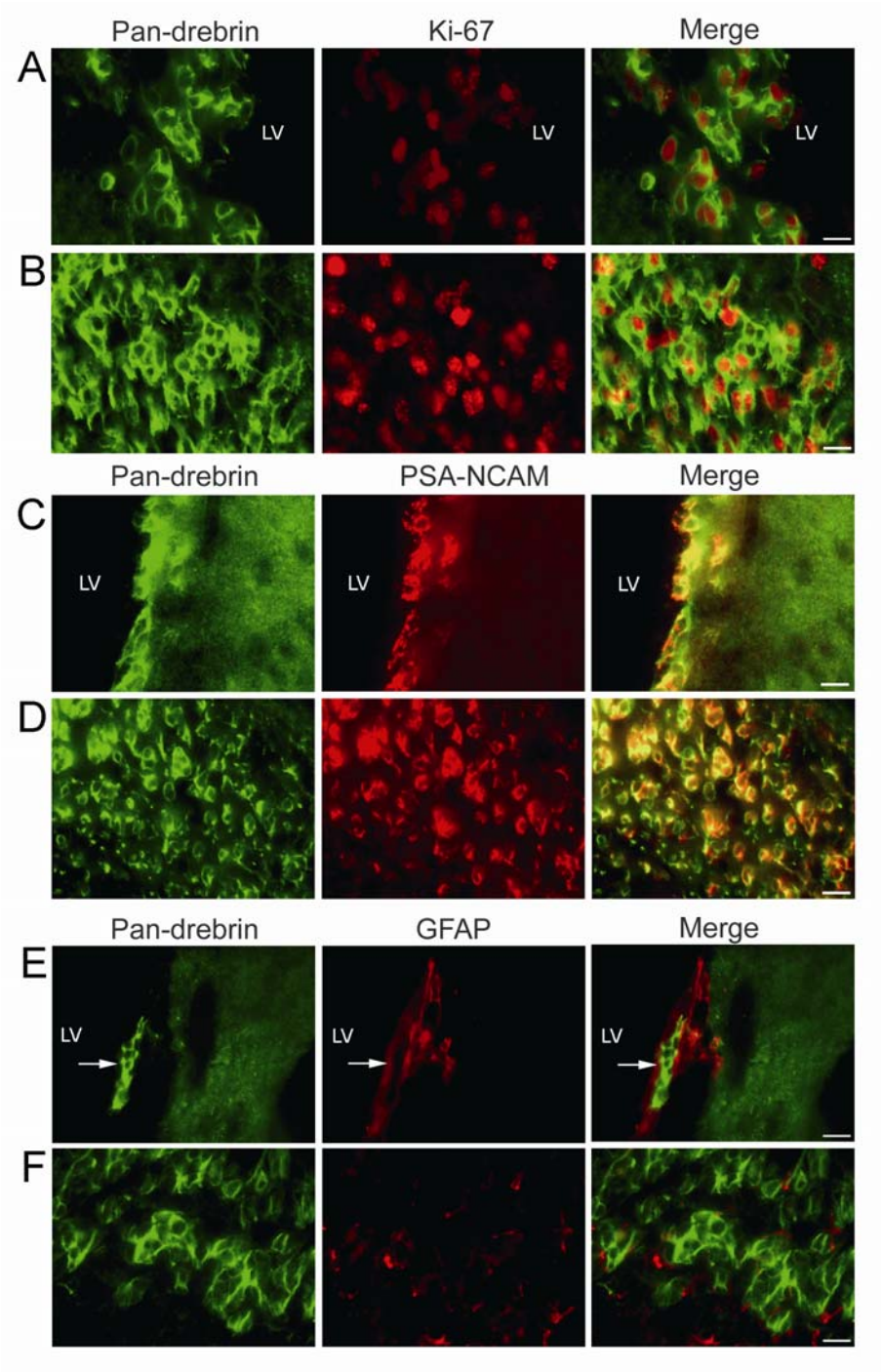
OB: Olfactory Bulb（嗅球）

Intense drebrin immunoassaying along RMS

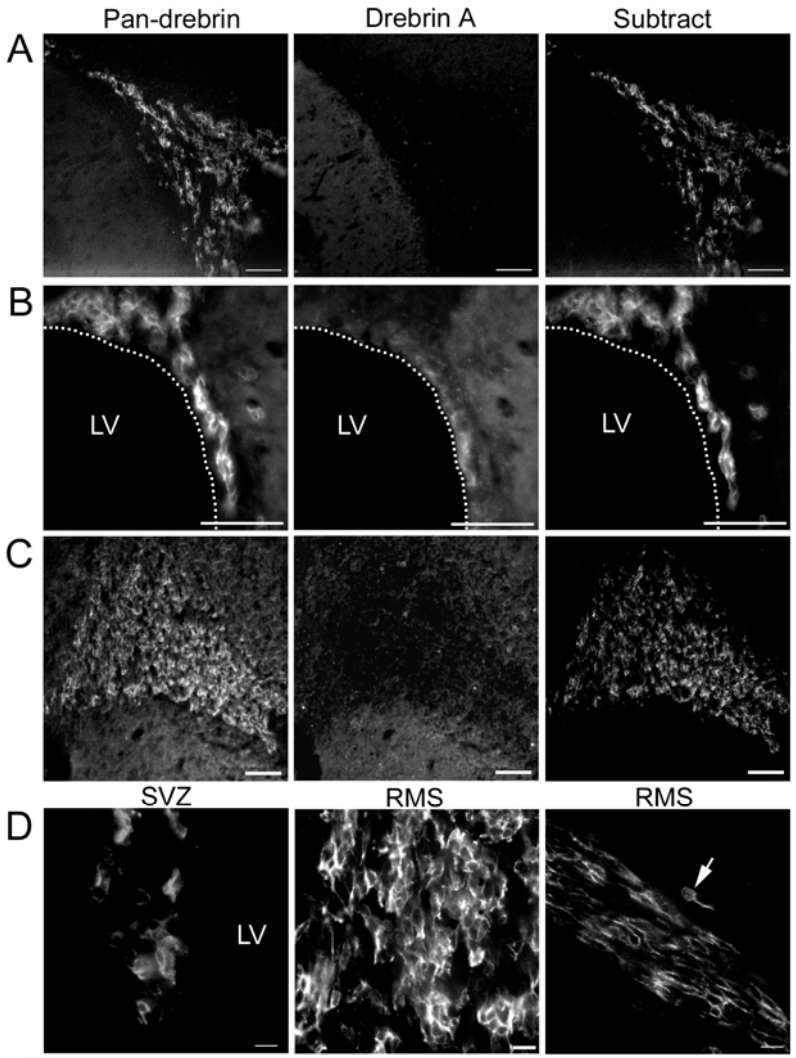


Drebrin E isoform is expressed in RMS

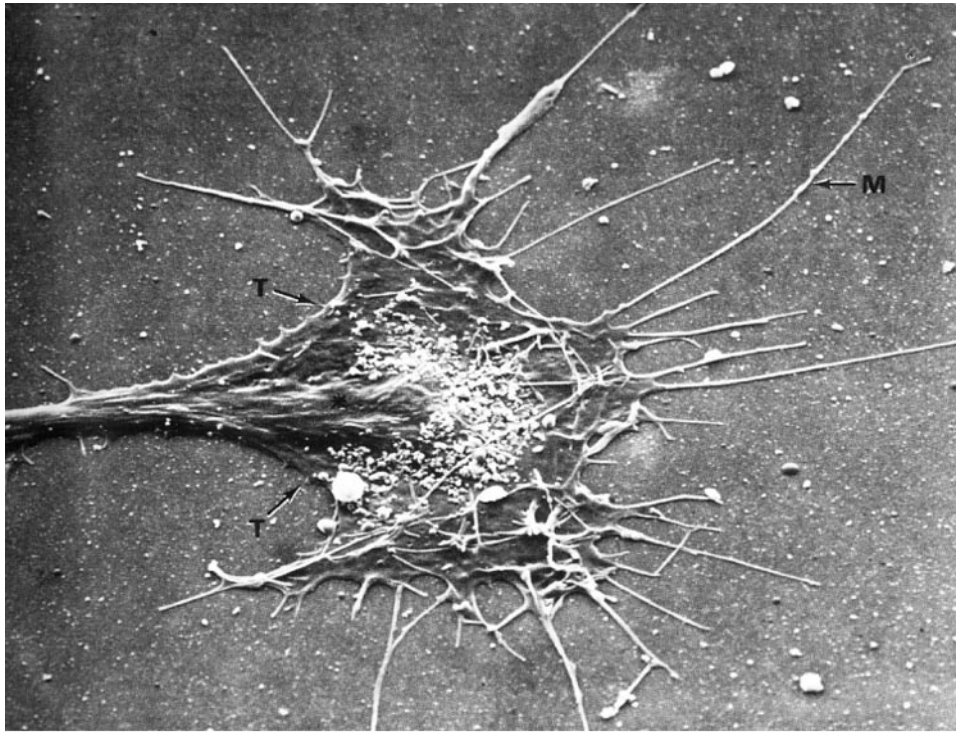



Pan-drebrin
Ki-67
Merge
A
LV
LV
LV
B
Pan-drebrin
PSA-NCAM
Merge
C
LV
LV
LV
D
Pan-drebrin
GFAP
Merge
E
LV
LV
LV
F

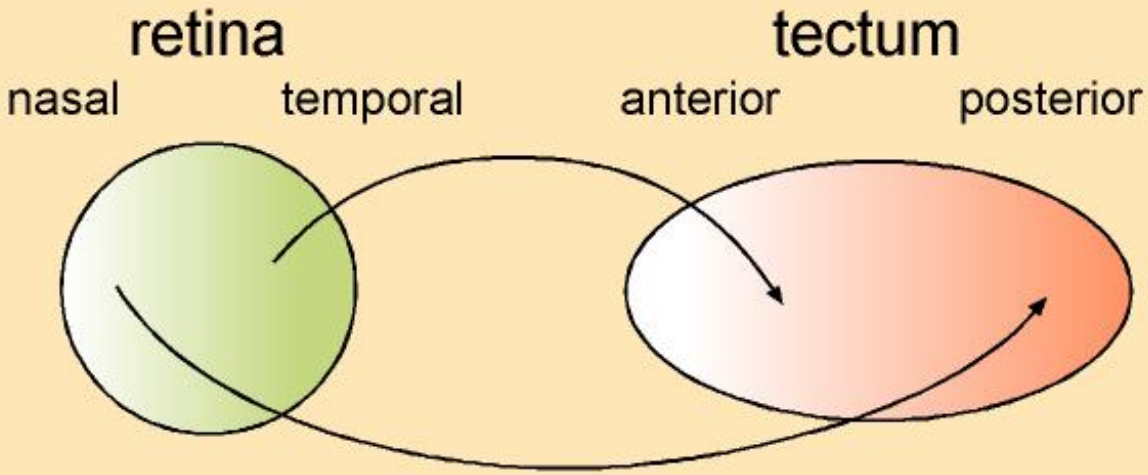
Migrating neurons only express drebrin E but not drebrin A.

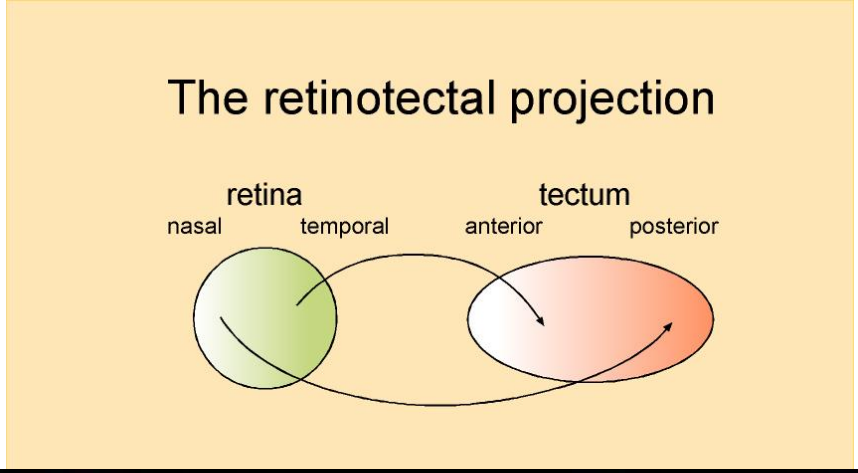


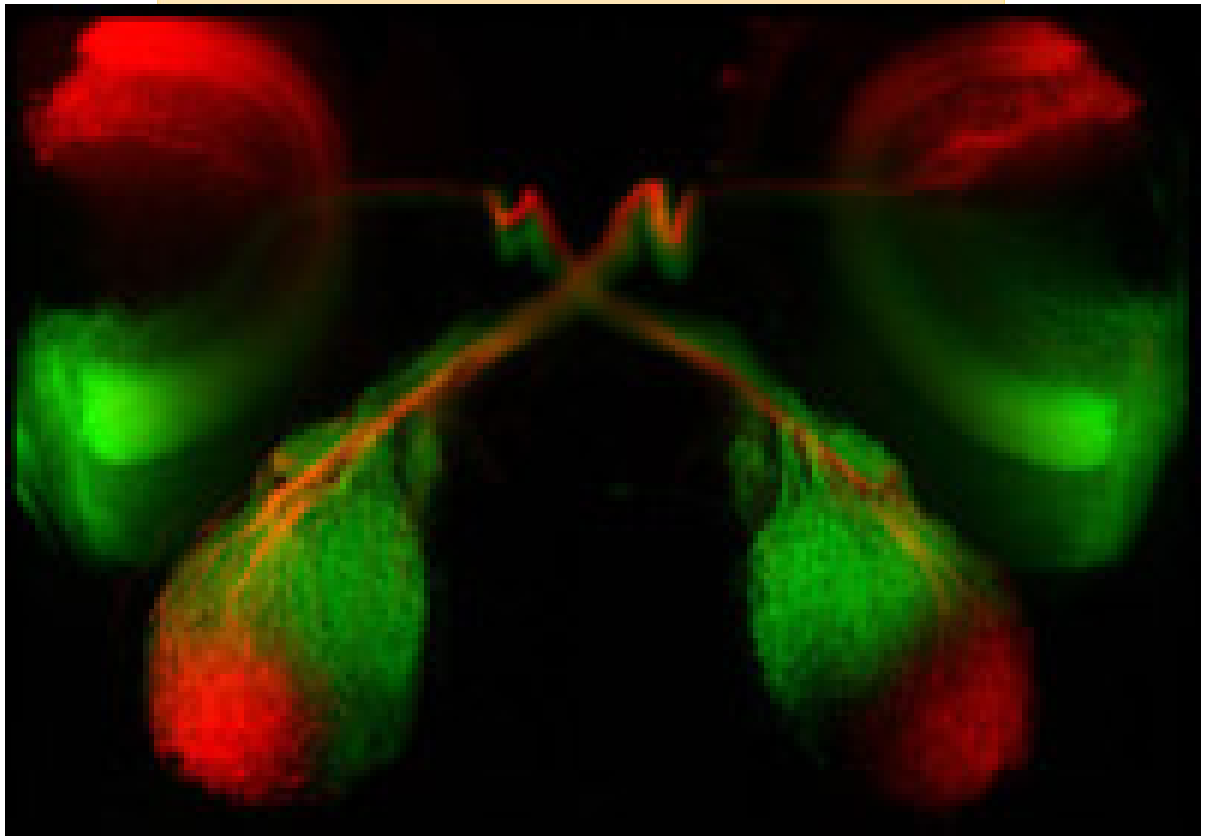
Growth cone and Path finding



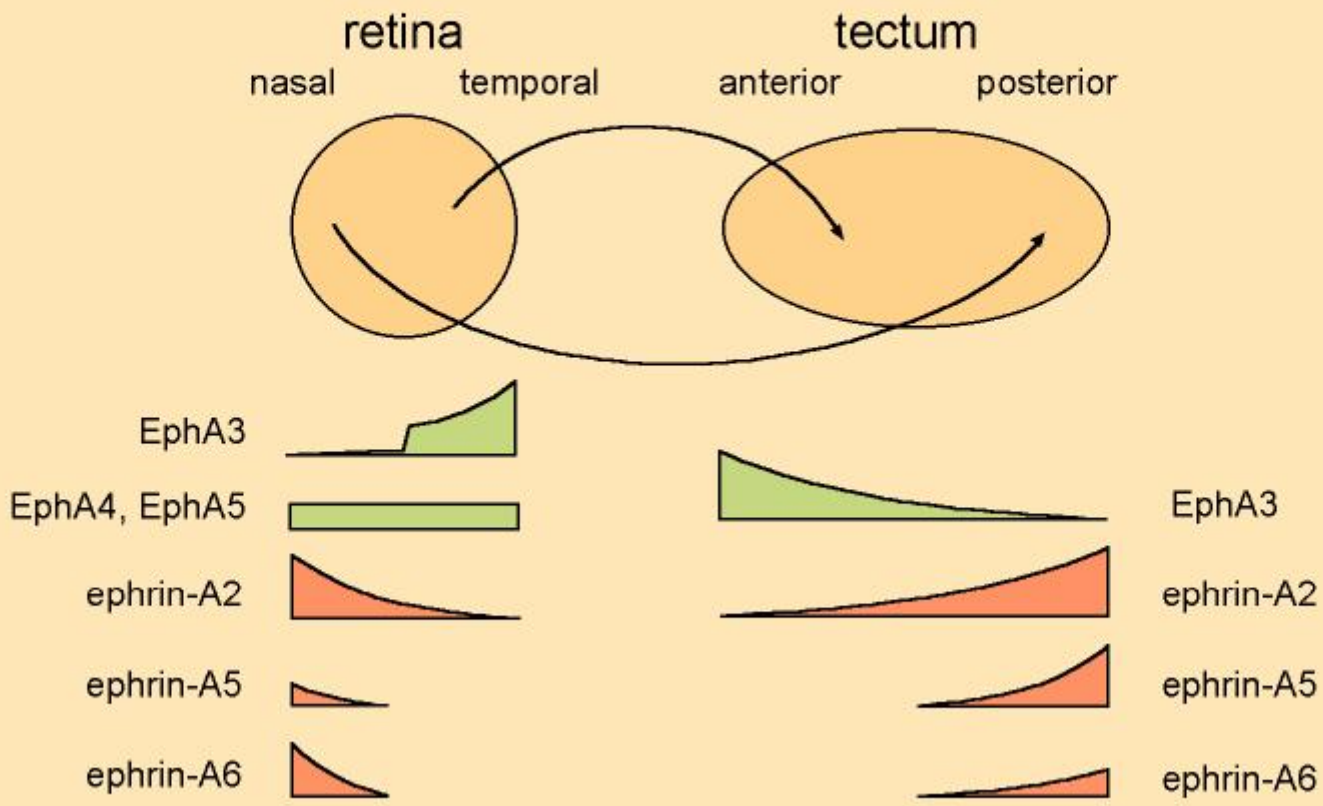
The retinotectal projection




The retinotectal projection
retina
nasal
temporal
tectum
anterior
posterior



Expression patterns of the Eph family in the retinotectal projection



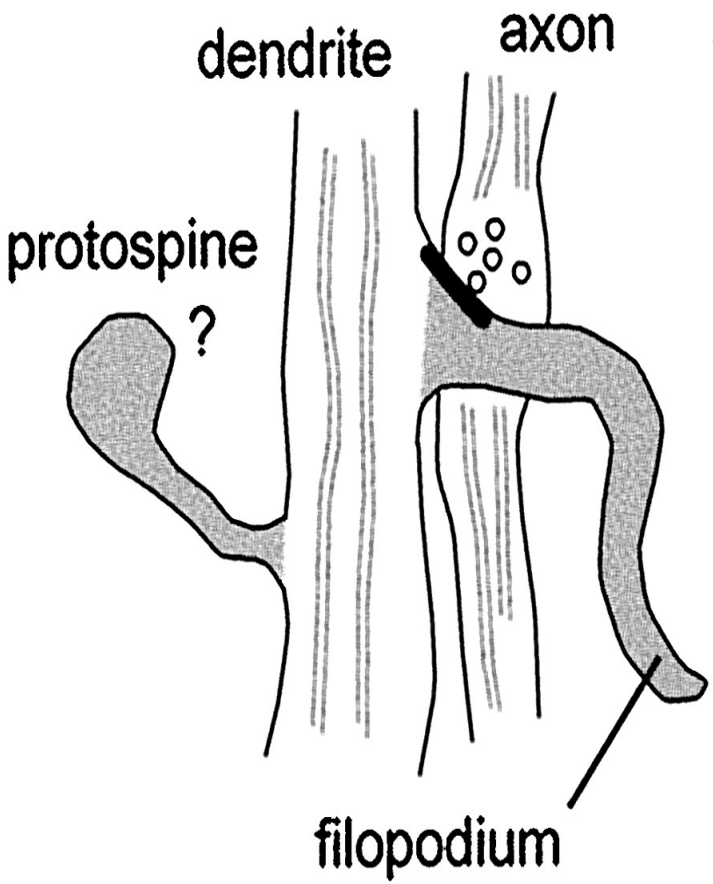
in vivo Timelapse Imaging of Retinotectal Axon Pathfinding in *Xenopus laevis*

Sonia Witte
Harris/Holt Labs
Department of Anatomy
Cambridge University

Synapse formation

Spine formation

FilopodiaからSpineへ

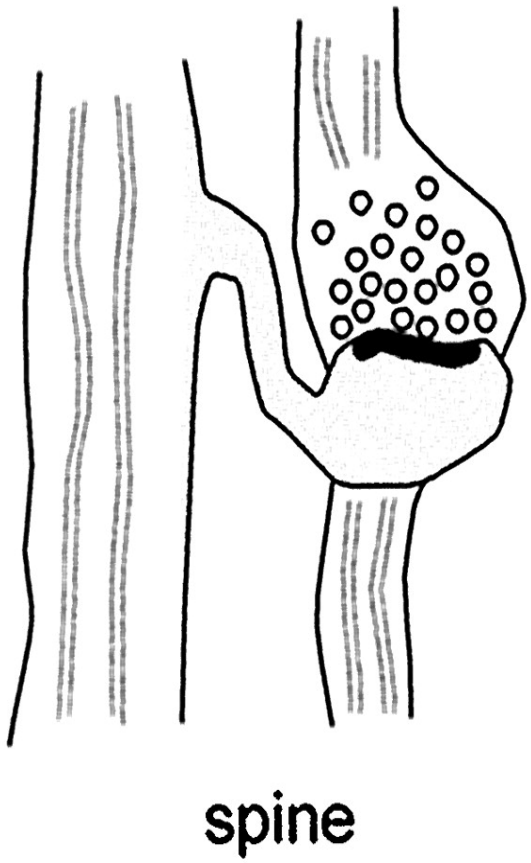


Filopodiaは光顕レベルでは
スパインとの区別は難しい.

典型的にはスパインよりも
長くて細胞質が暗い.

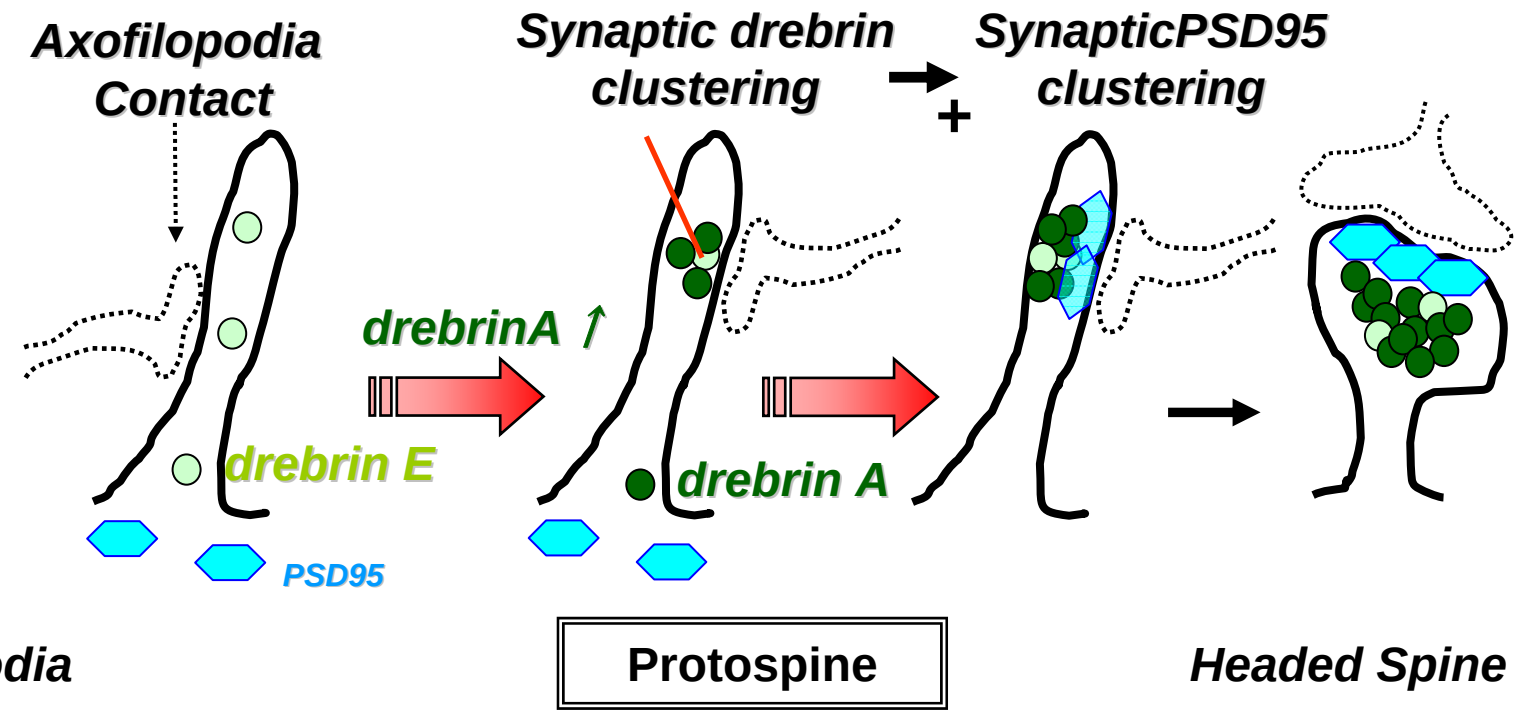
先端は団子状でなく点状.

スパインの前駆体と一般的
には考えられている.



Modified from
Fiala,JC et.al.
J.Neurosci. 1998

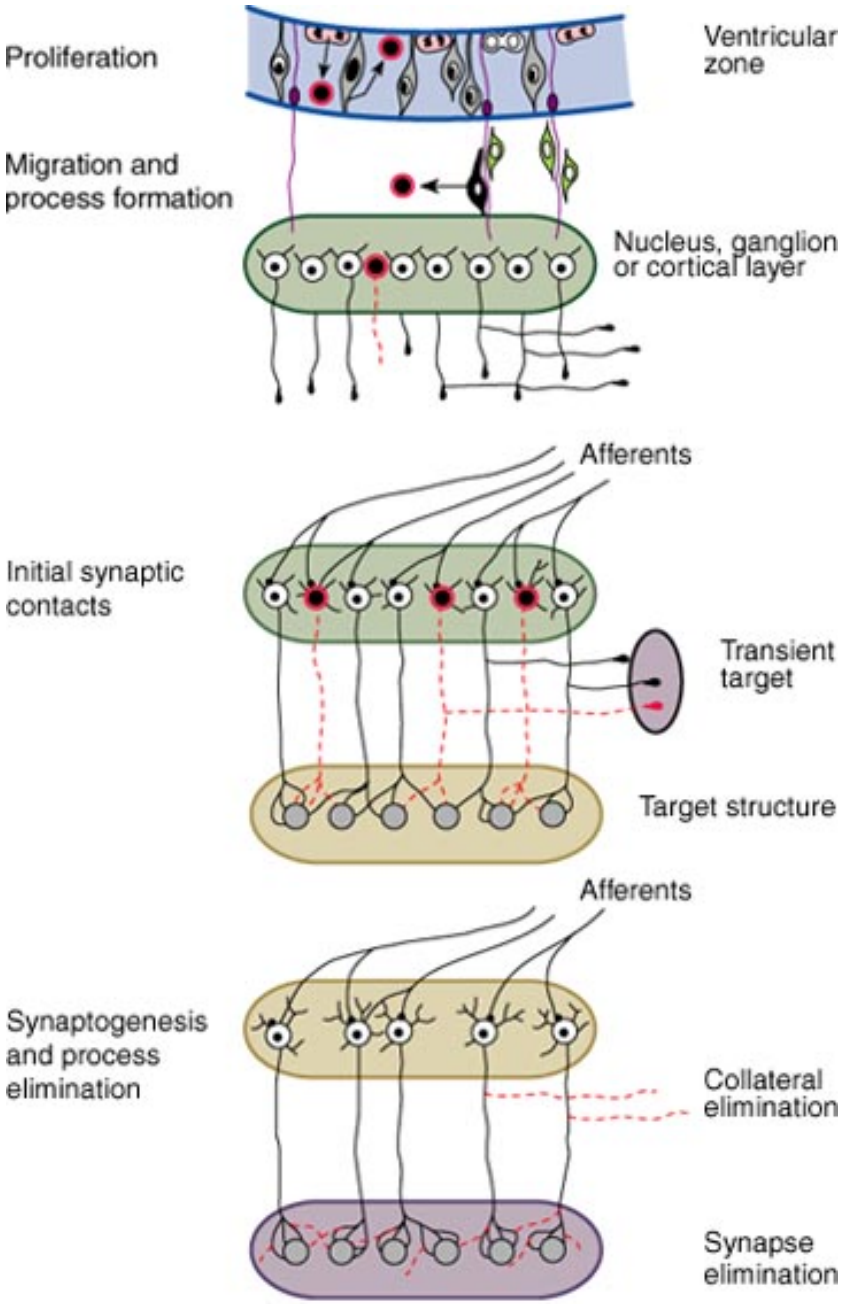
FilopodiaからSpineへ



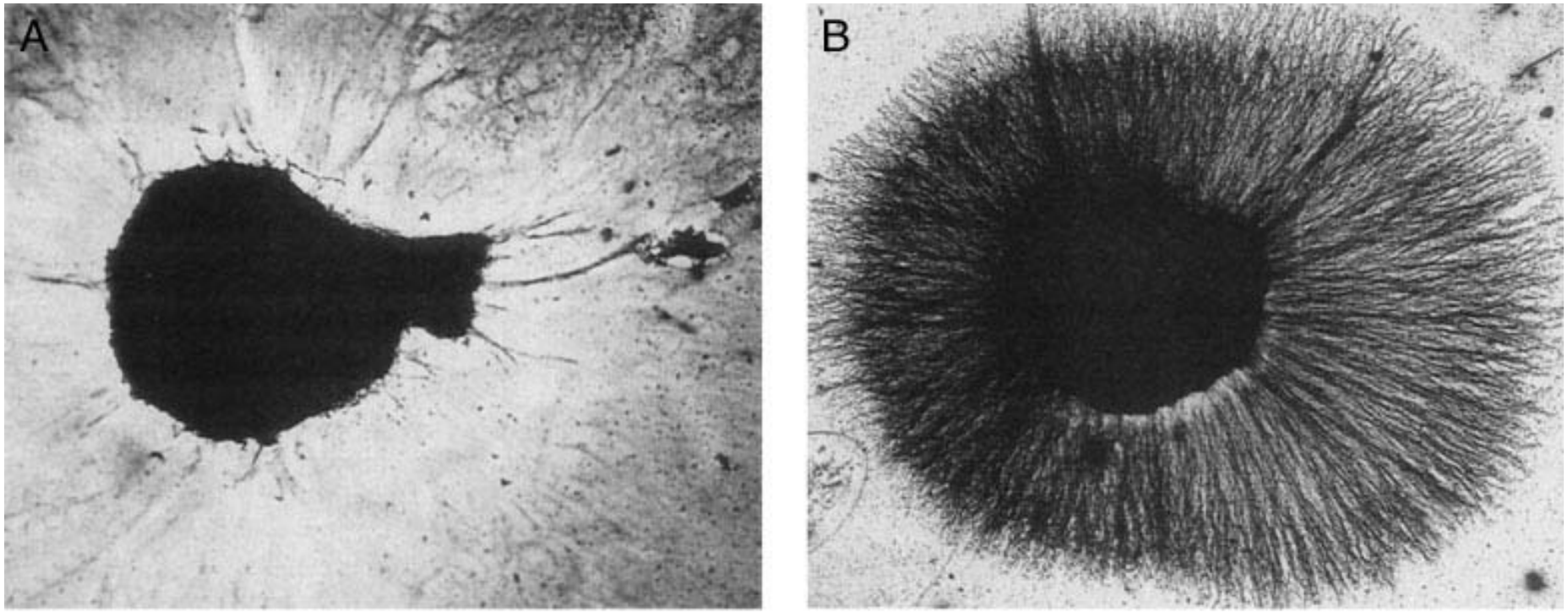
Takahashi et. al. J. Neurosci. 2003

Elimination

Synapse elimination, programmed cell death and neurotrophic factor



Discovery of NGF



その他の神経栄養因子

- BDNF (Brain derived neurotrophic factor)
- NT3 (Neurotrophic factor 3)
- NT4/5 (Neurotrophic factor 4/5)
- GDNFファミリー

神経栄養因子受容体

- TRK A　NGF
- TRK B　BDNF, NT-4/5
- TRK C　NT3
- P75 (low affinity NGF receptor)