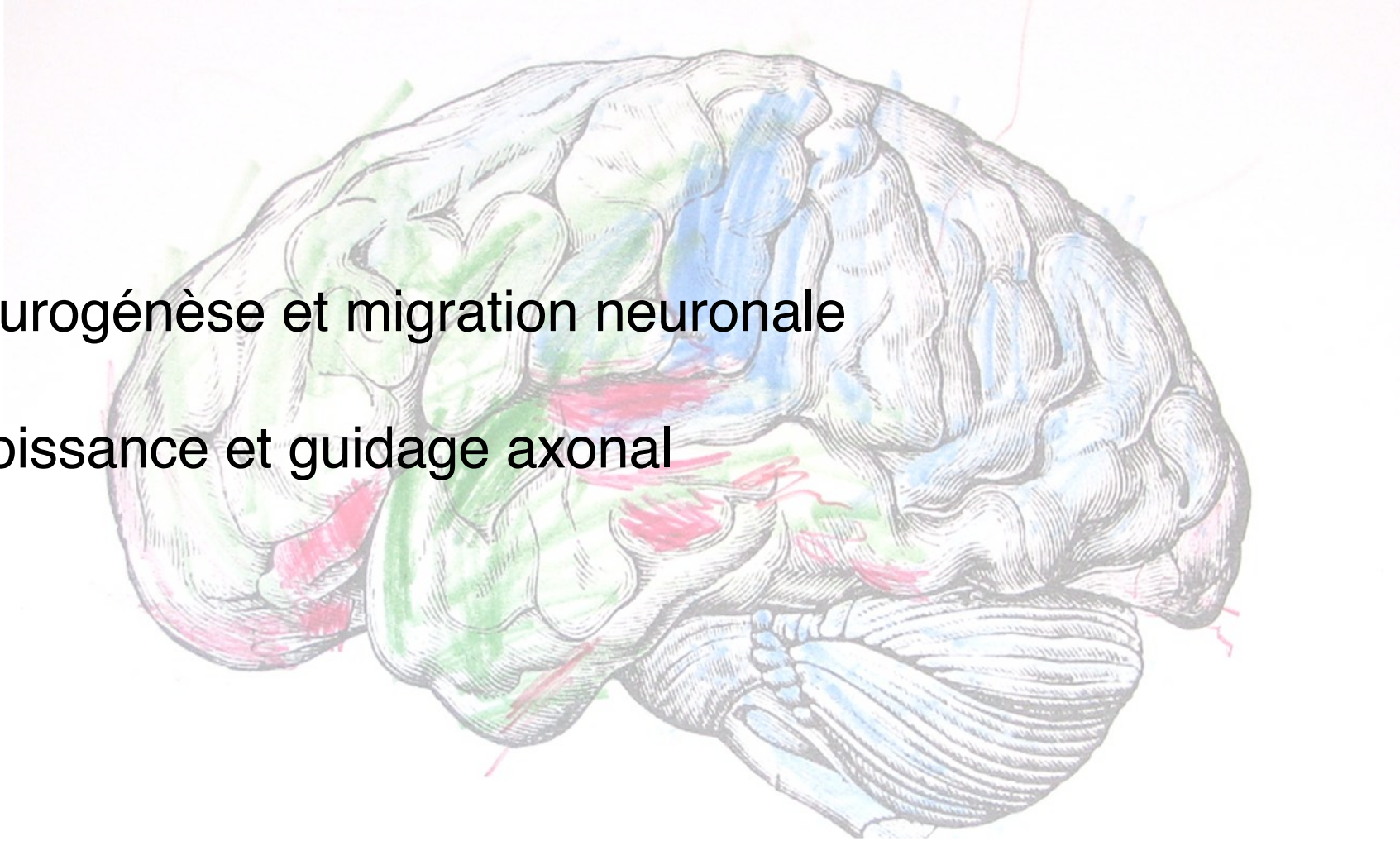
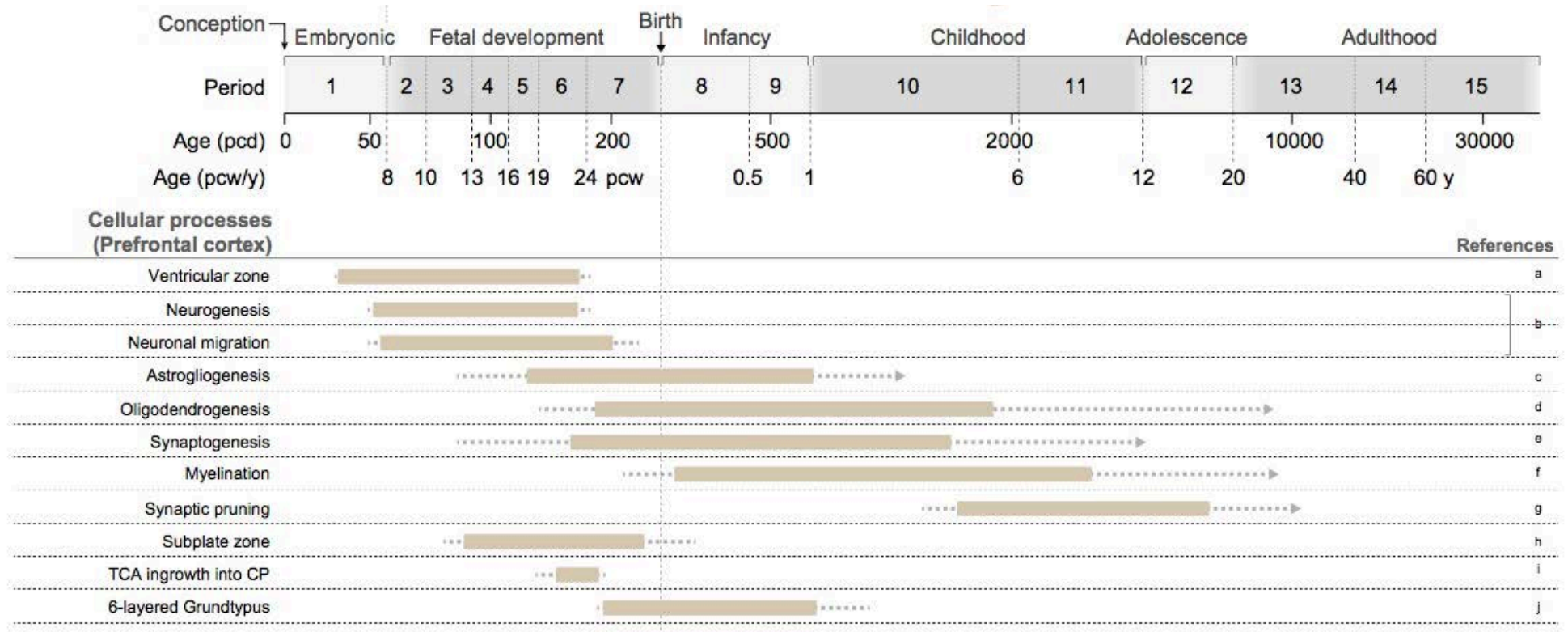


Développement du système nerveux II: aspects cellulaires

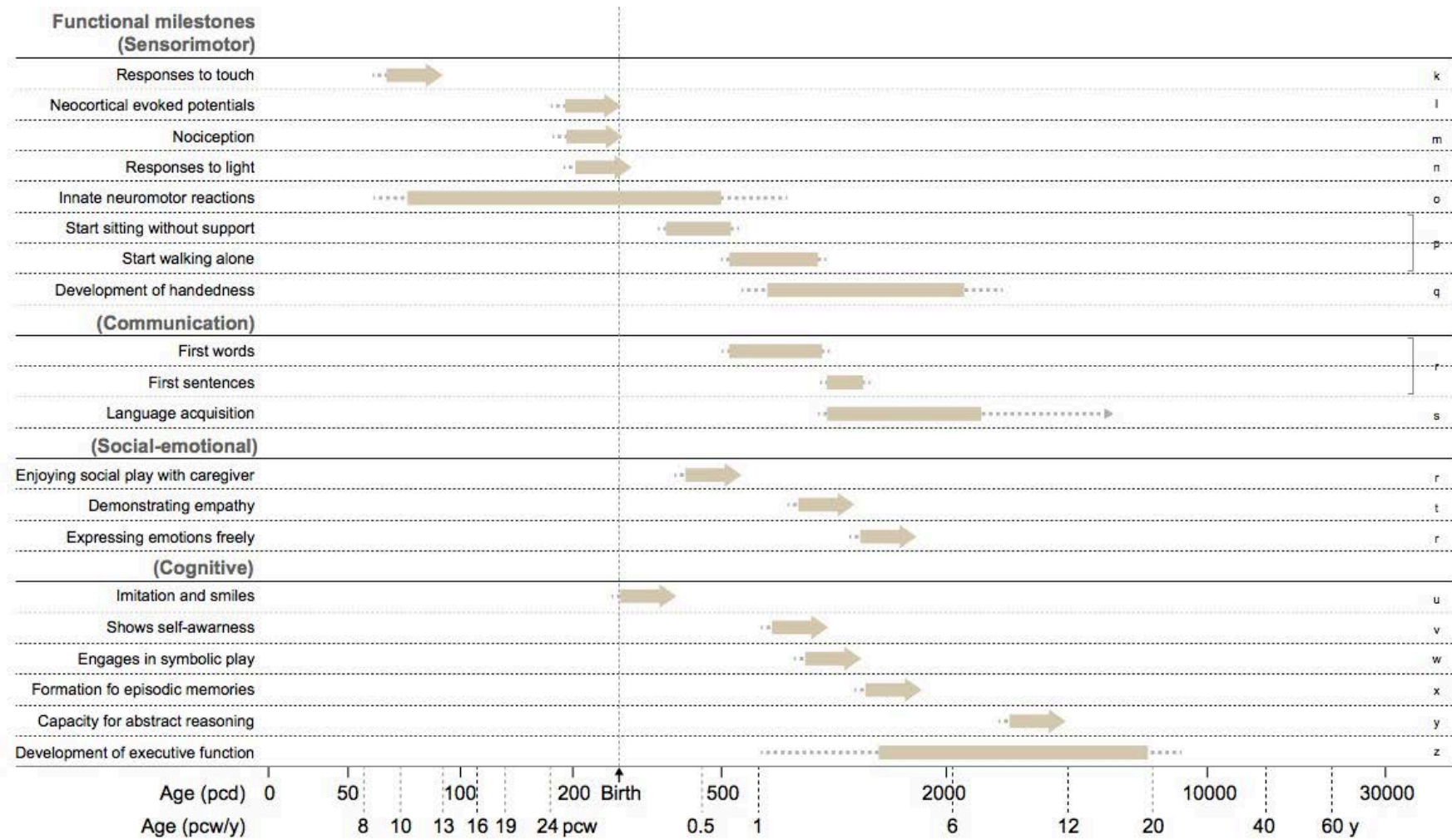
1. Neurogénèse et migration neuronale
2. Croissance et guidage axonal



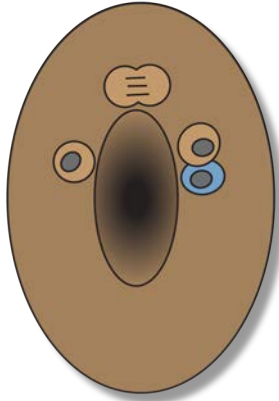
Les étapes du développement cérébral



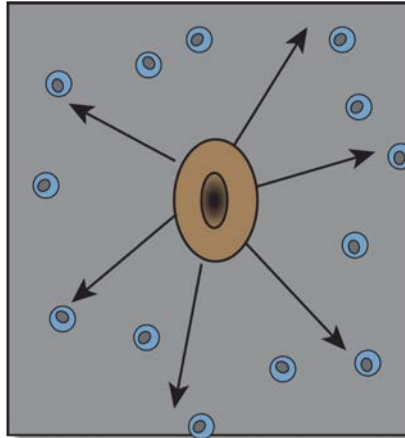
Le développement est un processus continu



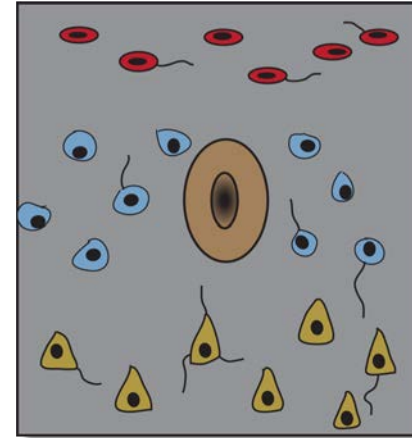
Processus cellulaires impliqués dans formation SNC



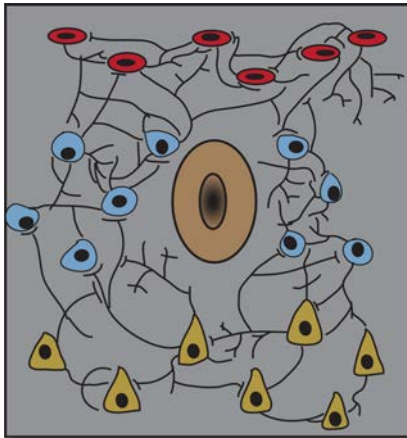
Prolifération des progéniteurs



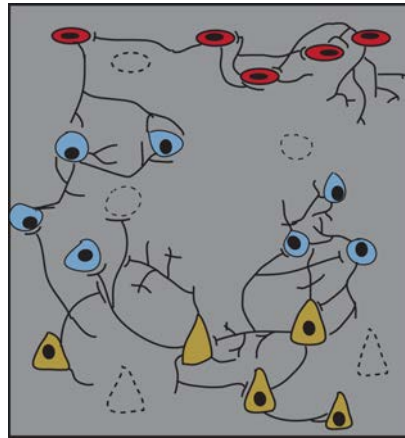
Migration



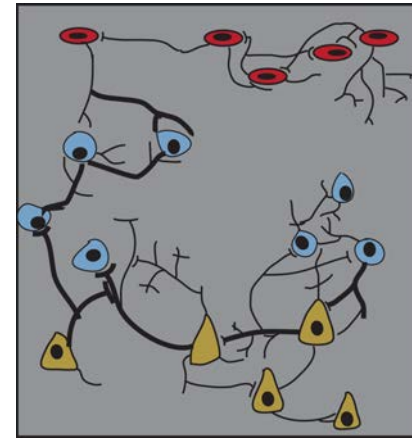
Différentiation

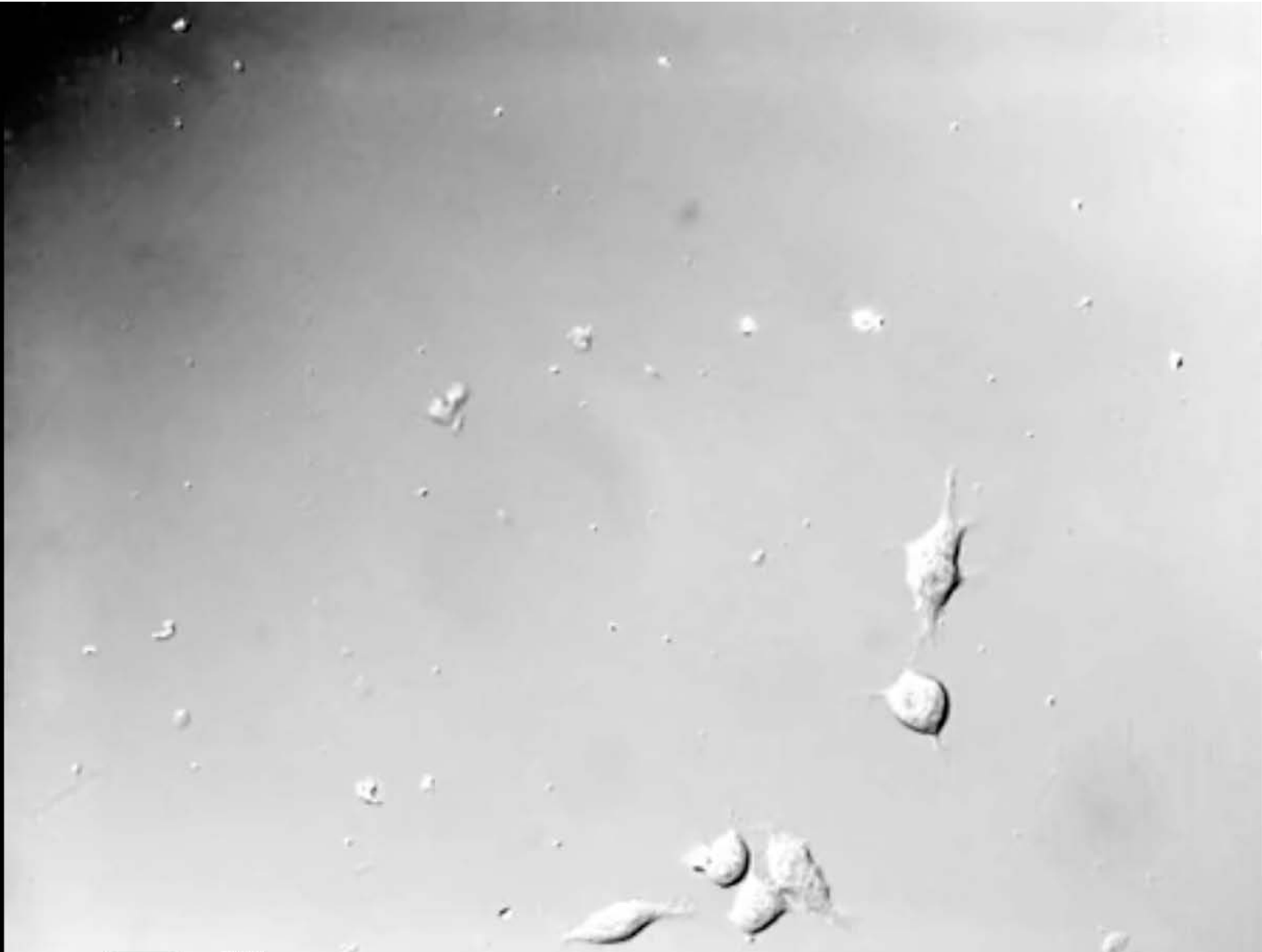


Neuritogénèse

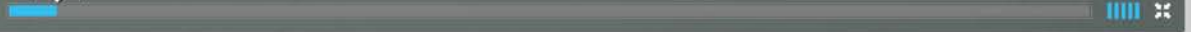


Sélection

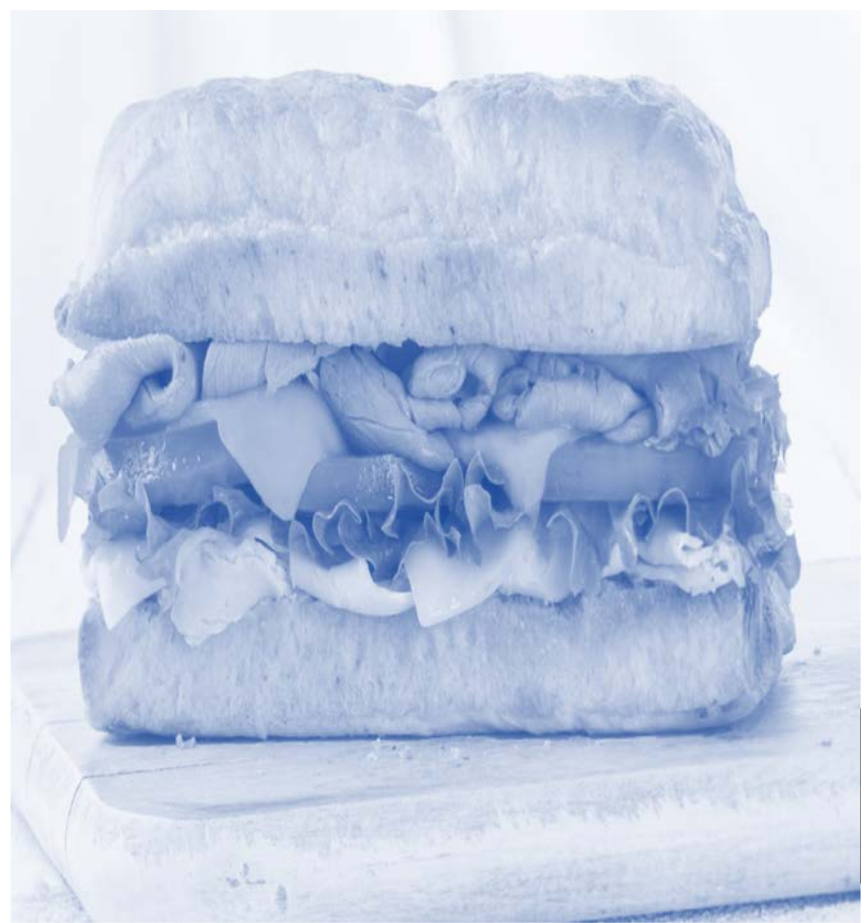
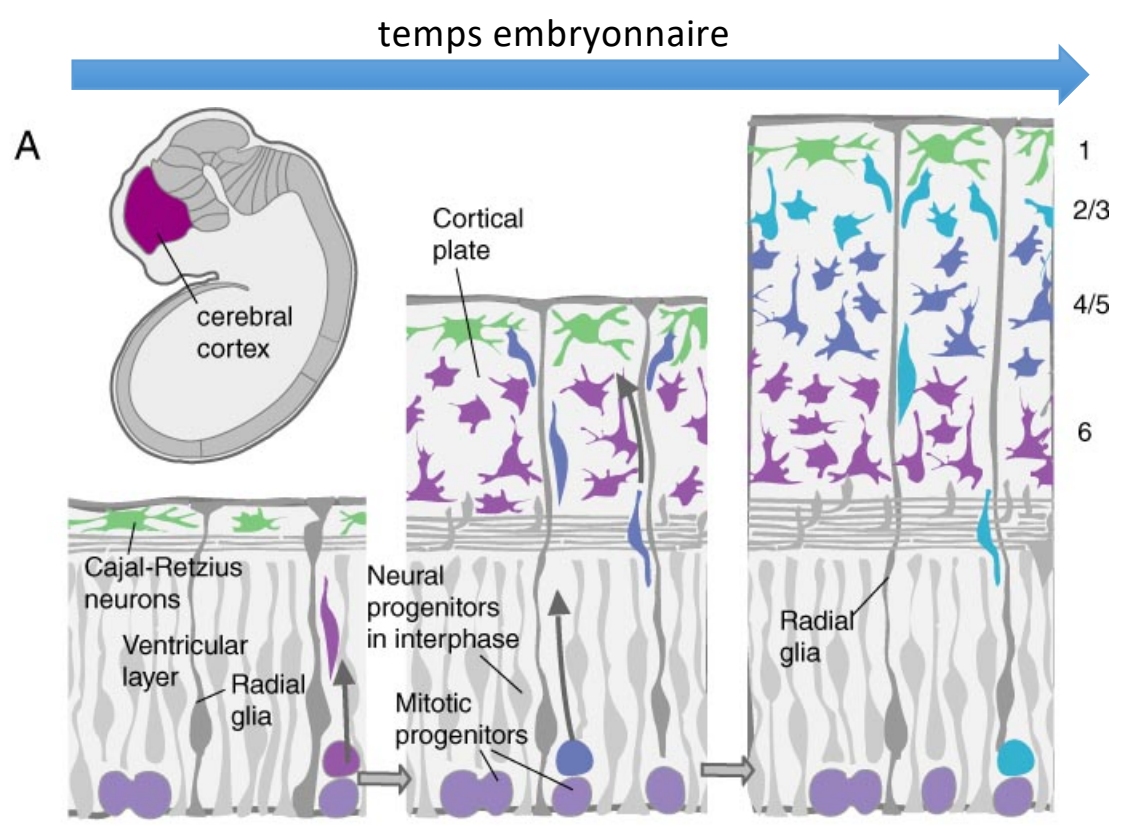




00:07

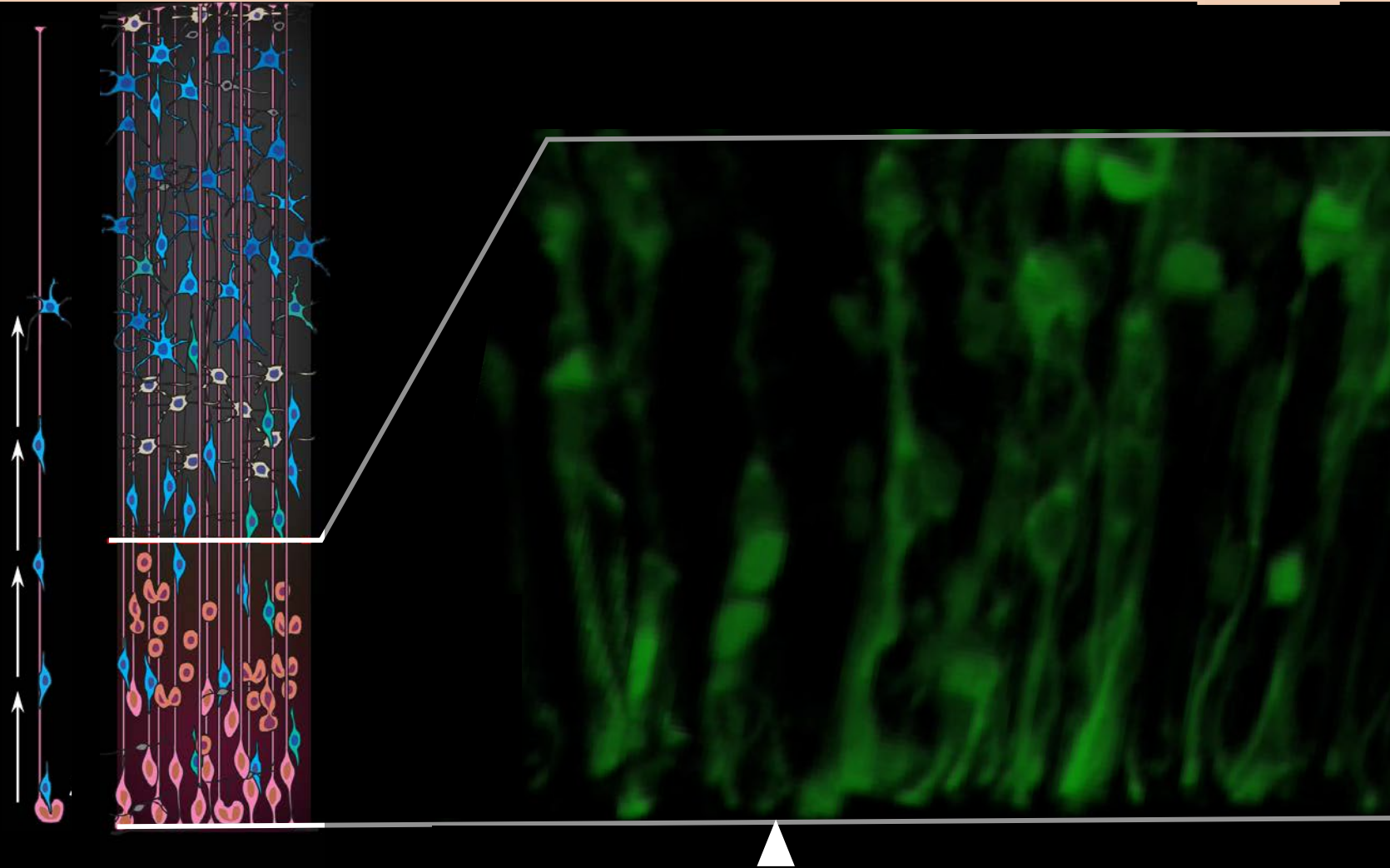
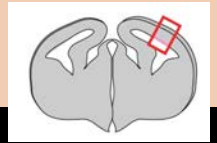


Développement du cortex cérébral: de l'intérieur vers l'extérieur



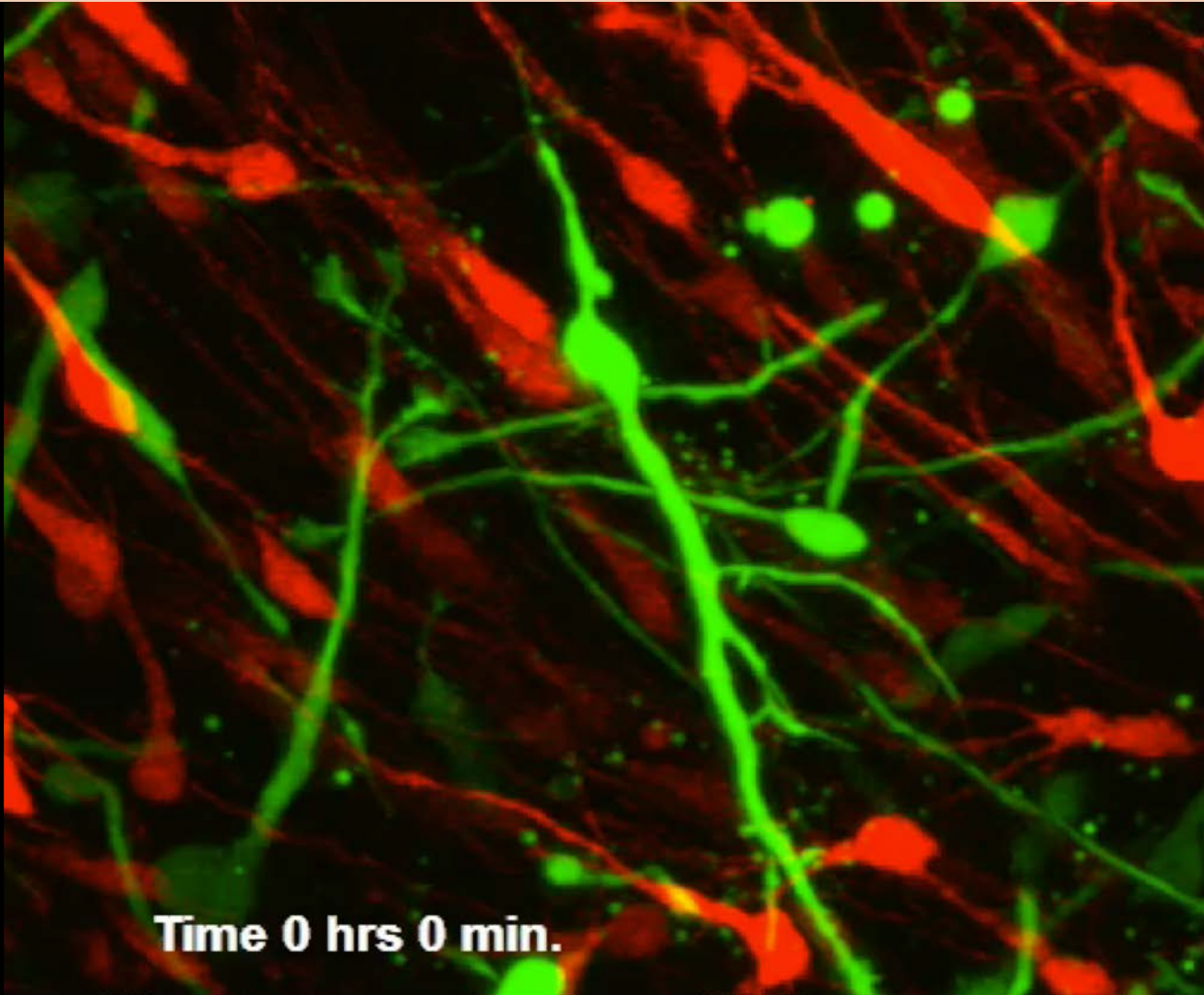
Glie radiaire: ce sont les progéniteurs. Juste un nom, ce n'est pas de la glie

Migration interkinétique des progéniteurs



Kosodo et al., EMBO J, 2011

Migration radiale des neurones excitateurs corticaux

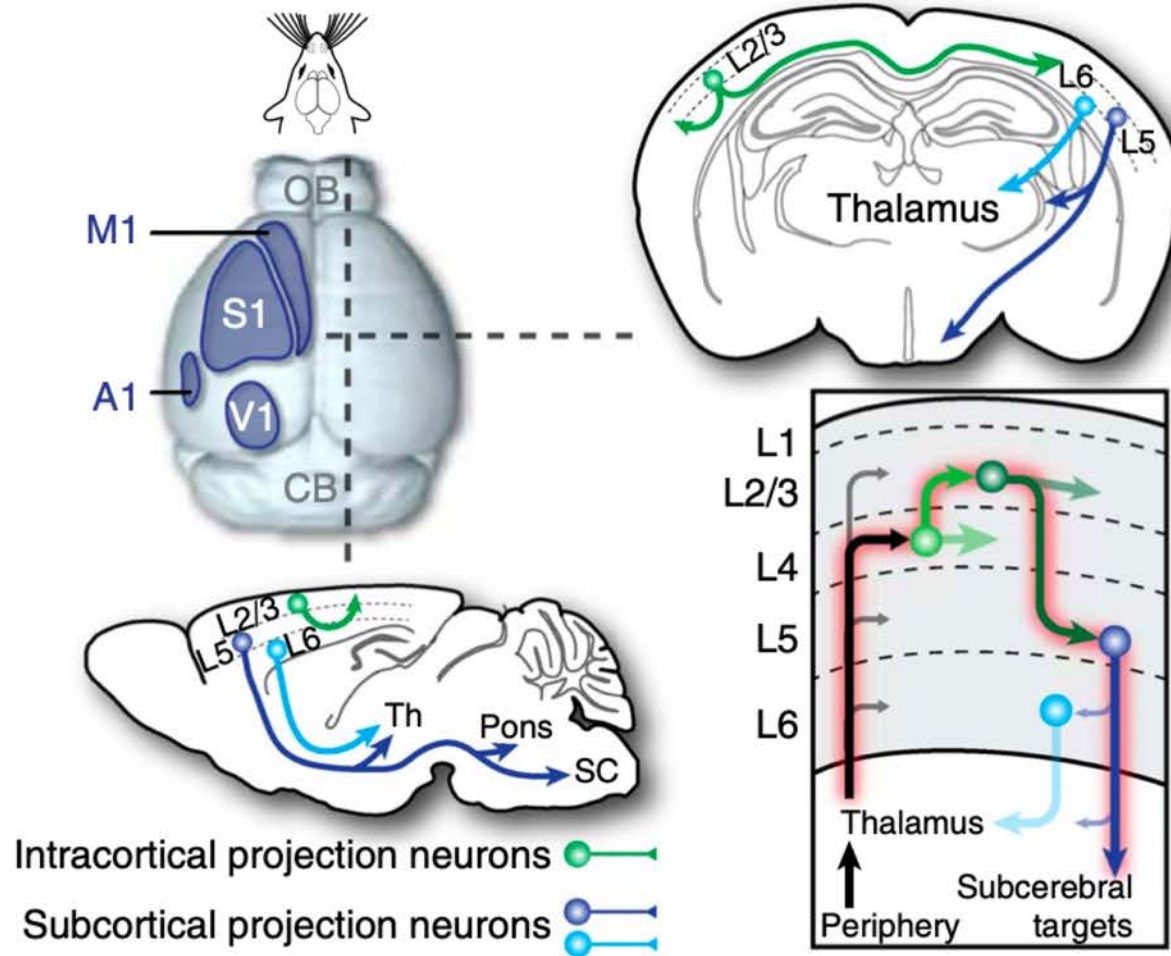


Vidéo: Prof. Alexandre Dayer, UNIGE

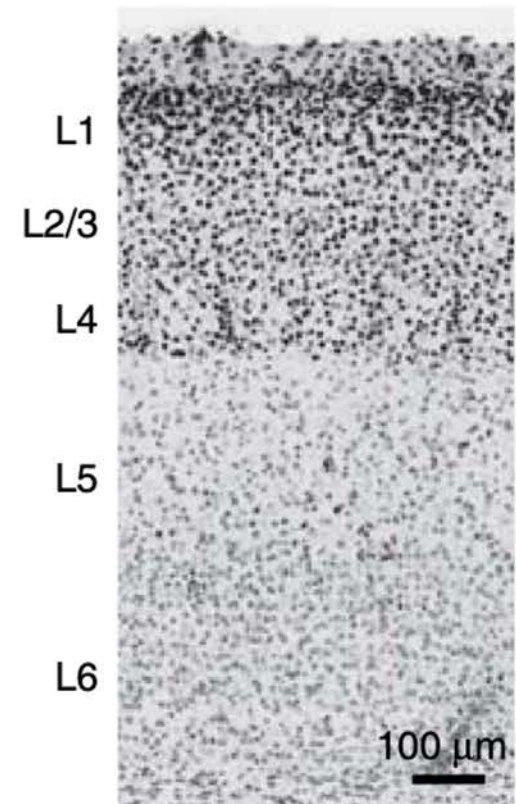
Les neurones du cortex cérébral forment des circuits précis



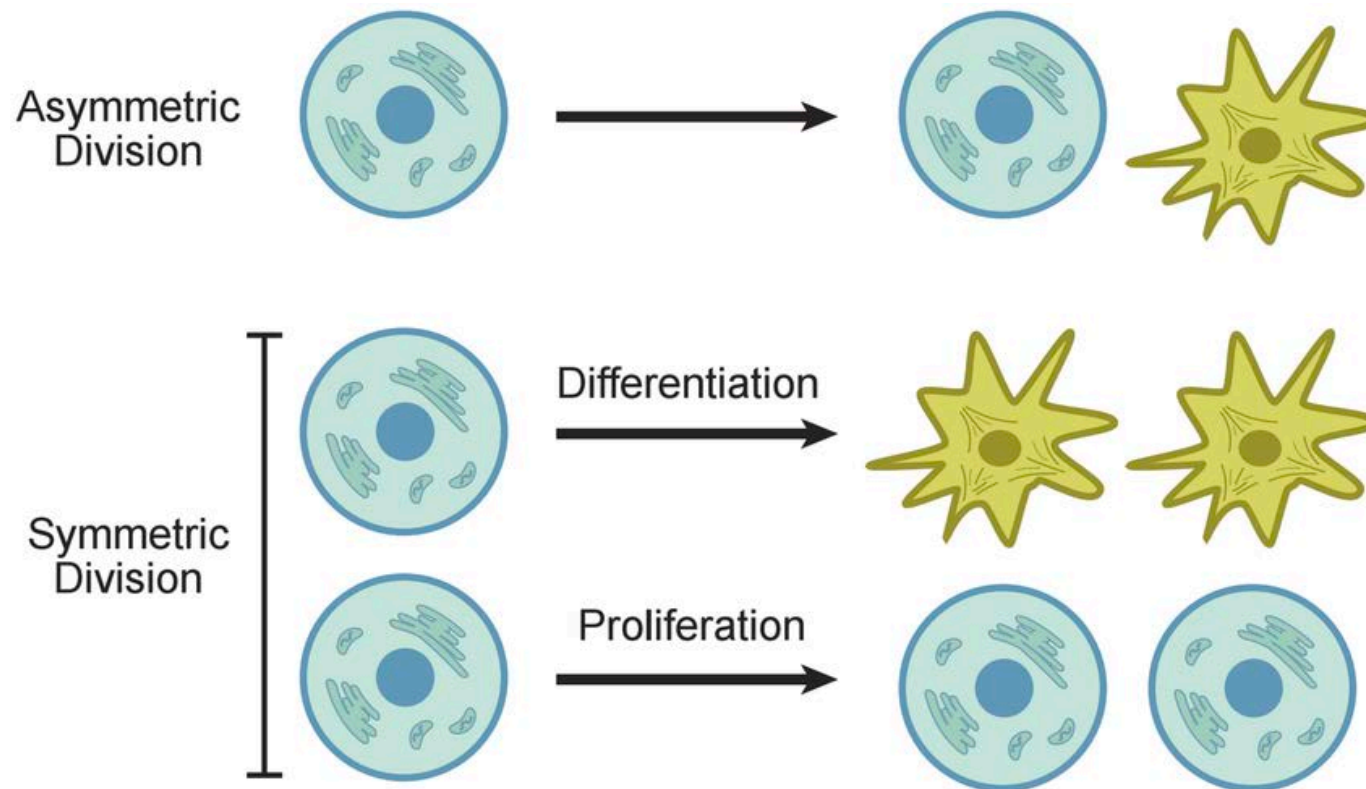
a



b



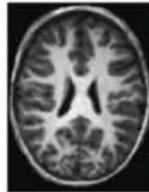
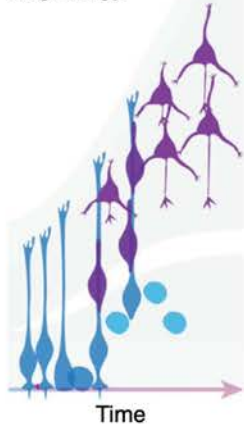
Divisions symétriques et asymétriques



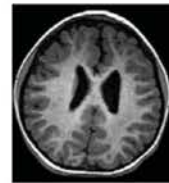
Malformations cérébrales: causes cellulaires



Normal

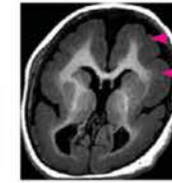


Microcephaly



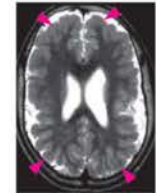
ASPM*, **CENPJ**,
CDK5,
EOMES (**TBR2**),
FOXG1, **PAX6**,
TUBB3, **WDR62**

Agyria
Lissencephaly



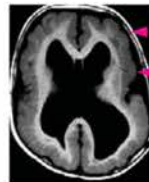
ARX, **CDK5**,
DCX,
LIS1, **RELN**,
TUBA1A, **TUBB3**

Poly-
microgyria



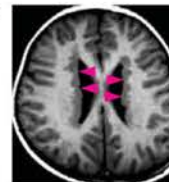
CEP85L,
EOMES, **GPR56**,
PIK3R2, **SCN3A**,
WDR62

Cobblestone
lissencephaly



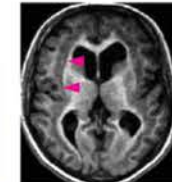
POMGNT2
CDK5RAP2

Periventricular
heterotopia



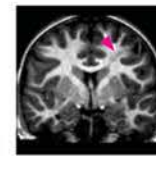
DCHS1, **FAT4**,
FLNA

Subcortical
band
heterotopia



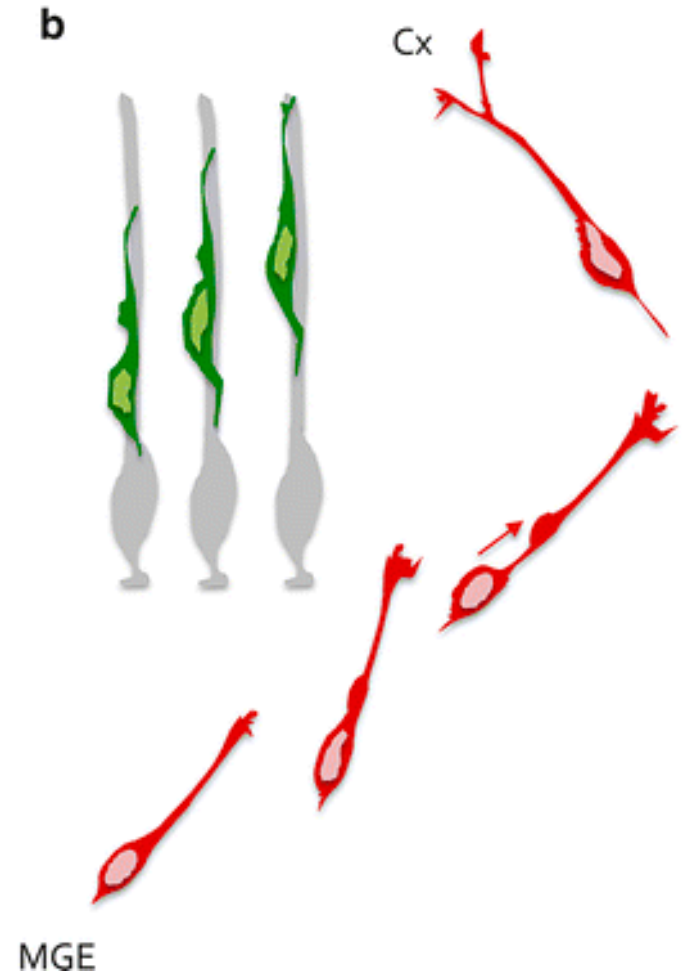
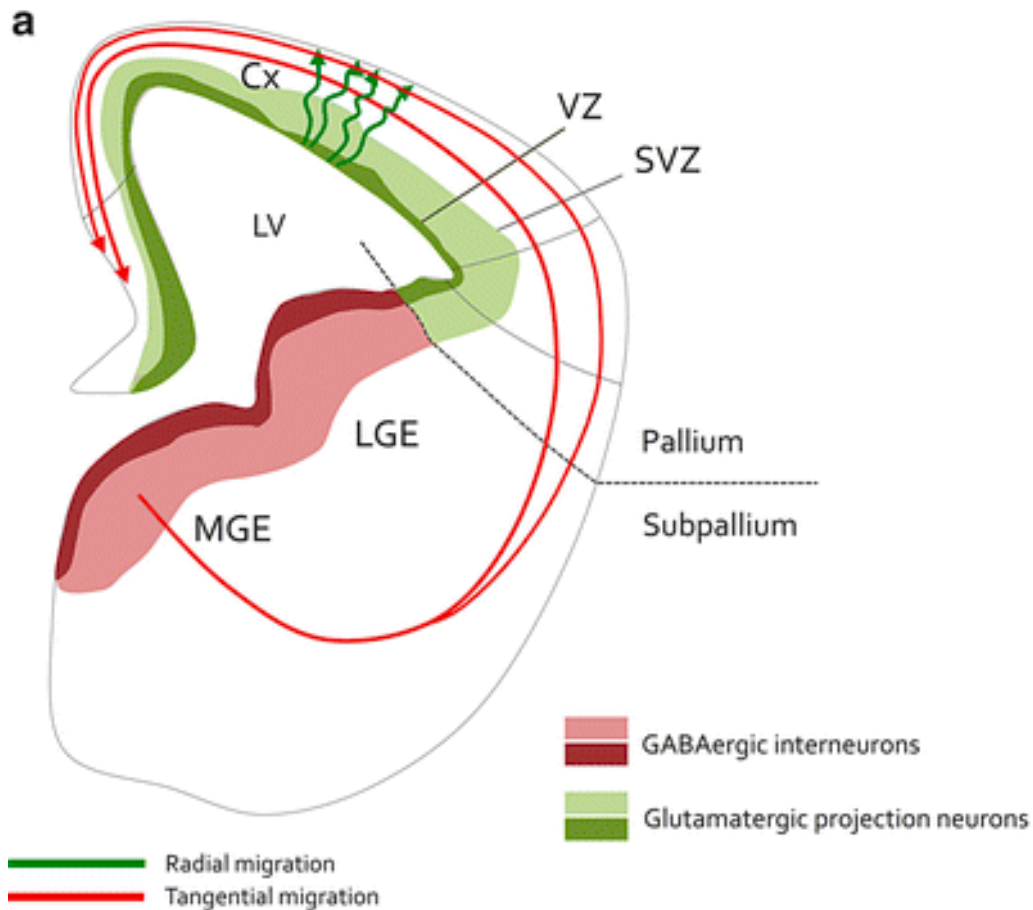
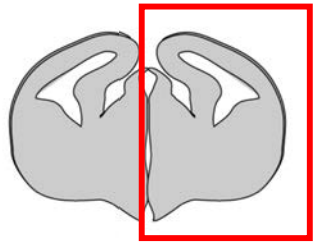
DCX, **EML1**
LIS1,
TUBA1A

Focal cortical
dysplasia

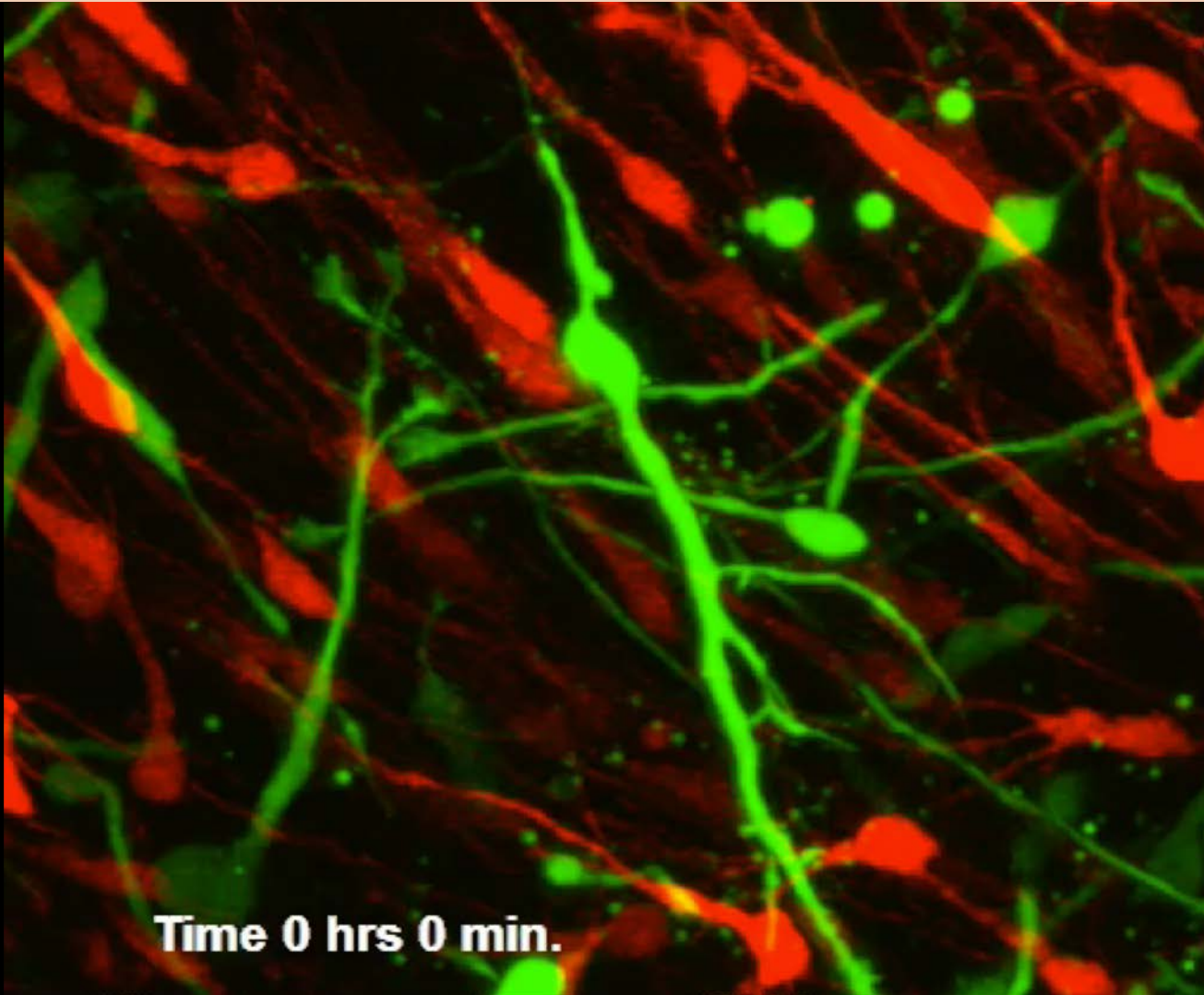


PIK3CA,
AKT3,
MTOR

Les interneurones inhibiteurs du cortex cérébral migrent sur de longues distances



Migration tangentielle des neurones inhibiteurs corticaux



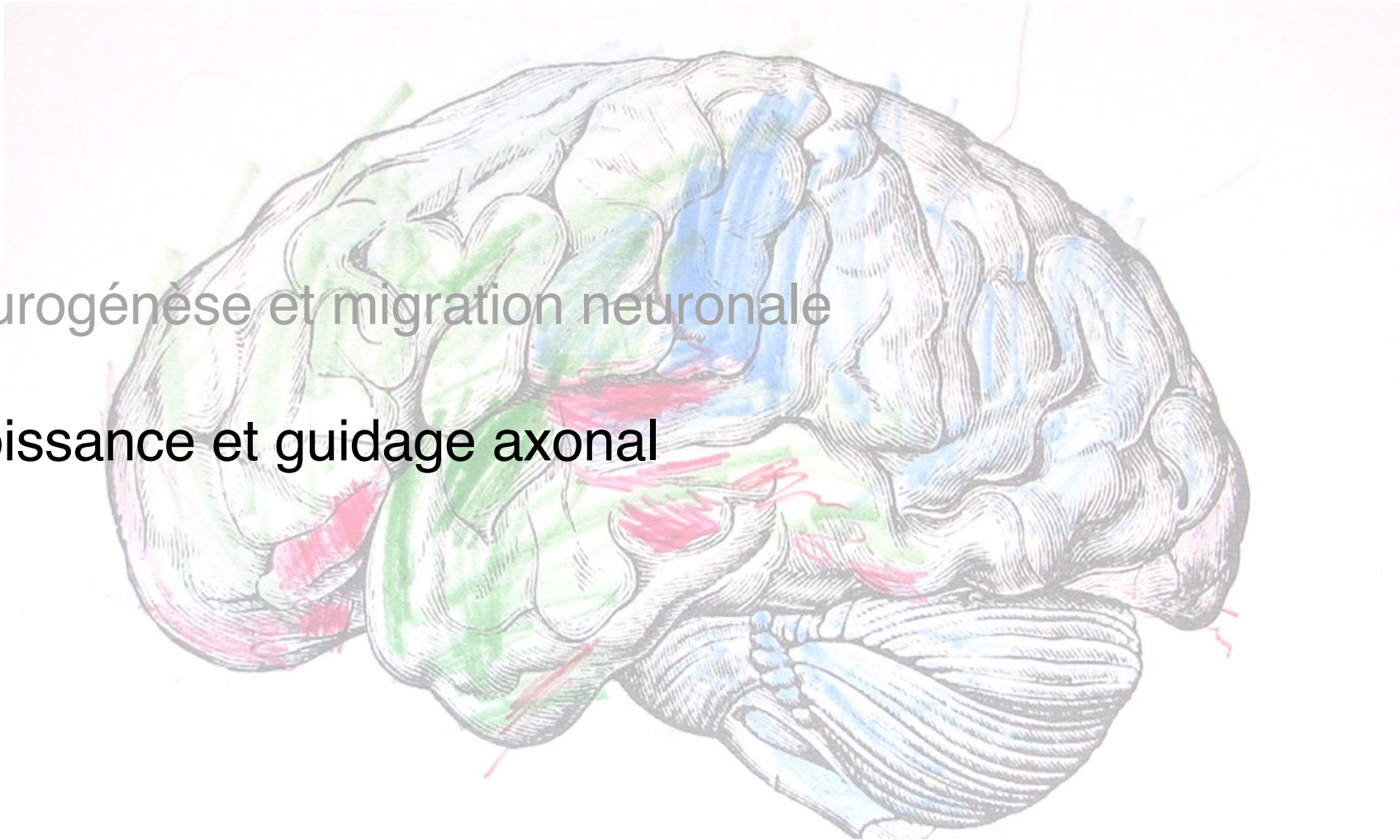
Time 0 hrs 0 min.

Code couleur inverse par rapport
à diapo précédente!
Excitateur = rouge
Inhibiteur = vert

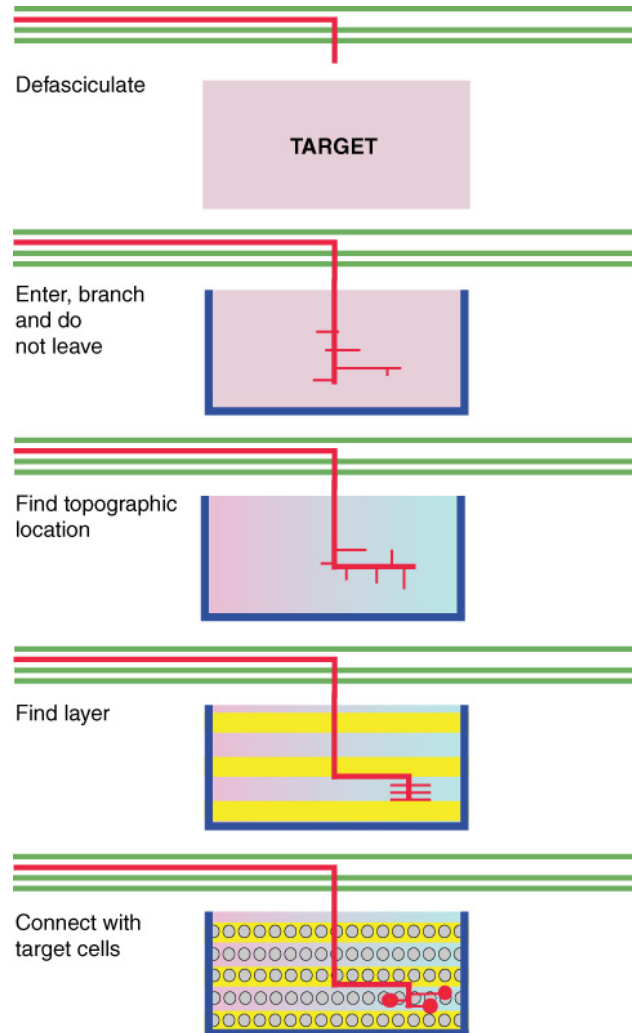
Vidéo: Prof. Alexandre Dayer, UNIGE

Développement du système nerveux II: aspects cellulaires

1. Neurogénèse et migration neuronale
2. Croissance et guidage axonal

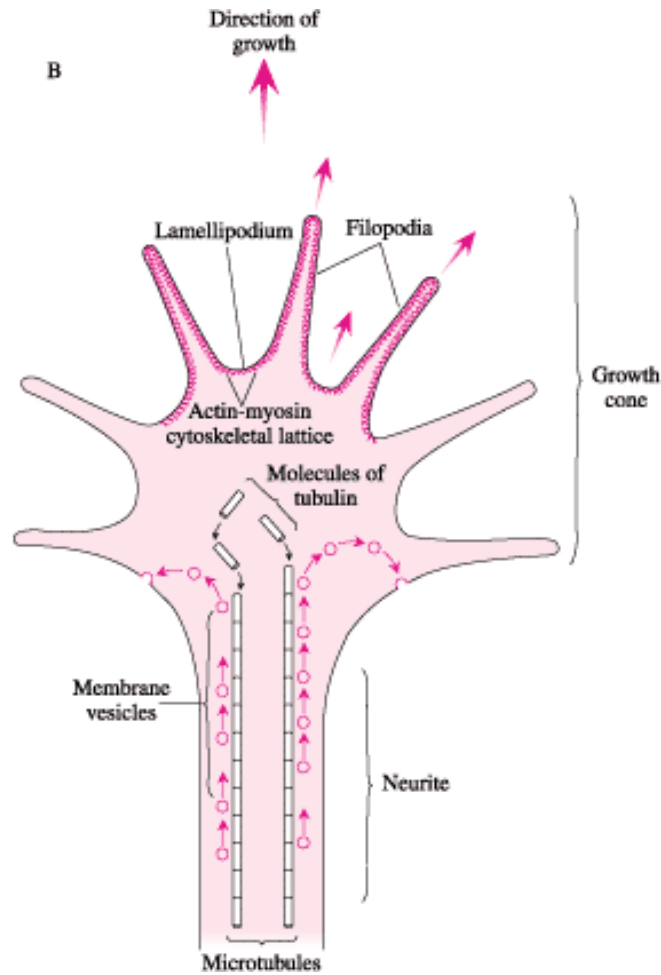
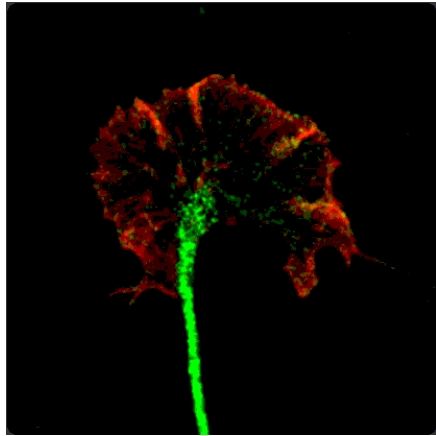


Etapes pour atteindre une cible

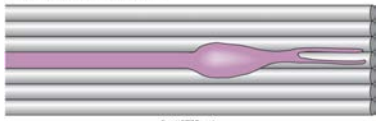


(After Holt and Harris, 1998)

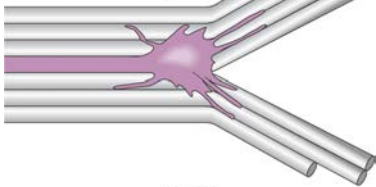
Cône de croissance axonal



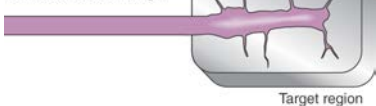
A Growth cone at fascicle



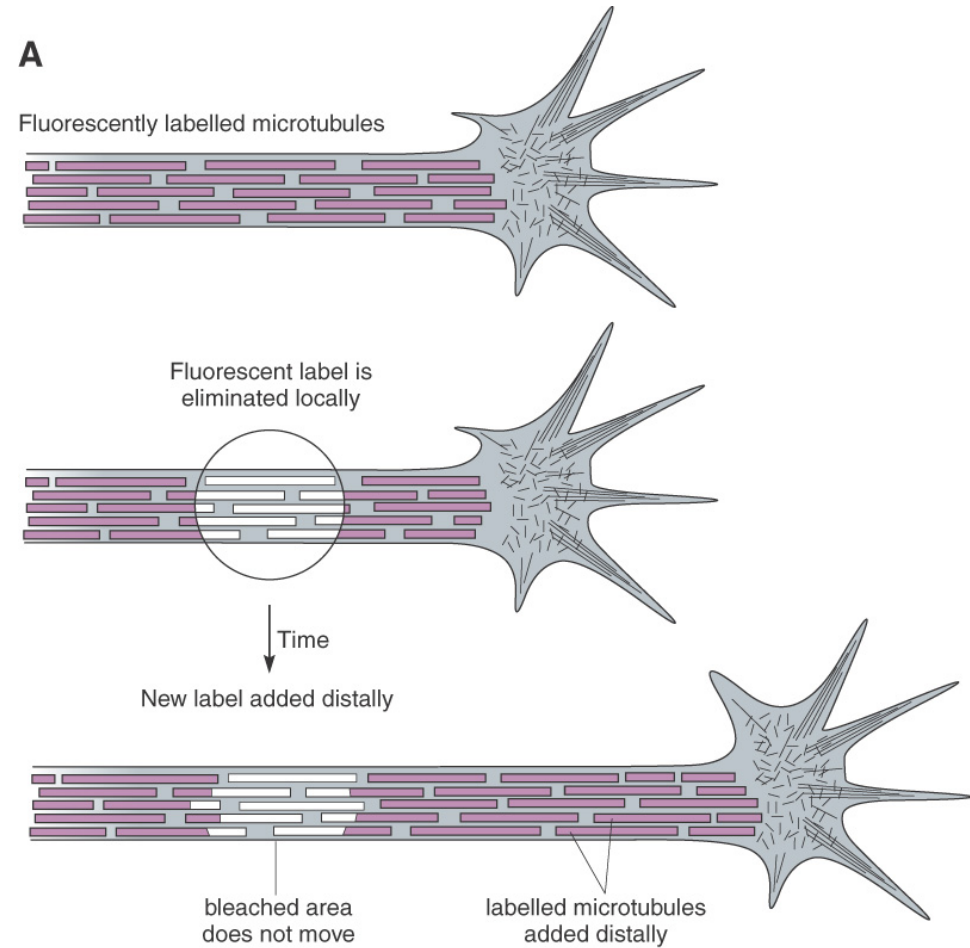
B Growth cone at choice point



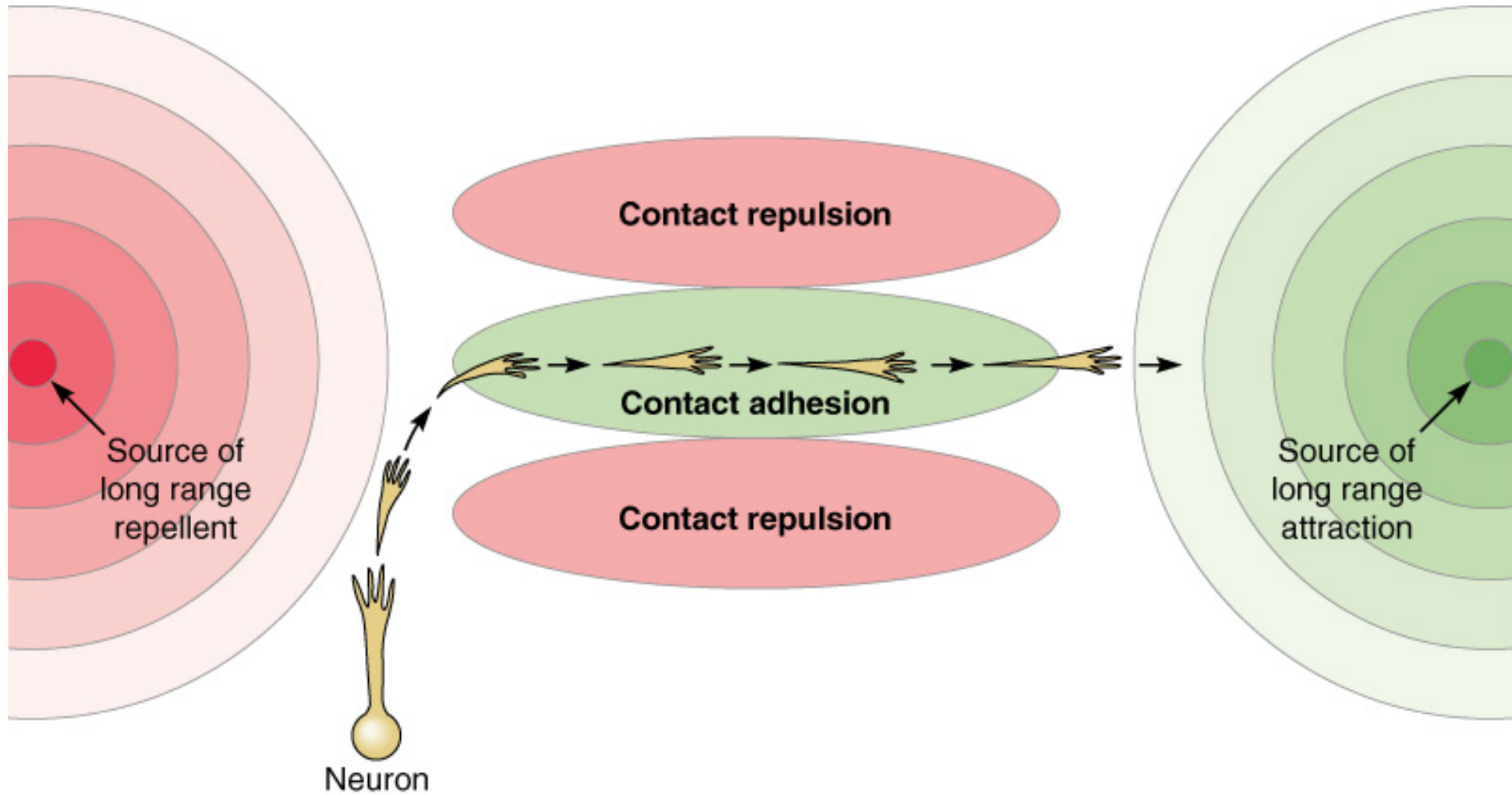
C Growth cone in target



A

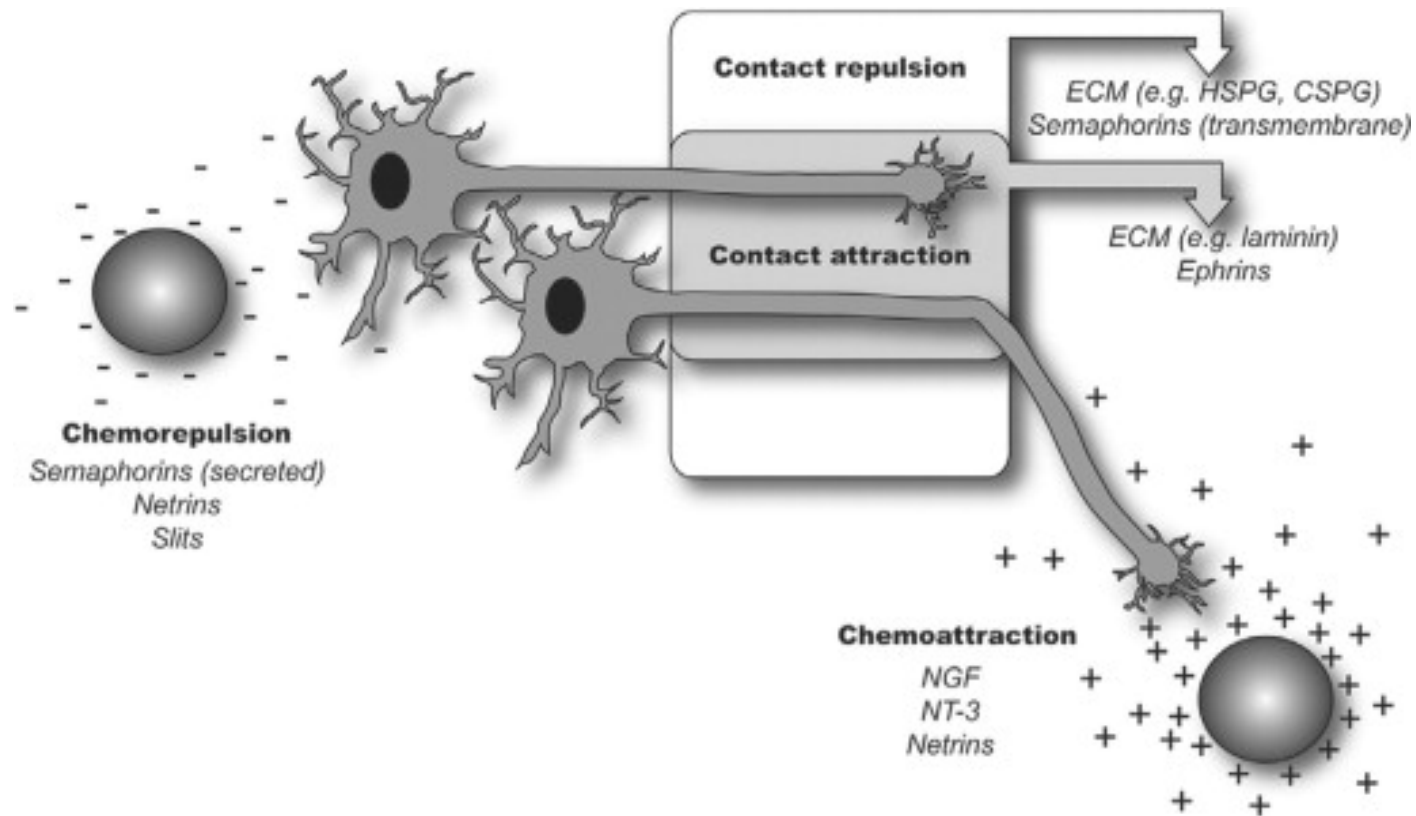


Guidage axonal: chemoattractants et chemorepellents



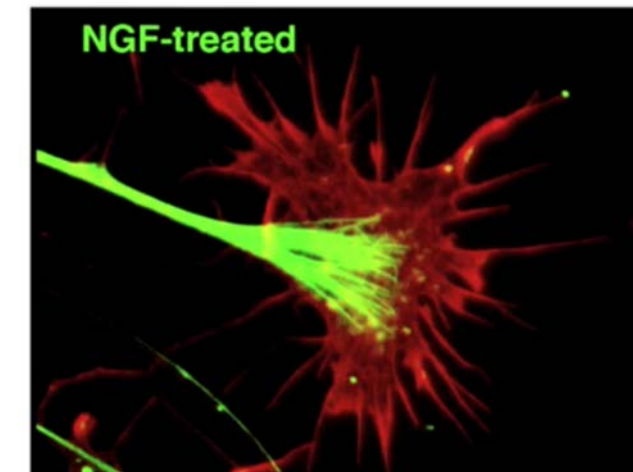
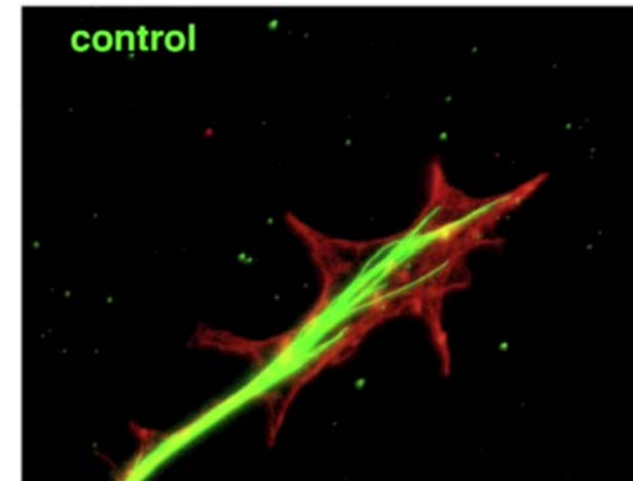
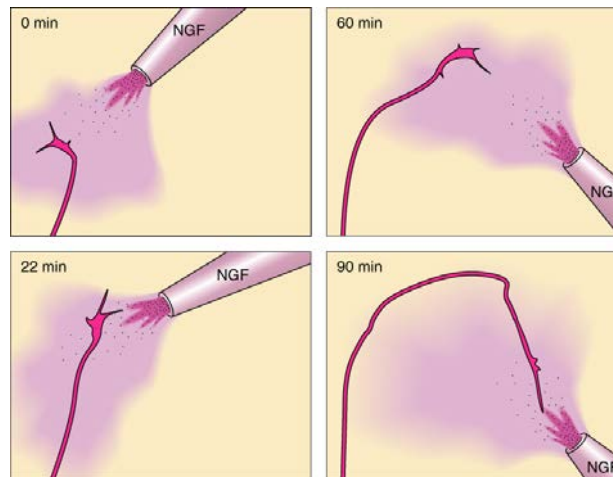
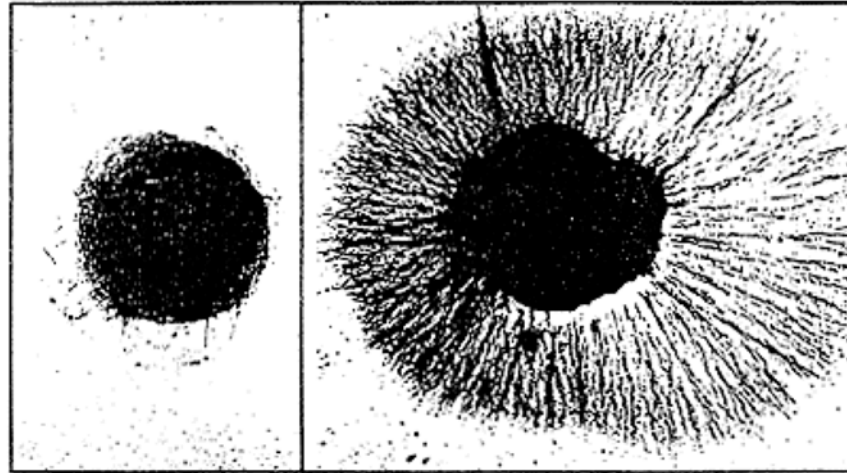
(After Tessier-Lavigne and Goodman, 1996)

Guidage axonal: chemoattractants et chemorepellents

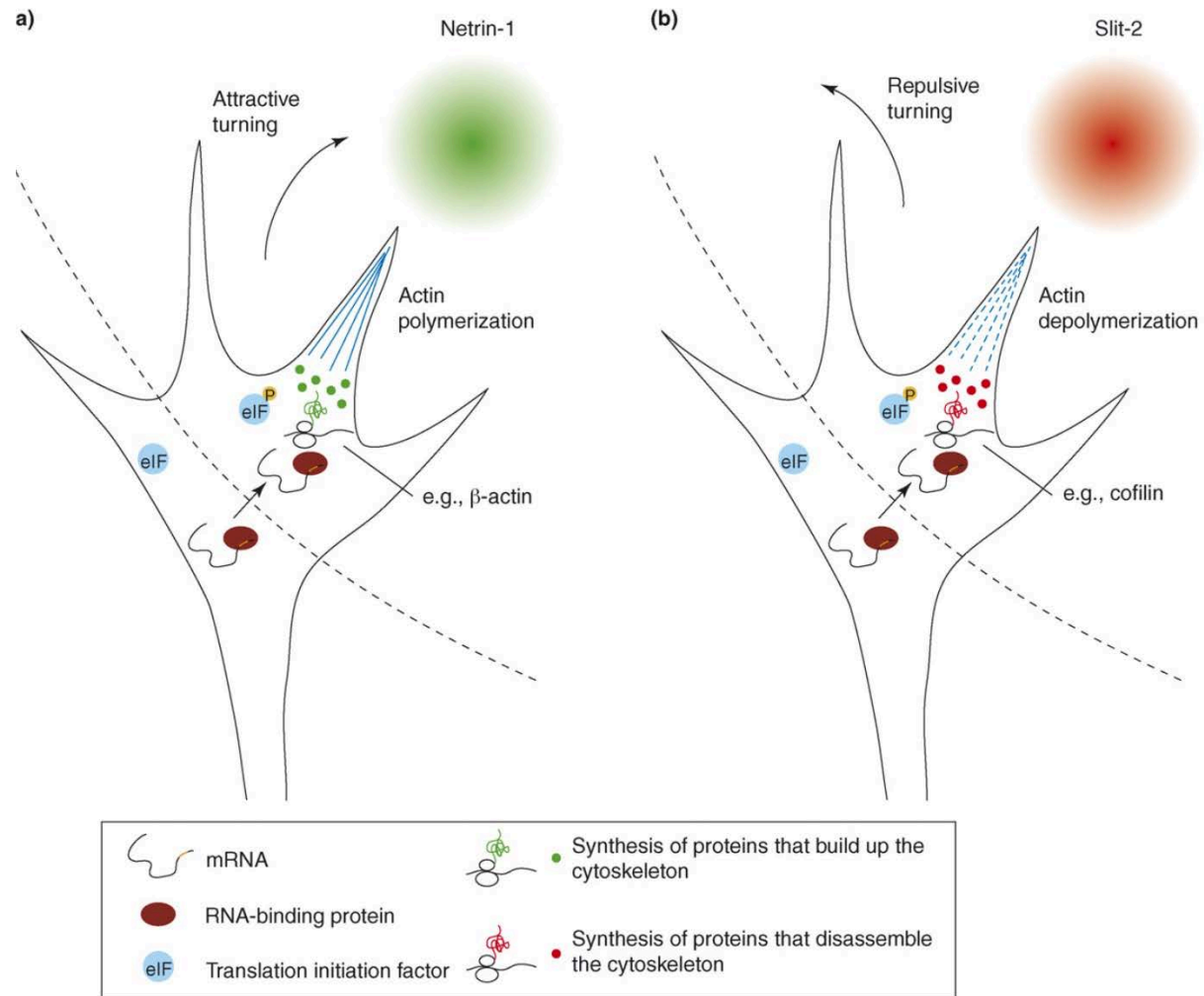


Nerve Growth Factor (NGF)

- Protéine sécrétée par les glandes et les muscles
- Capturée par les axones des neurones moteurs, prévient l'apoptose.



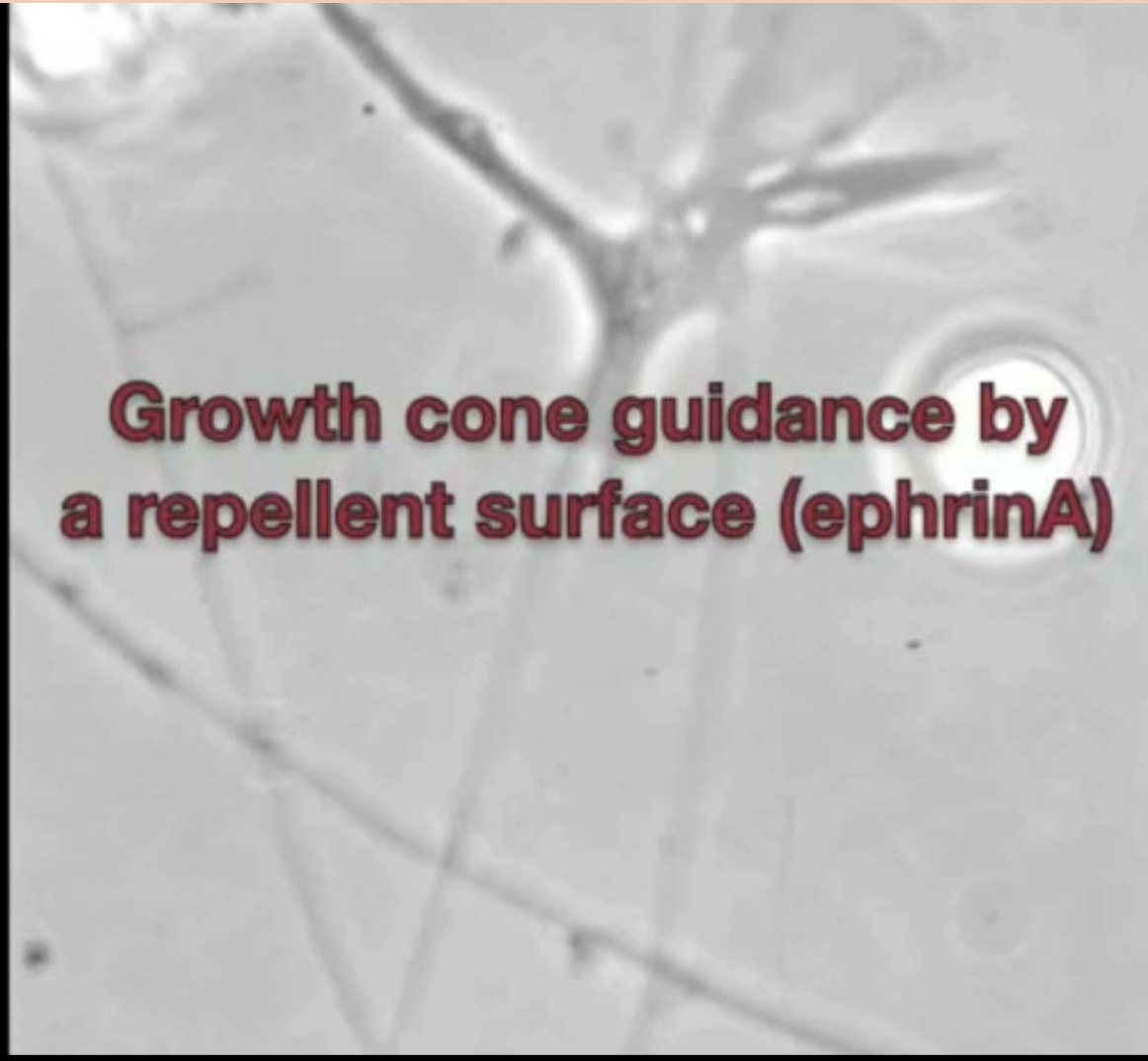
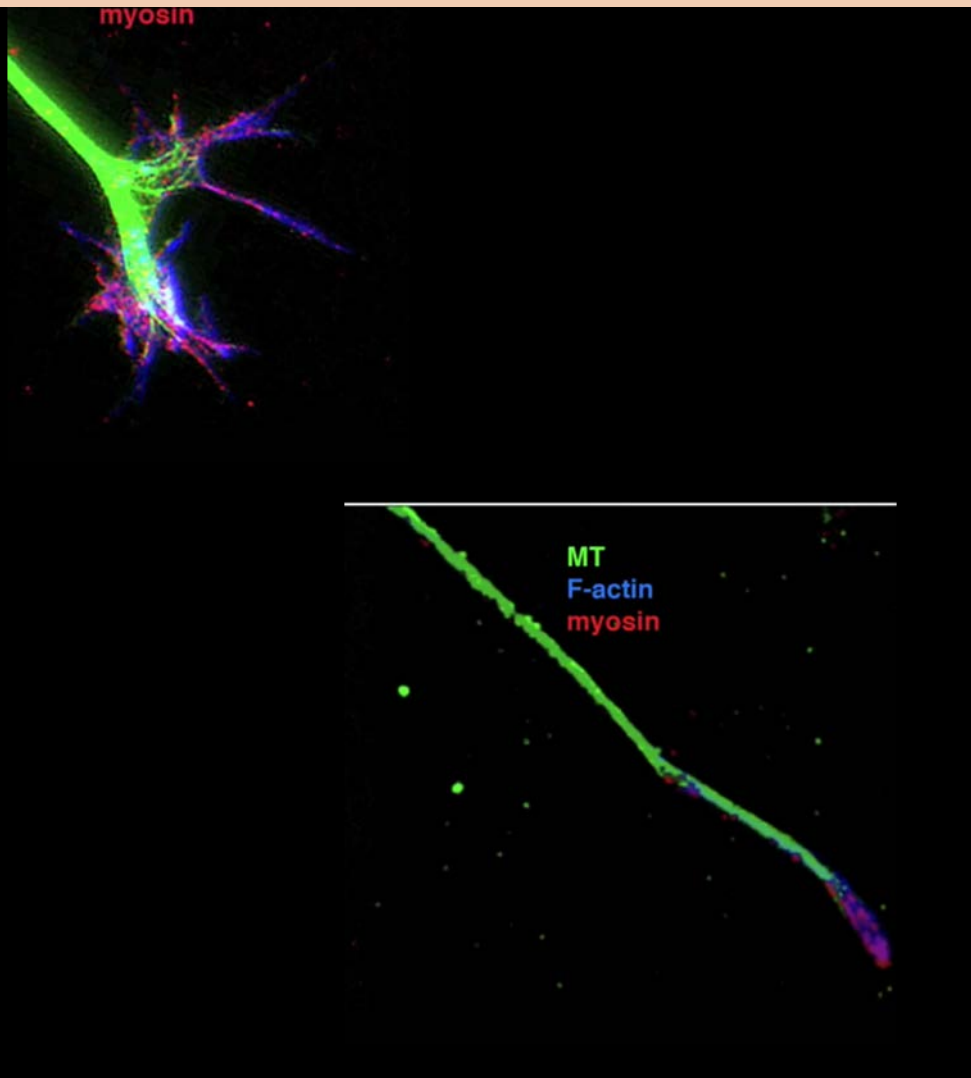
Traduction axonale et croissance



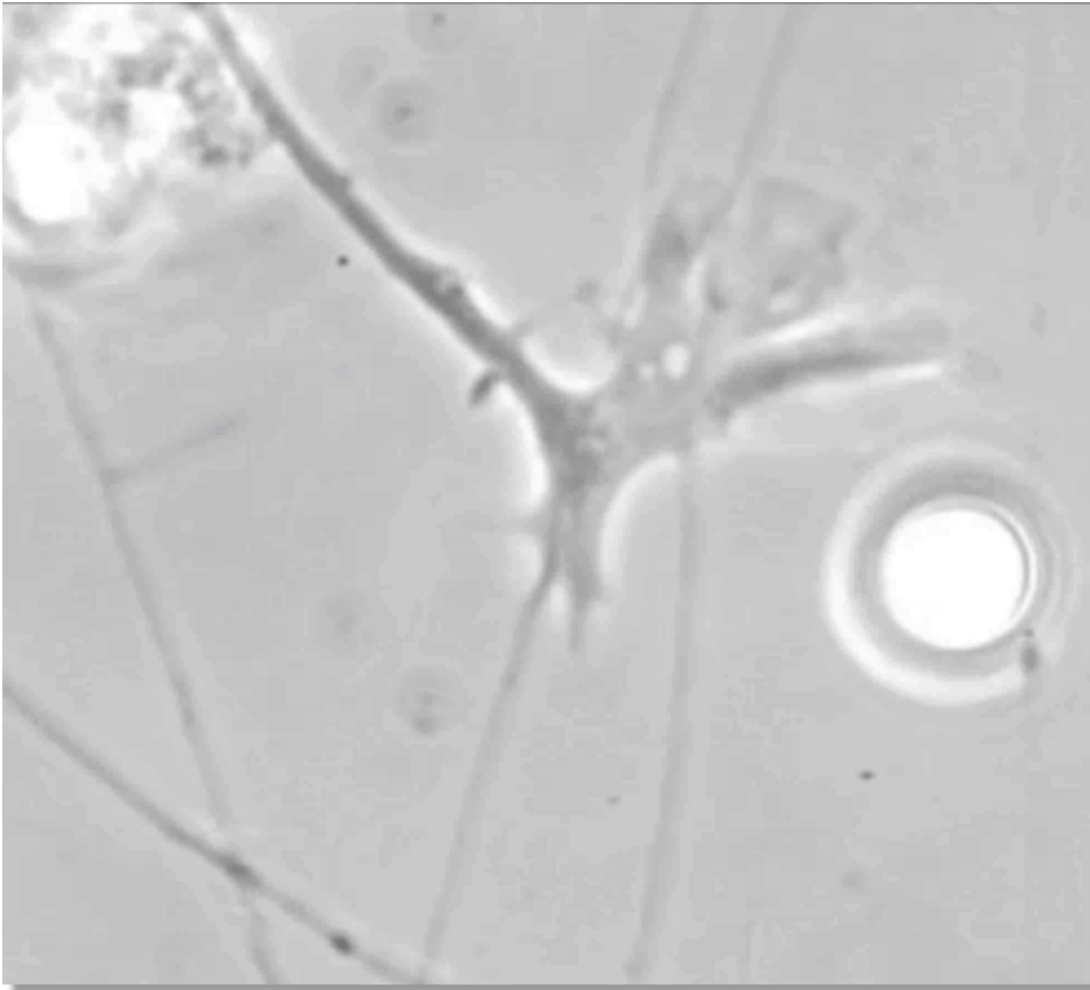
Le NGF est un chemoattractant



L'Ephrin A est un chemorepellant



La directionalité dépend de gradients de chemoattractants/repellants



Guidage des fibres commissurales de la moelle épinière

