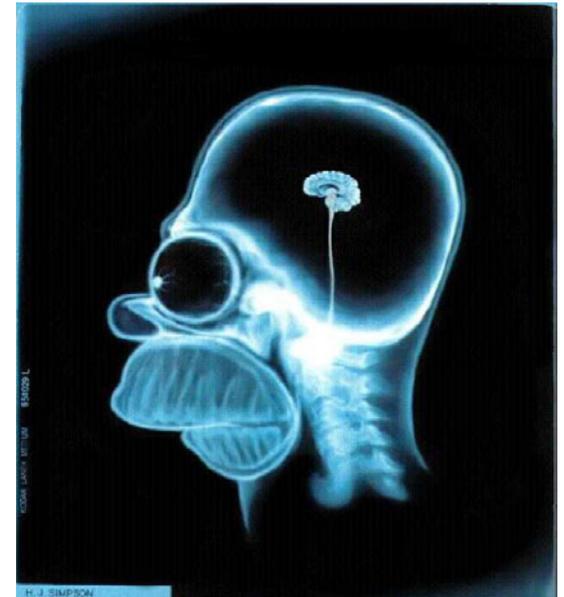


Apprentissage

Master 1

2013

Julien Lagarde



PLAN du cours

✓ Rappels neuro-anatomiques

- Cortex, noyaux sous corticaux, cervelet
- Neurones, synapses
- Connectivité corticale
- Voies efférentes et afférentes

✓ Plasticité synaptique : Règle de Hebb, changement à long termes, mémoire

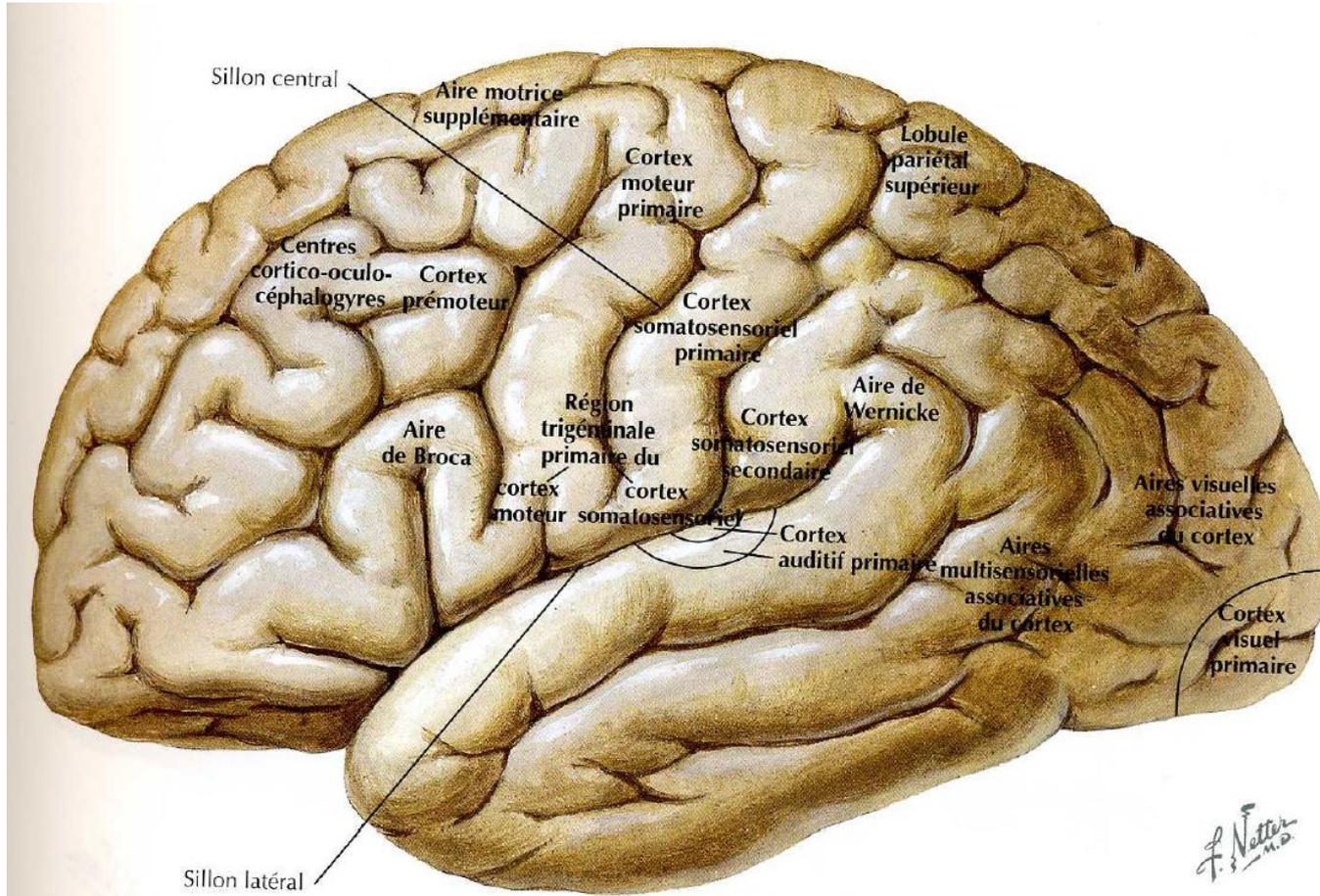
✓ Les techniques d'imagerie du cerveau

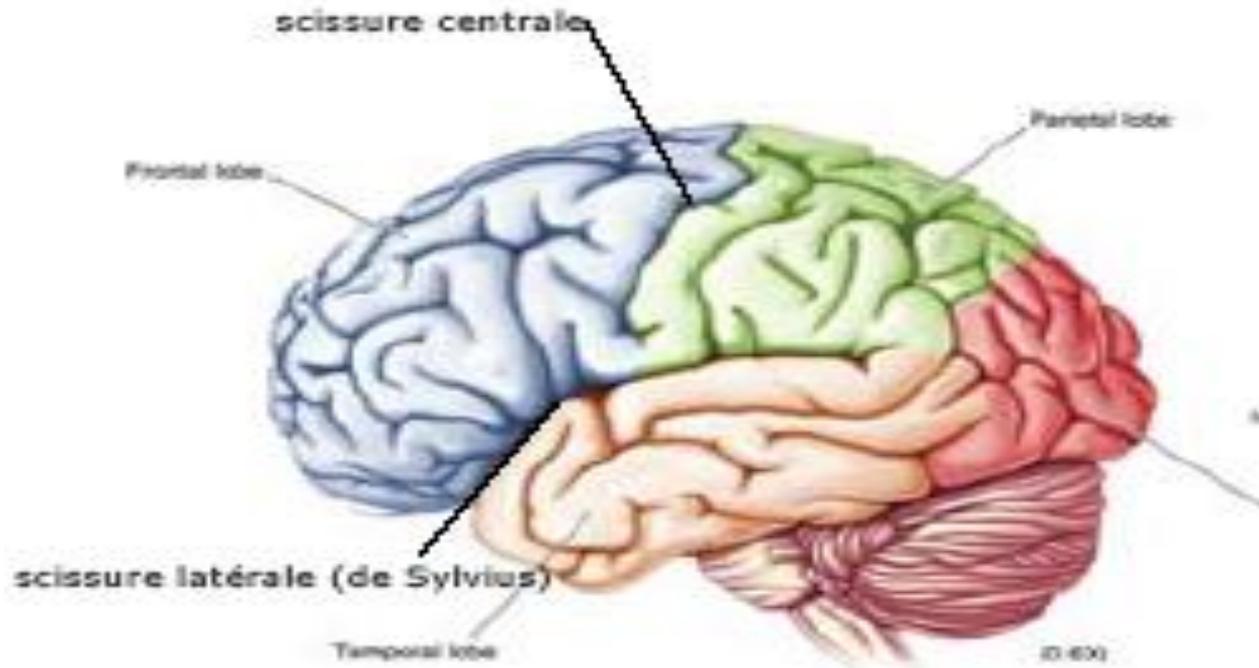
- EEG, MEG, IRMF, PET, Stimulations transcrâniennes

✓ Résultats d'imagerie cérébrale

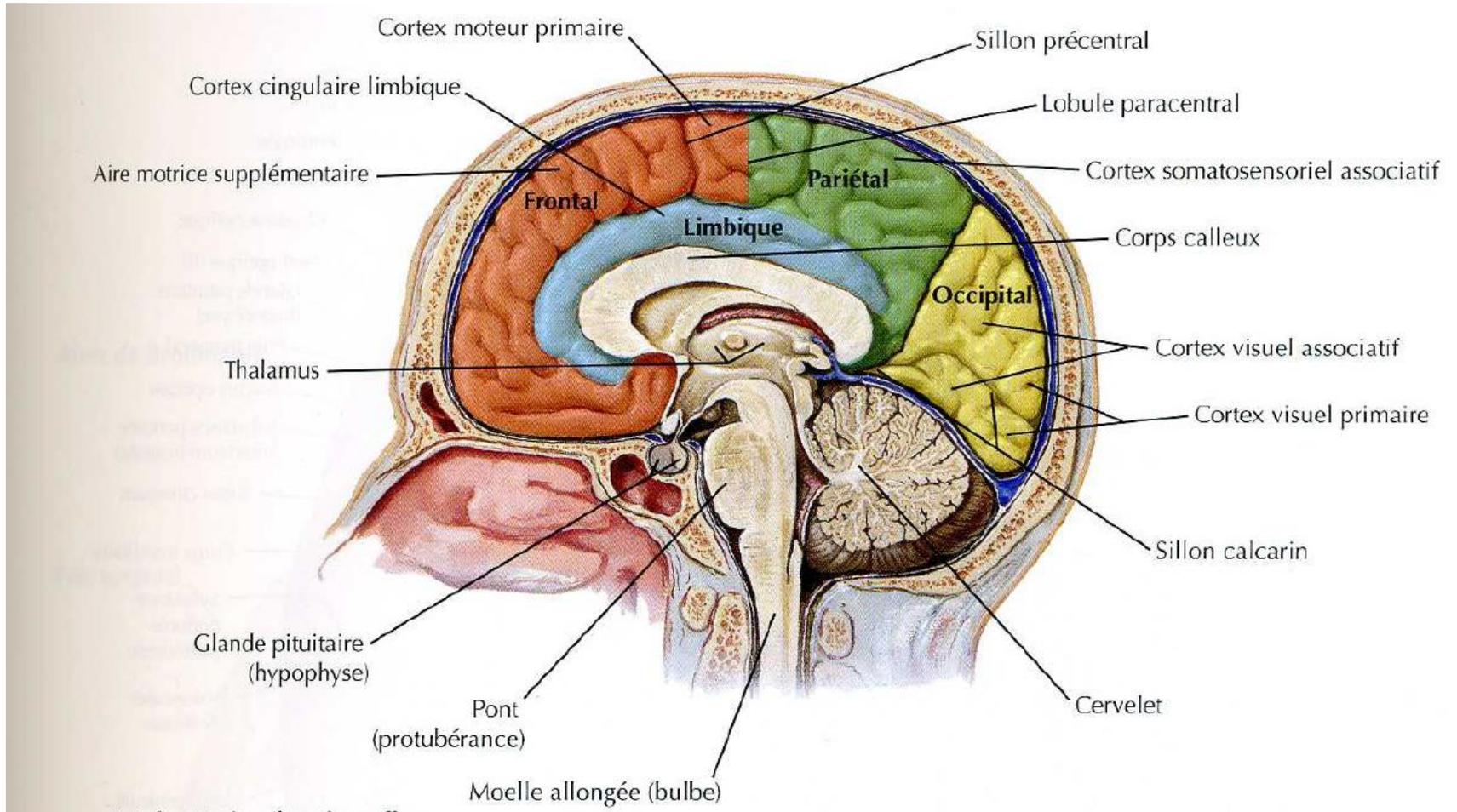
- L'acquisition d'habiletés sensorimotrices
- L'observation des mouvements, les neurones miroirs

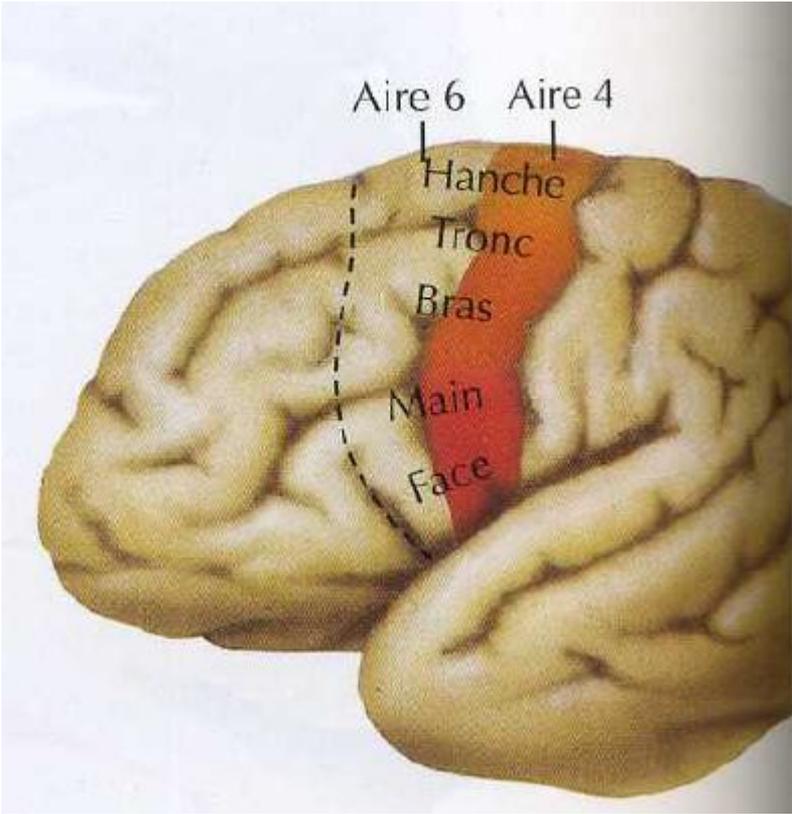
Cerveau : Cortex





Circonvolutions (gyrus)
Sillons (sulcus ou scissure)
Division en lobes
Localisation ET intégration





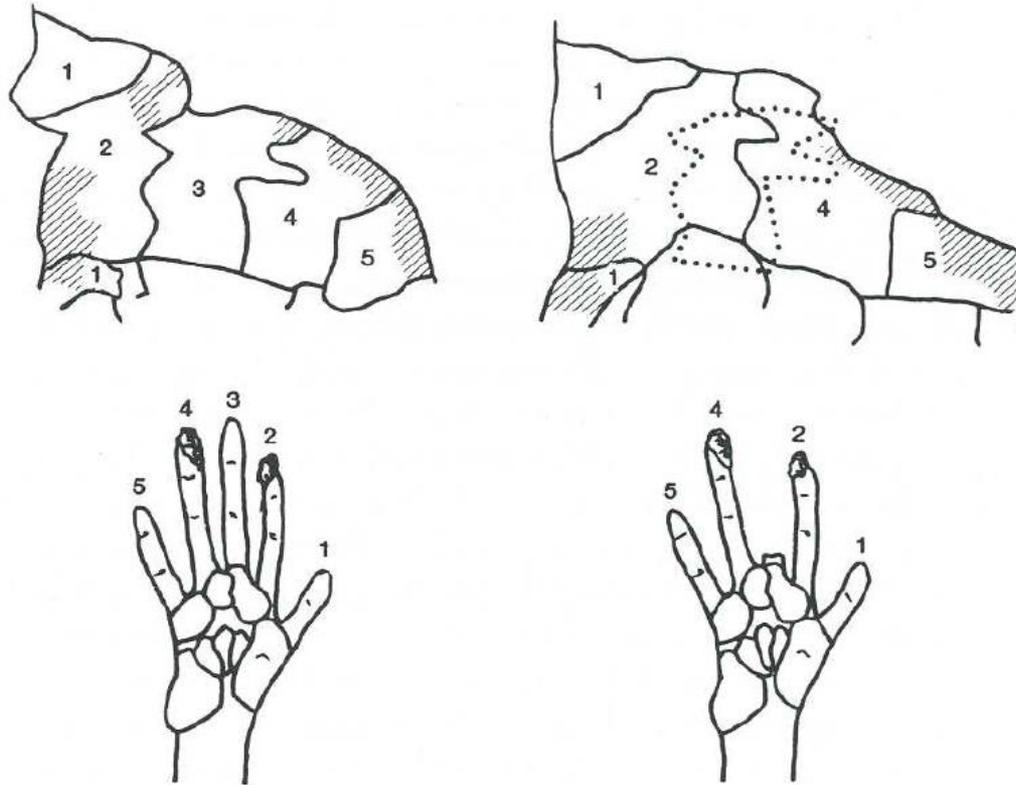
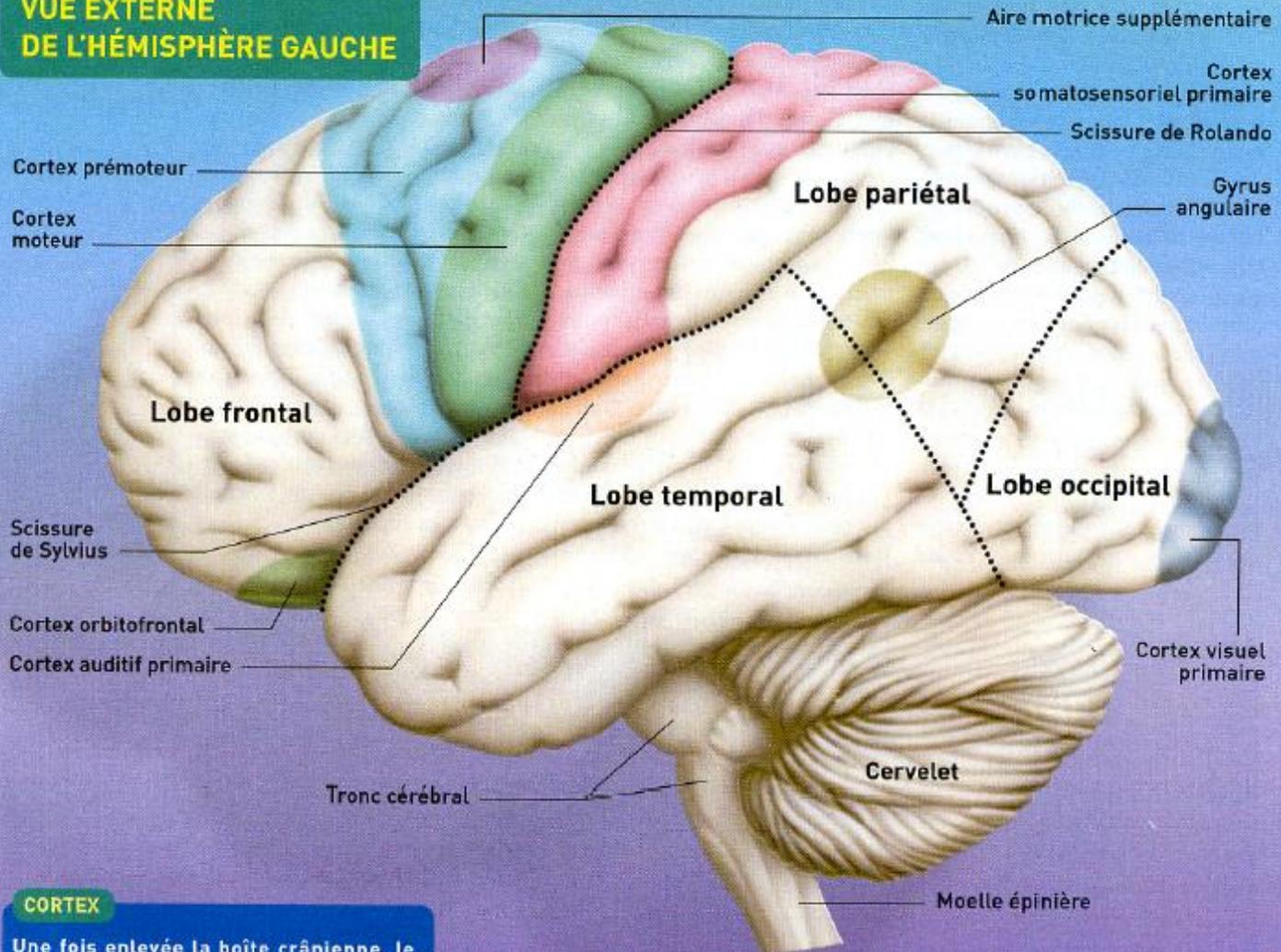


Figure 9.3 Brain maps of a monkey hand. The area representing the monkey's middle finger before it is amputated (left) is filled in by areas representing adjacent fingers a few weeks after the operation (right). (Adapted with permission from reference 12.)

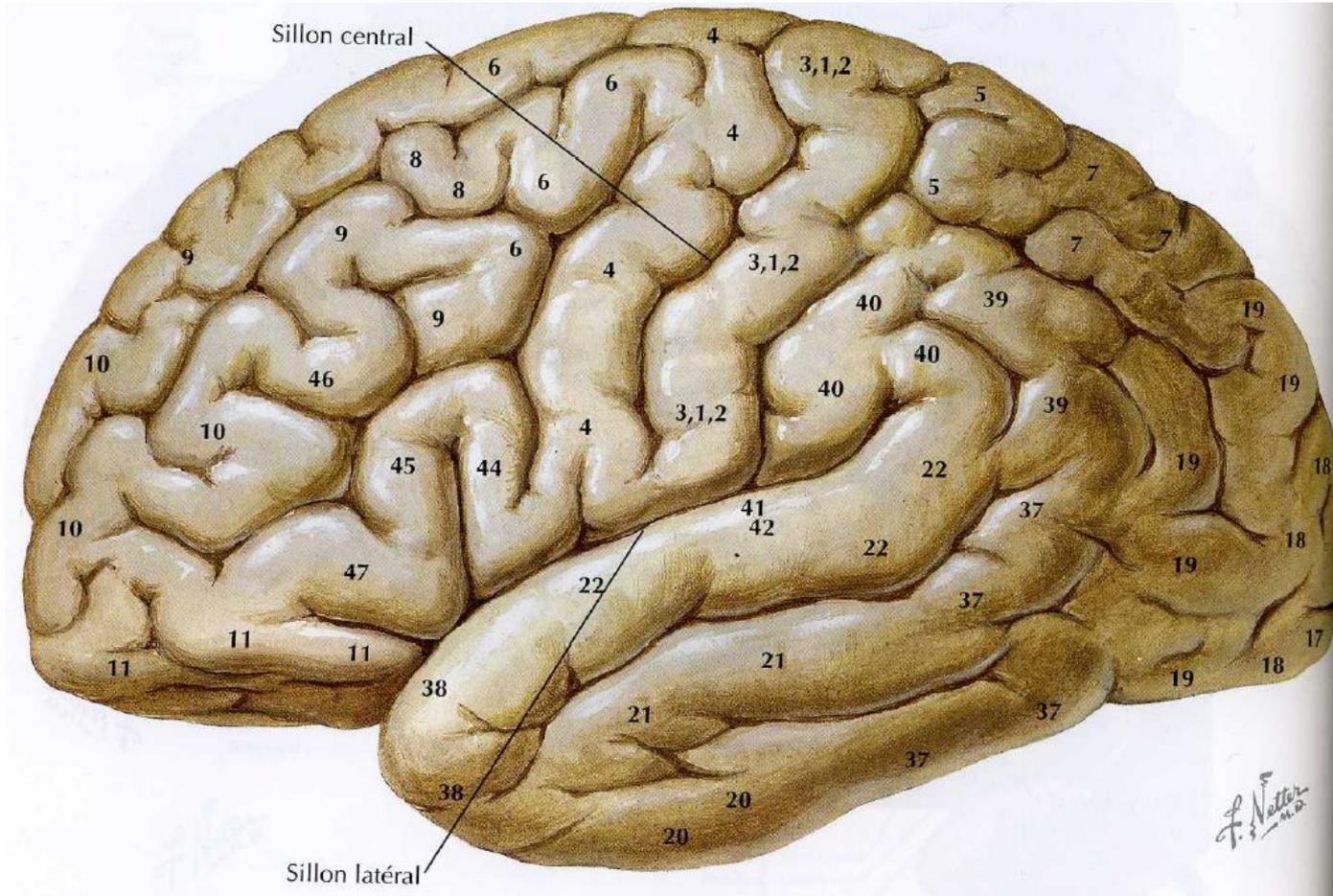
**VUE EXTERNE
DE L'HÉMISPÈRE GAUCHE**



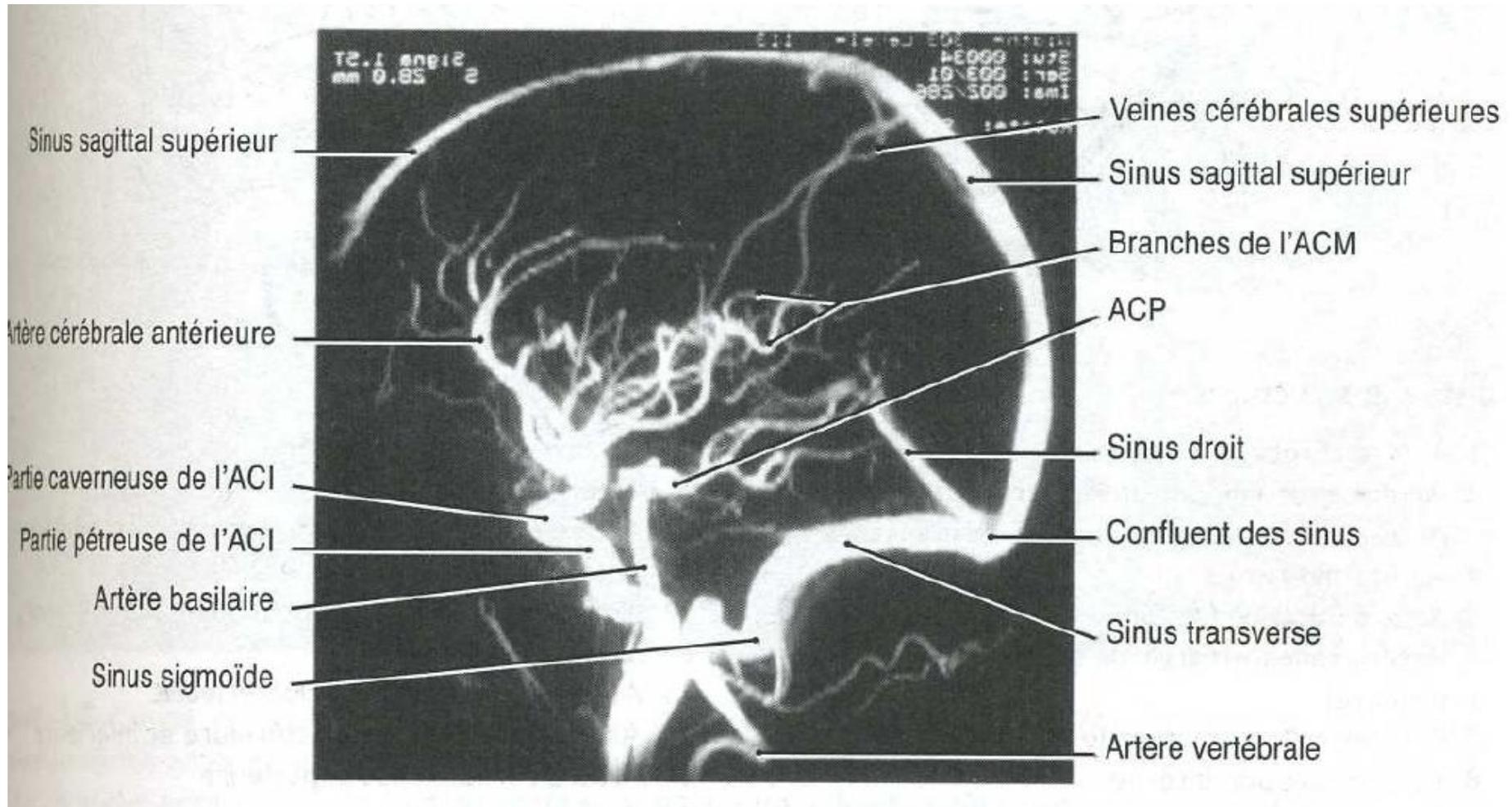
CORTEX

Une fois enlevée la boîte crânienne, le

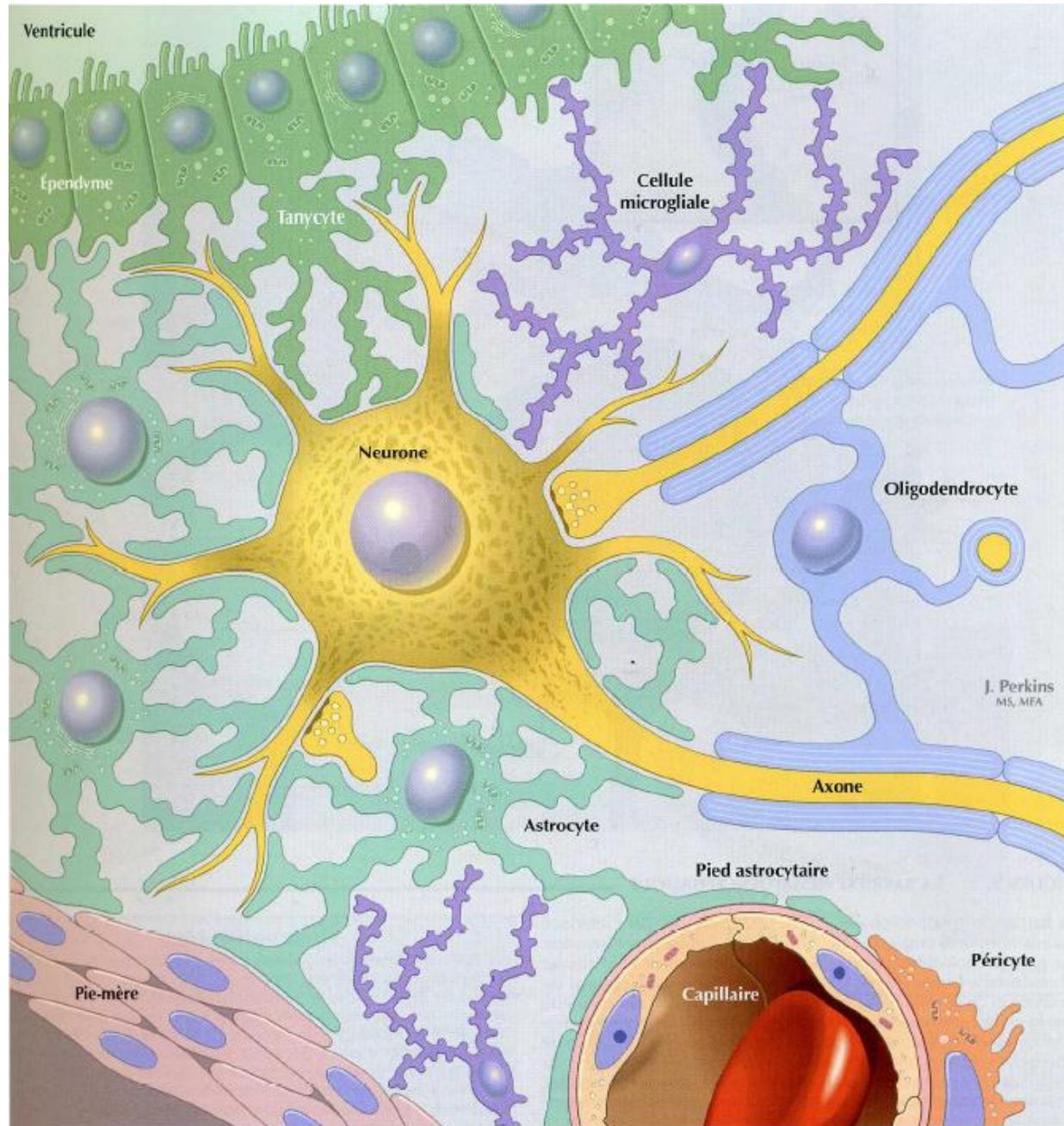
Aires de Brodman

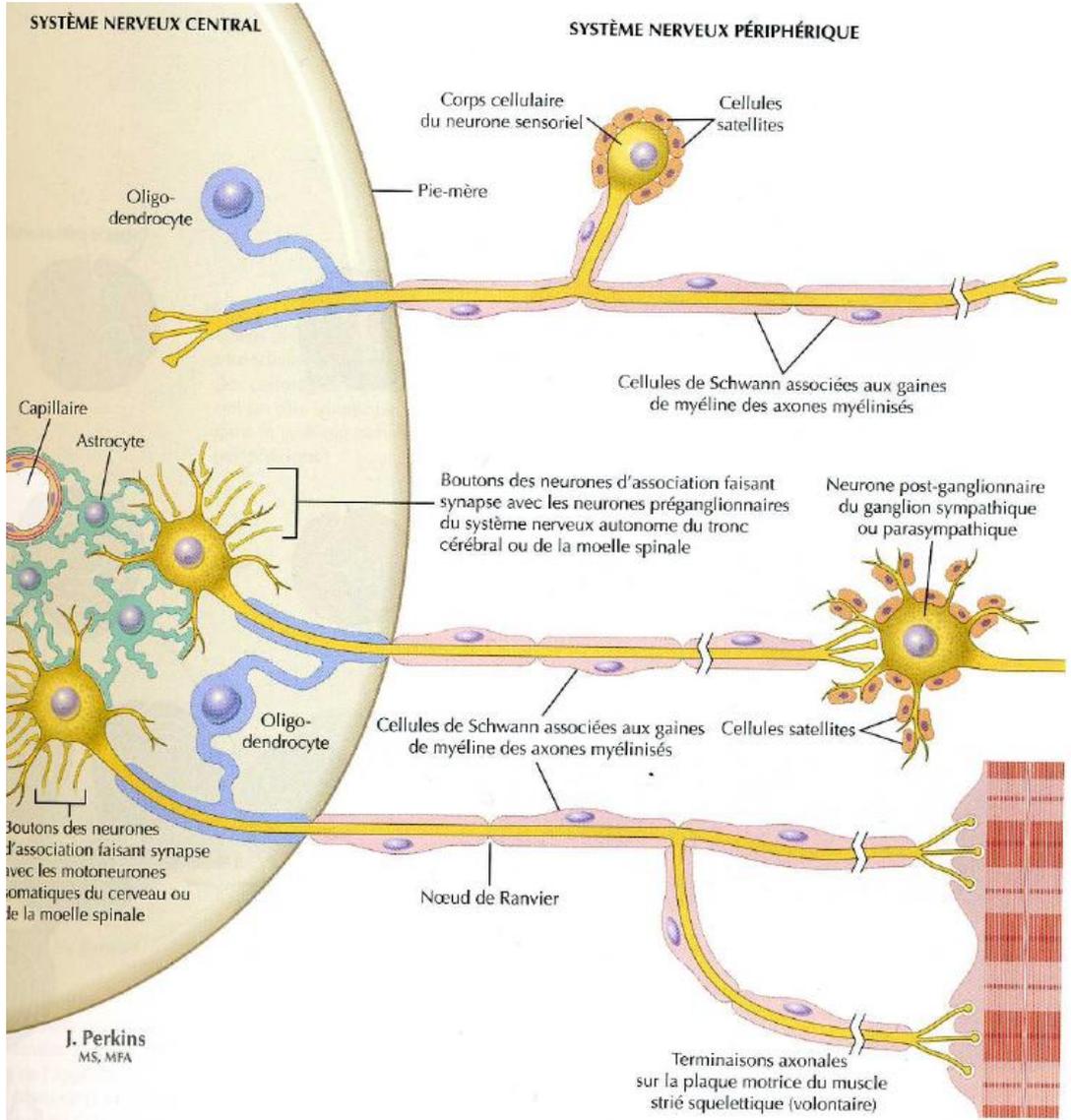


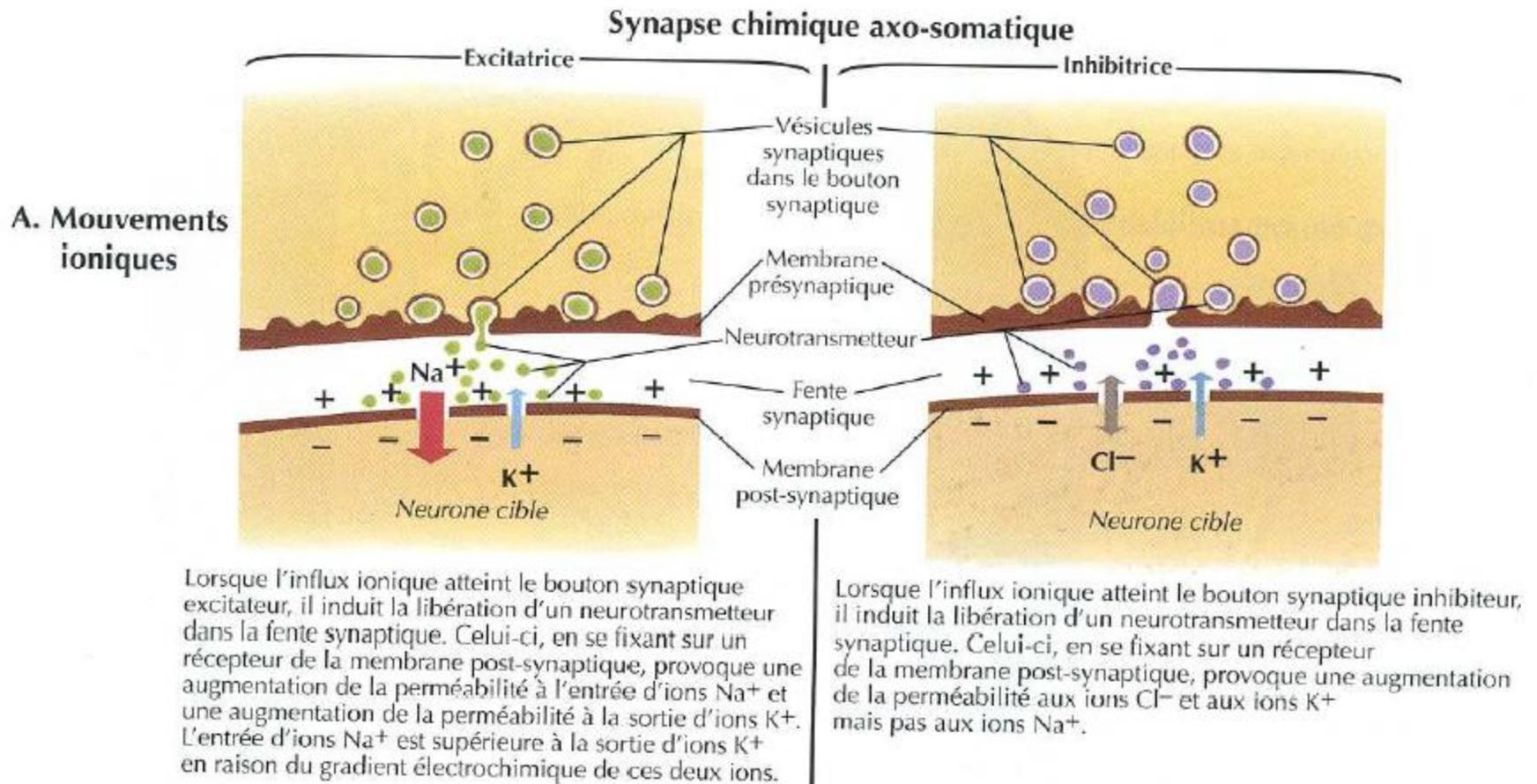
Systeme artériel



Neurones

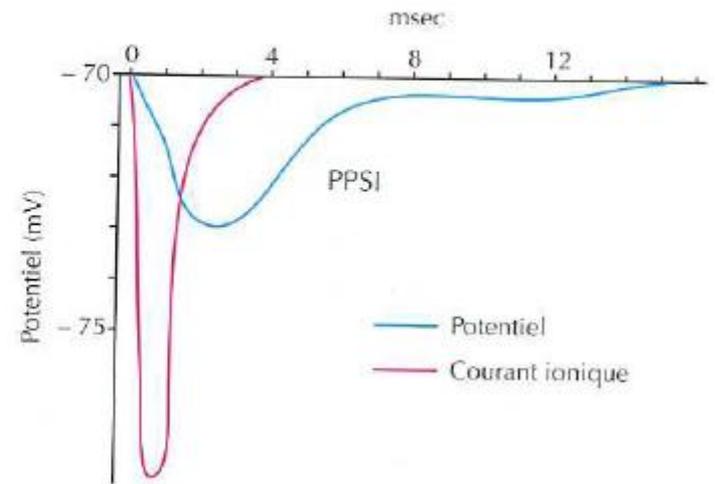
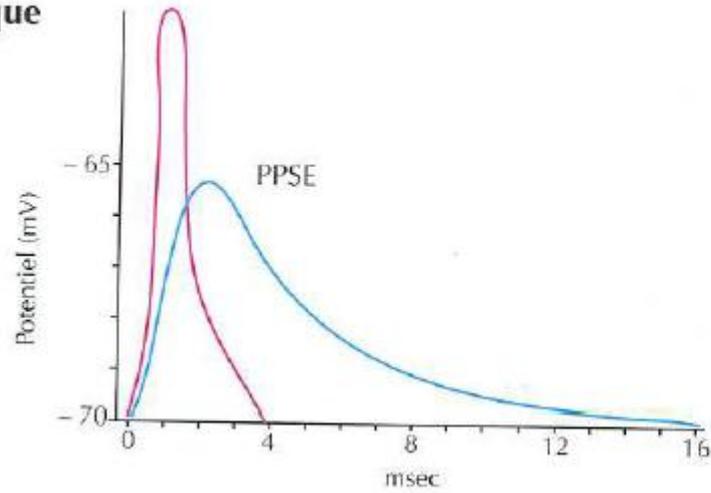




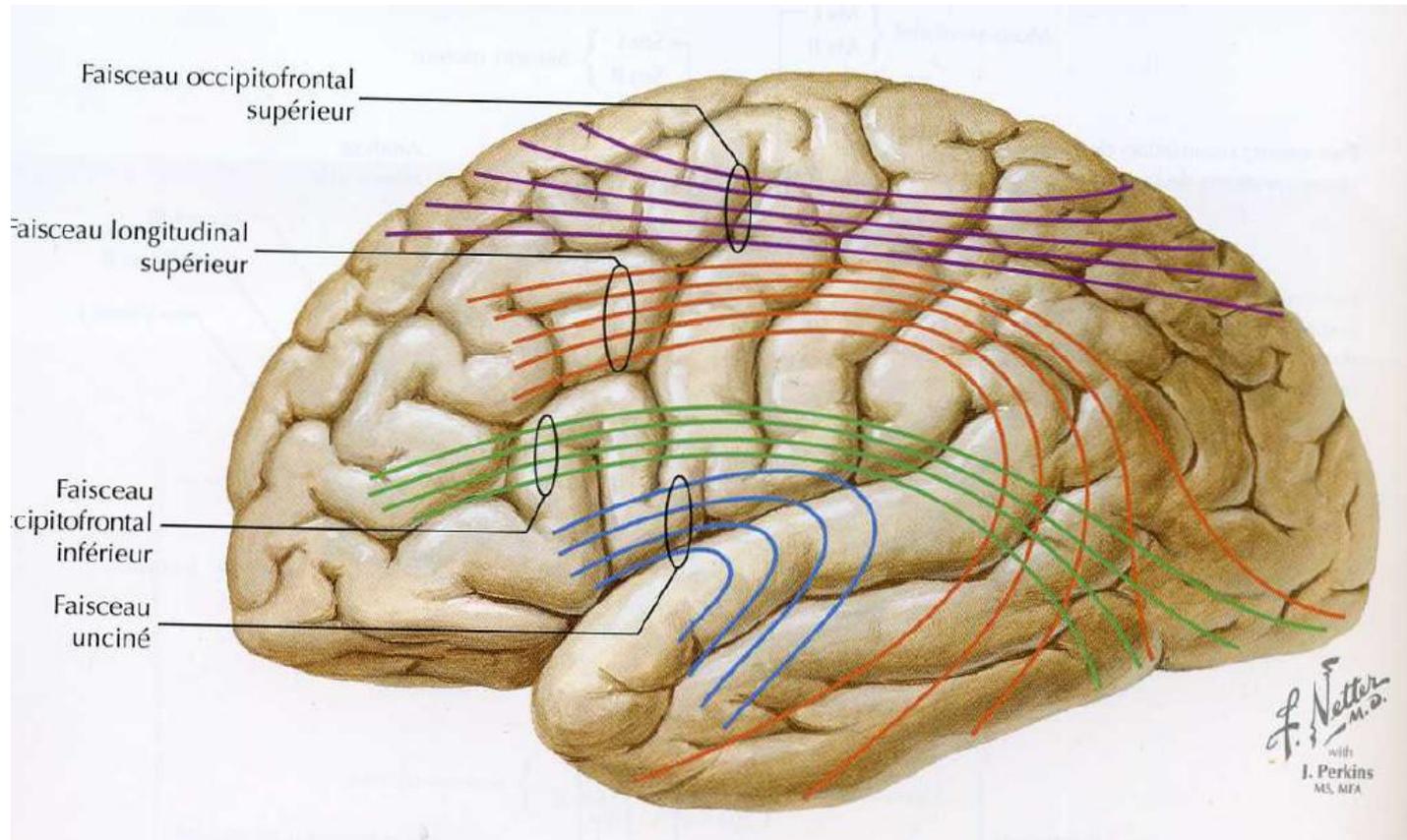


Excitation/ inhibition

B. PPSE, PPSI, courant ionique



Connectique



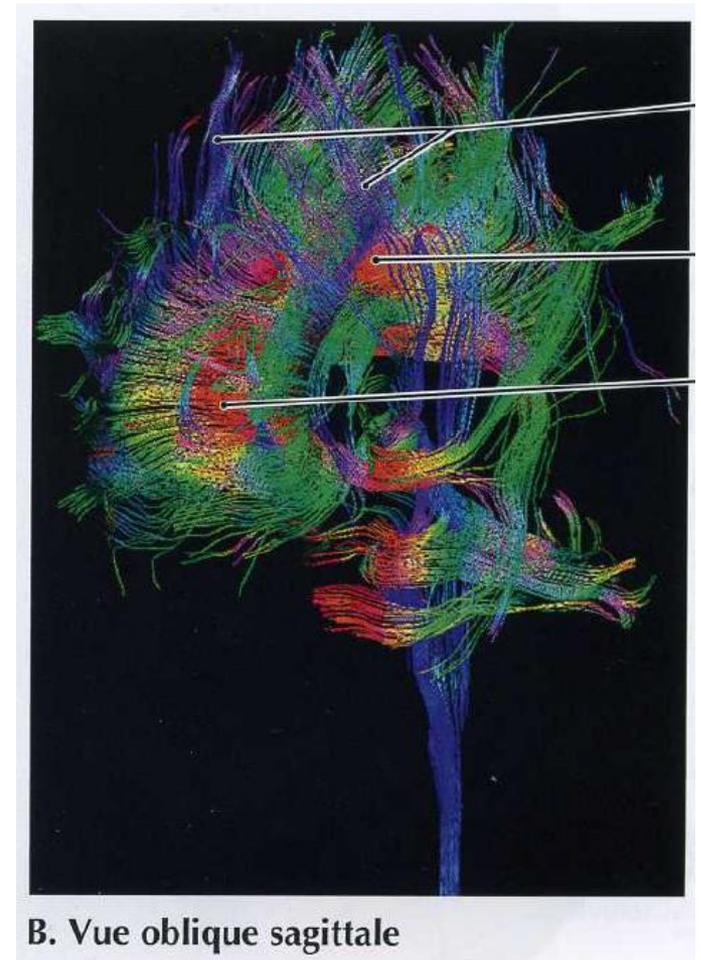
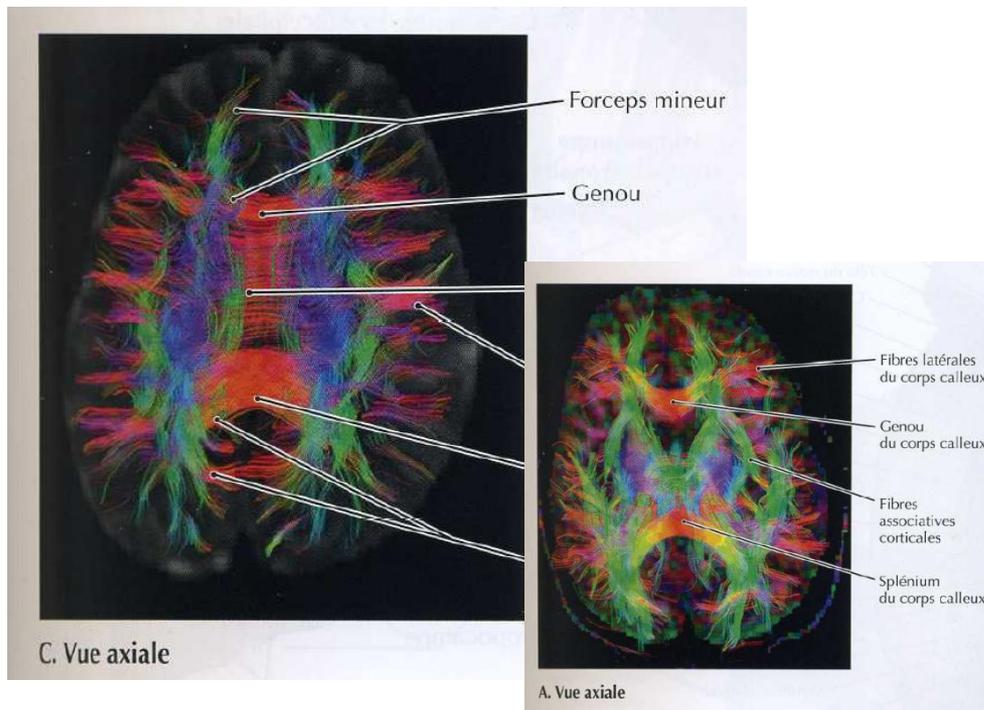
Faisceau occipitofrontal supérieur

Faisceau longitudinal supérieur

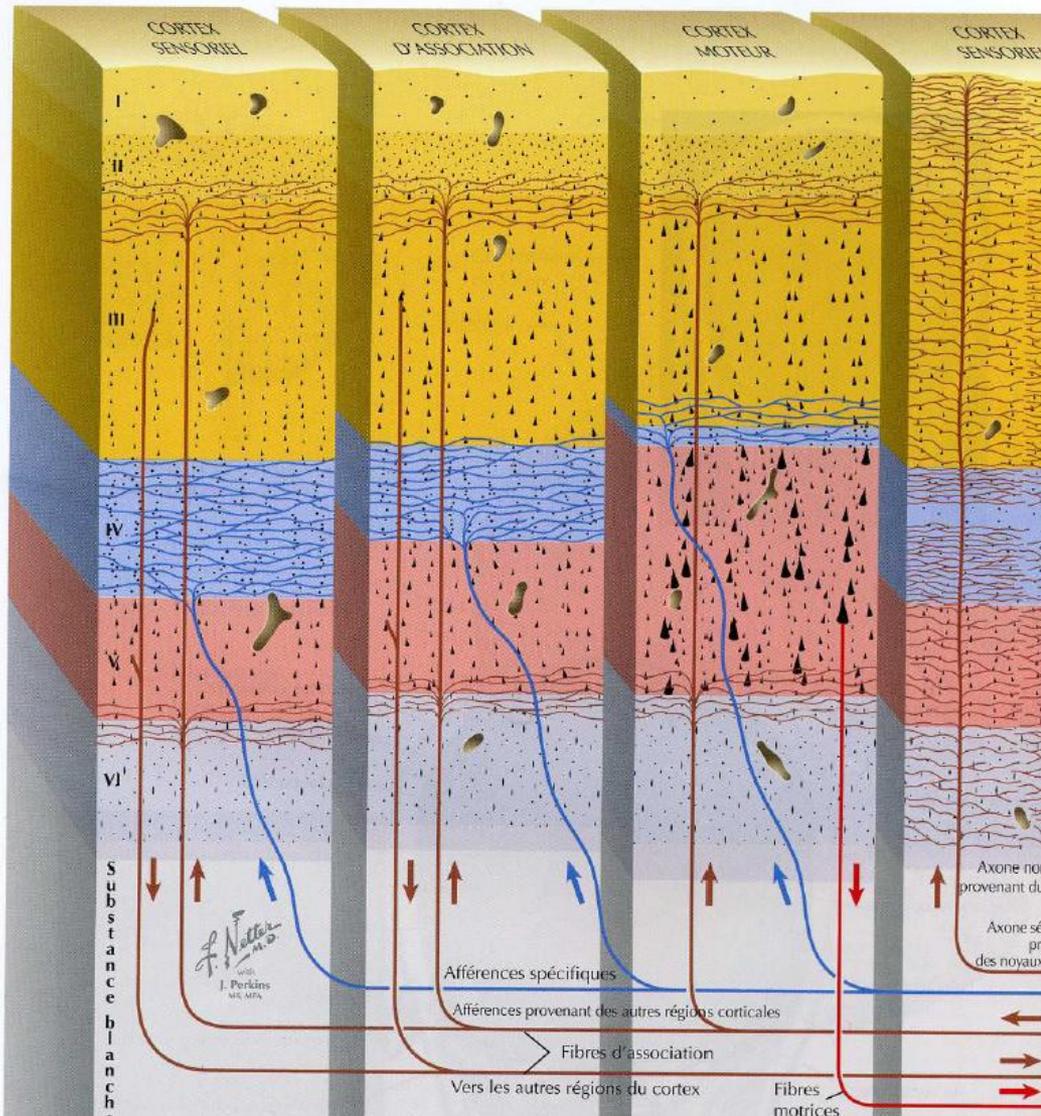
Faisceau occipitofrontal inférieur

Faisceau unciné

F. Netter
M.D.
with
J. Perkins
MS, MFA



tenseur de diffusion. Afin d'isoler les faisceaux de fibres qui irradient dans des directions différentes, un codage couleur vert est attribué aux vecteurs propres irradiant vers les directions antéropostérieures; rouge, vers les directions latérales gauche et droite; bleu vers les directions supéro-inférieures. Sur les différents schémas représentés ici, le corps calleux apparaît en rouge.



Types de neurones et connexions dans le cortex

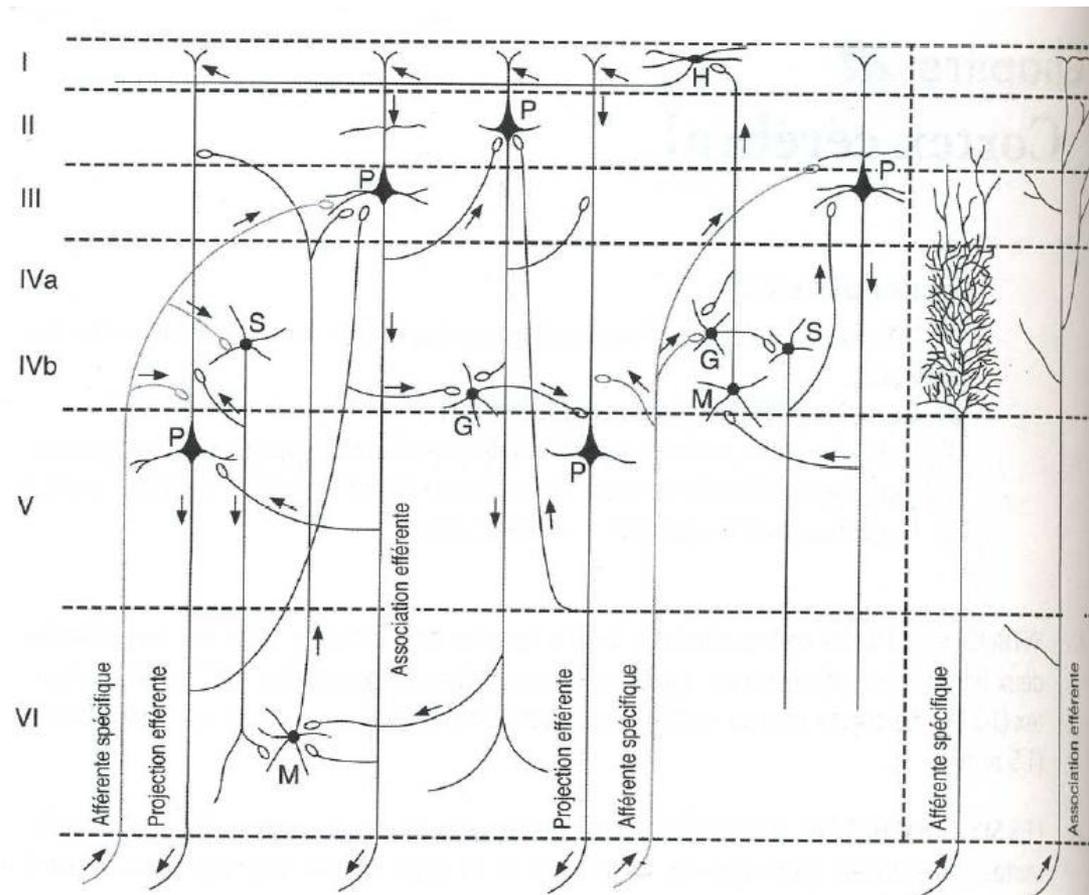
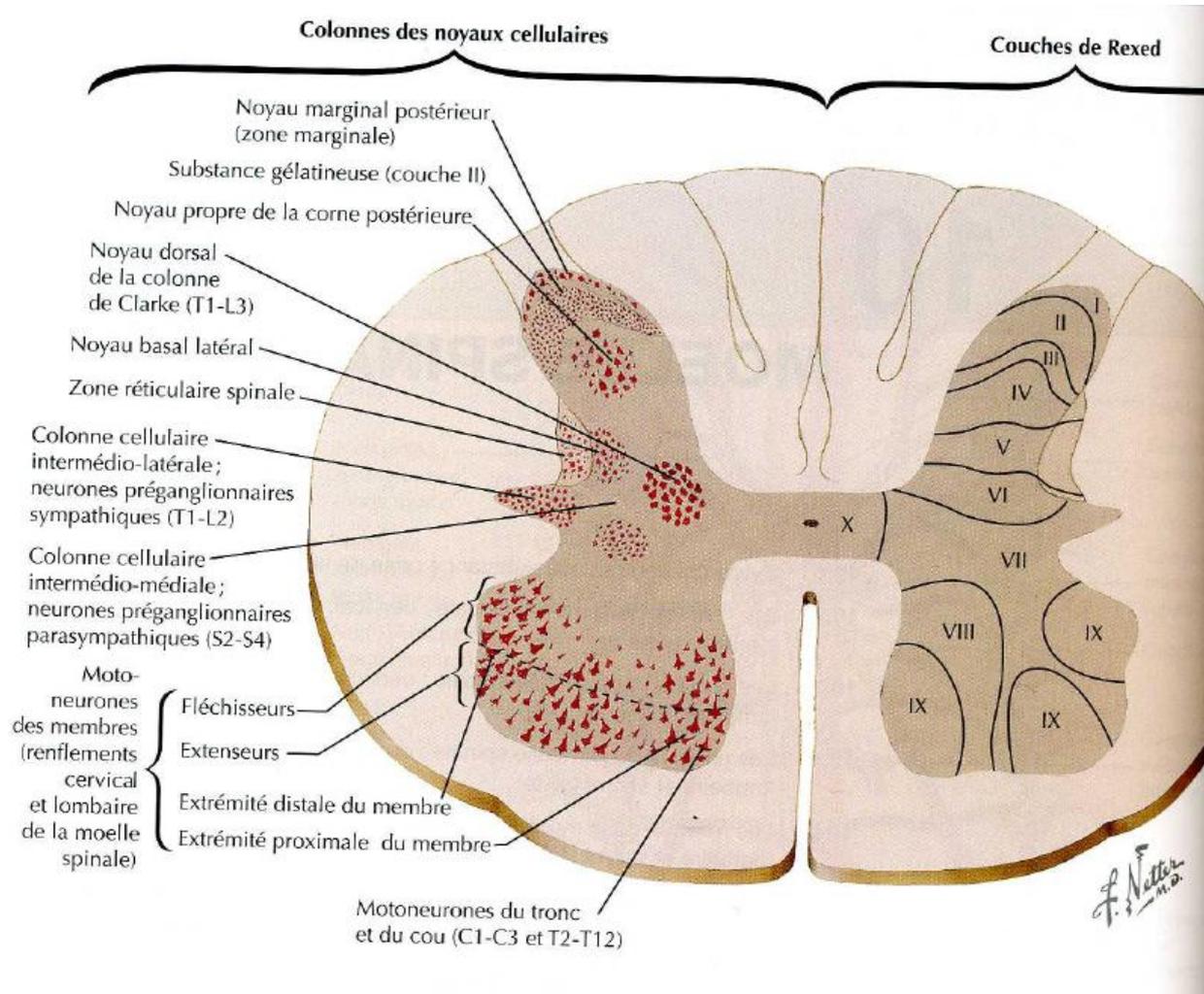


Figure 22-1. Circuits neuro-corticaux. G, grains ; H, cellule horizontale ; M, cellule de Martinotti ; P, cellule pyramidale ; S, cellule étoilée. Les boucles montrent les jonctions synaptiques. (d'après A Parent, *Carpenter's human neuroanatomy*, 9th ed. Baltimore : Williams & Wilkins, 1996 : 868, avec la permission de l'auteur.)

Ségrégation dans la moelle épinière



Circuits

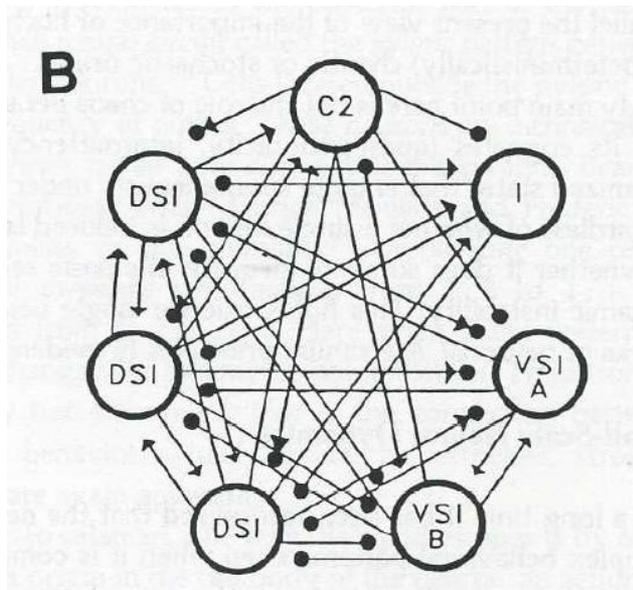
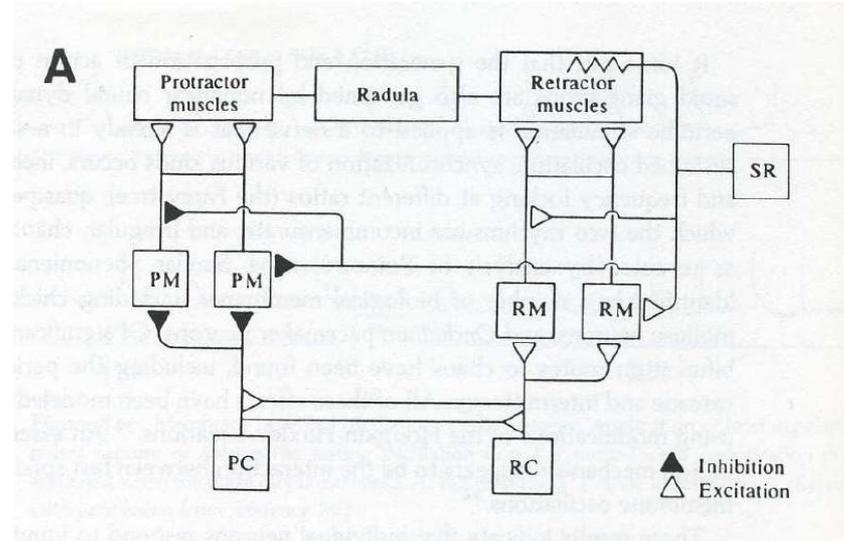
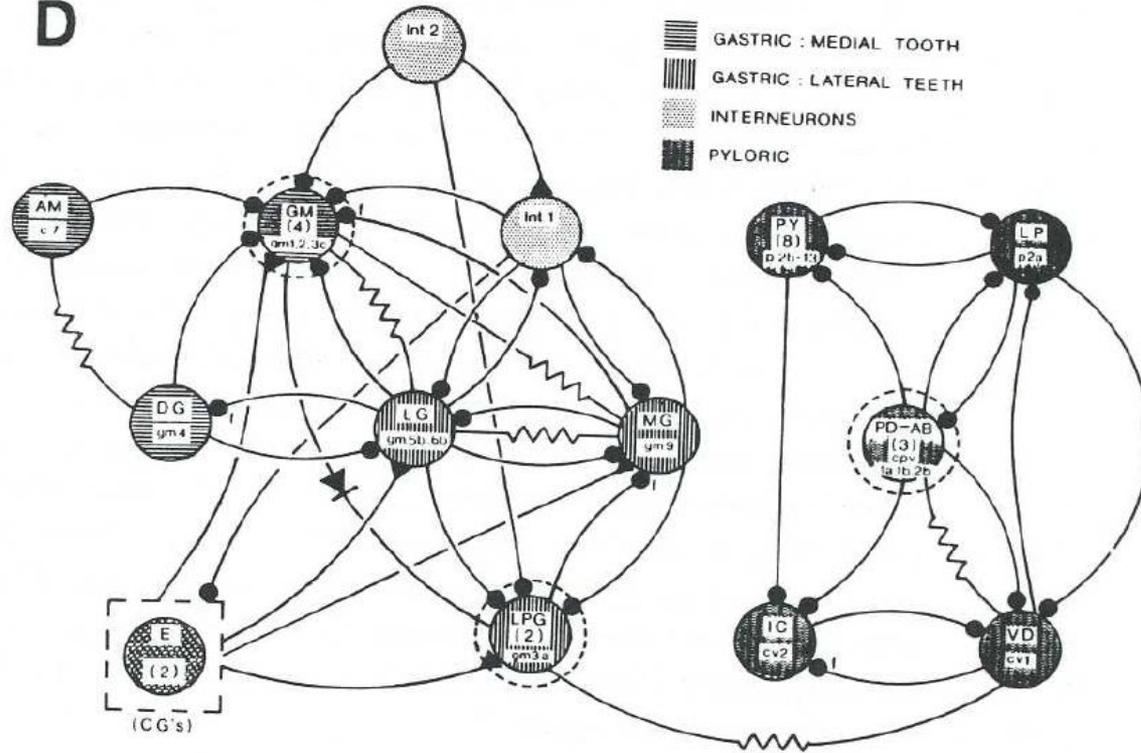
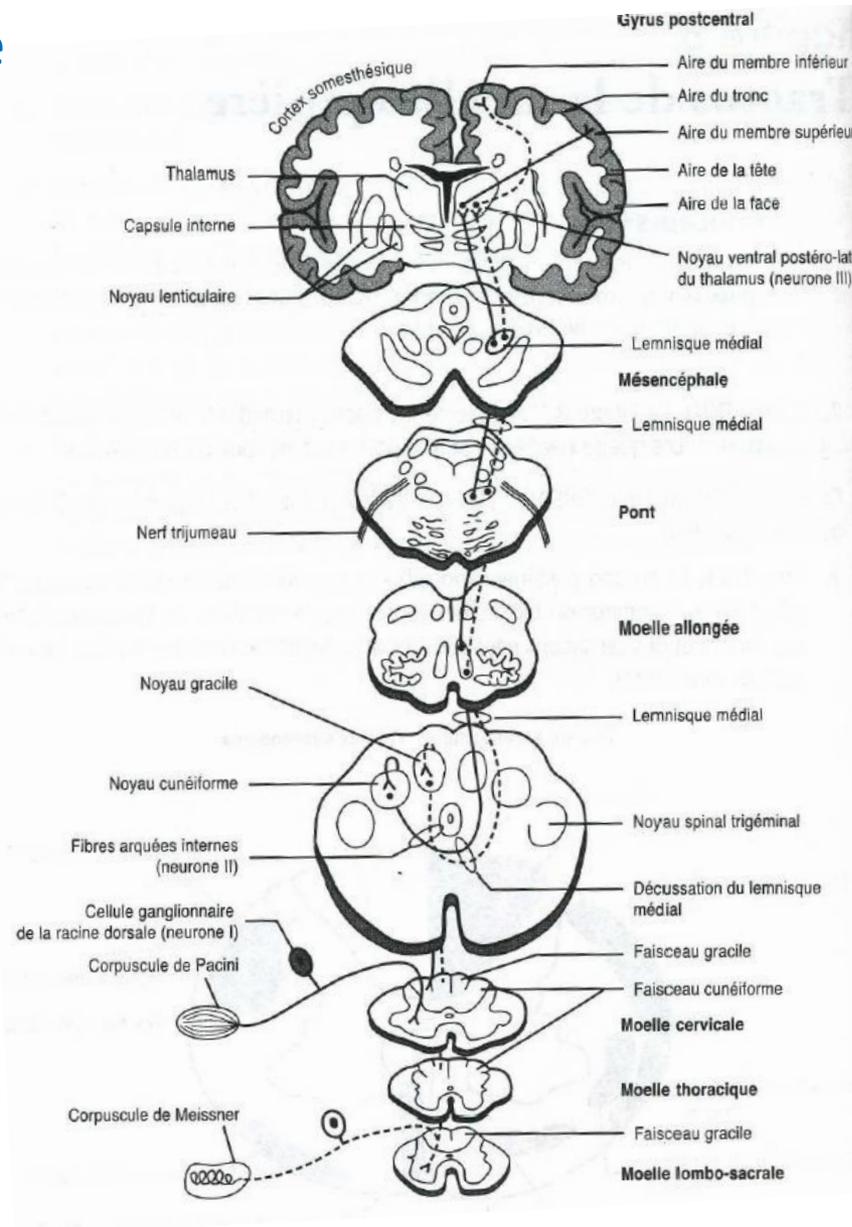


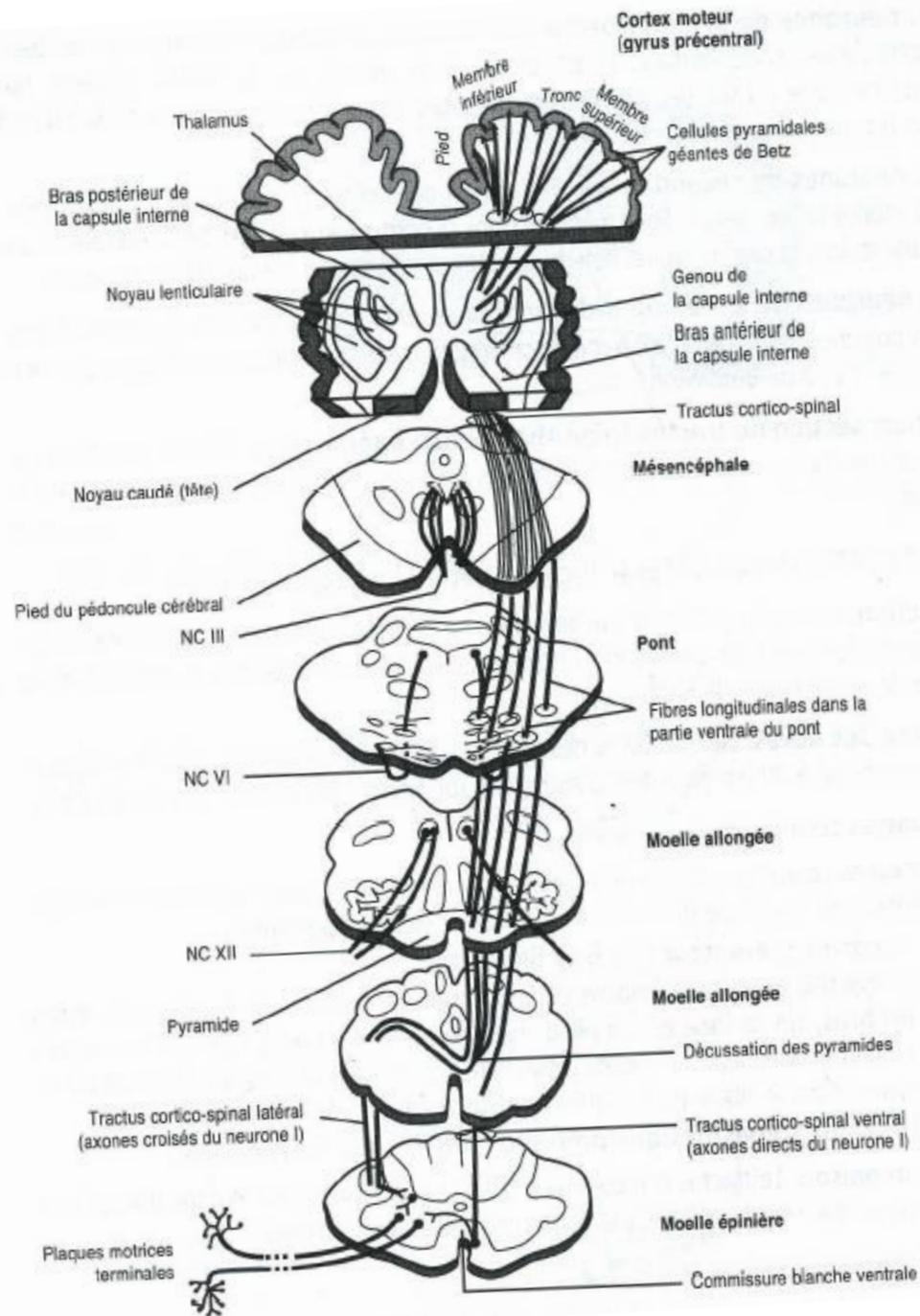
Figure 8.4 Examples of invertebrate neural circuits, showing some of the best worked-out cases. (A) Feeding circuit in the snail *Helisoma*. From *Cellular Basis of Behavior* by E. R. Kandel. Copyright © 1976 by W. H. Freeman & Co with permission. (B) *Tritonia* escape swimming network. (From Getting, A. P. Reproduced with permission from *Annual Review of Neuroscience*, 12 © 1989.) (C) Swimming circuit in the leech. (From Stent, G. L. et al. (1978) Reproduced with permission from *Science*, 200, 1348–1357. Copyright 1978 by AAAS.) (D) Stomatogastric ganglion of the lobster. (From A. I. Selverston et al. (1977). *Progress in Neurobiology* 7, 215–290. With kind permission of Elsevier Science.)

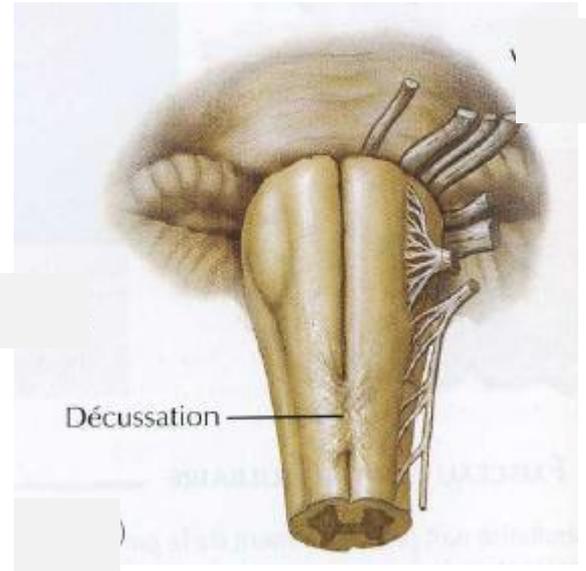
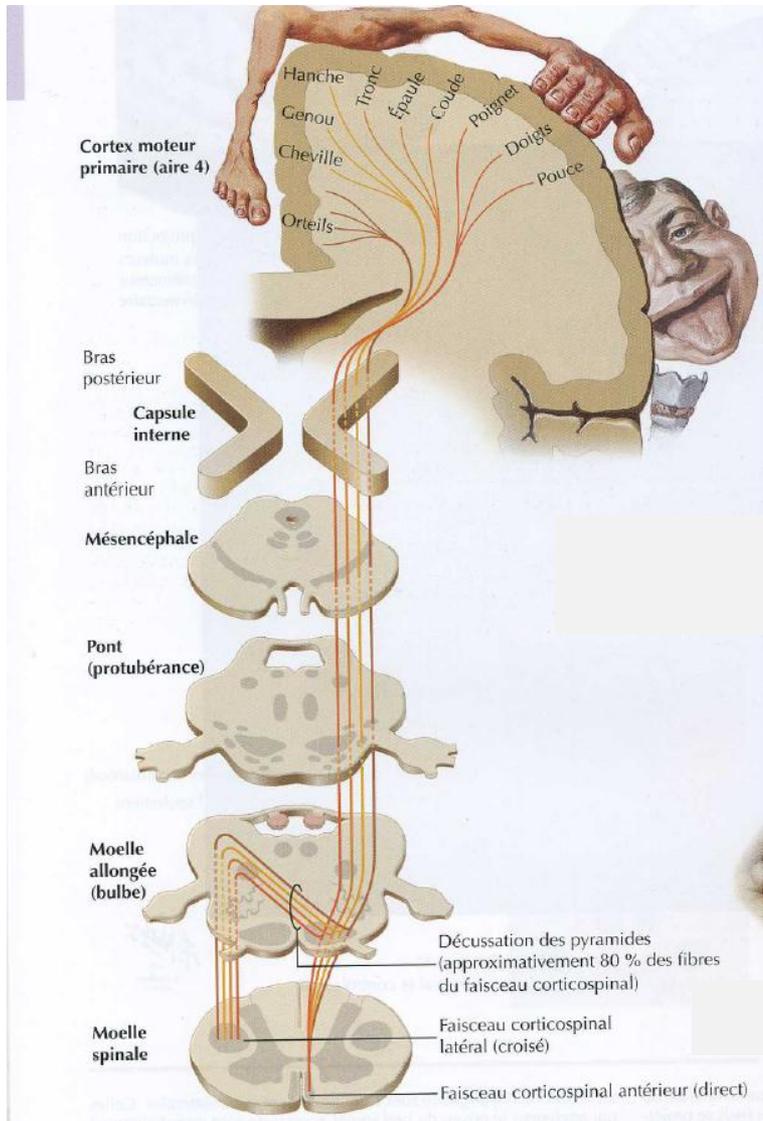
D

Voie afférente

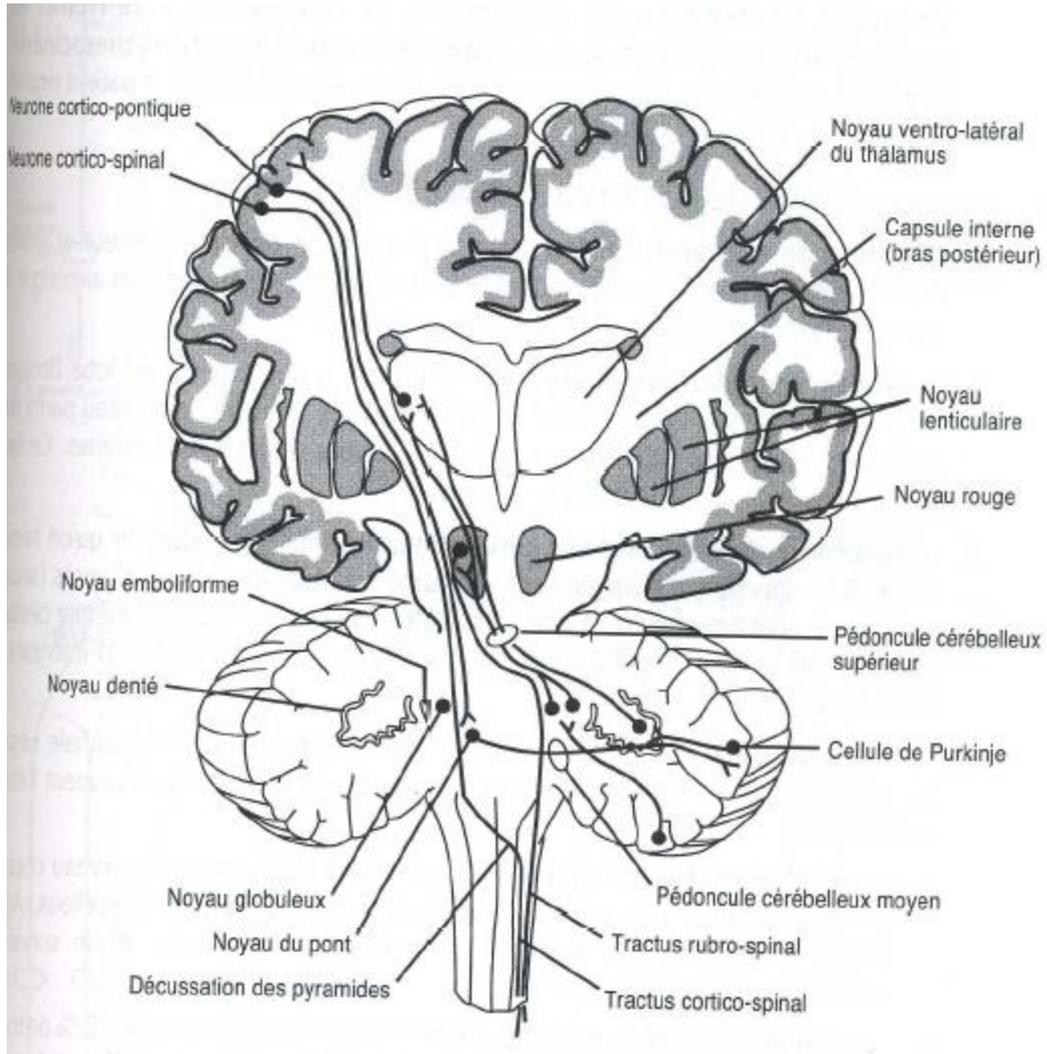


Voie efférente

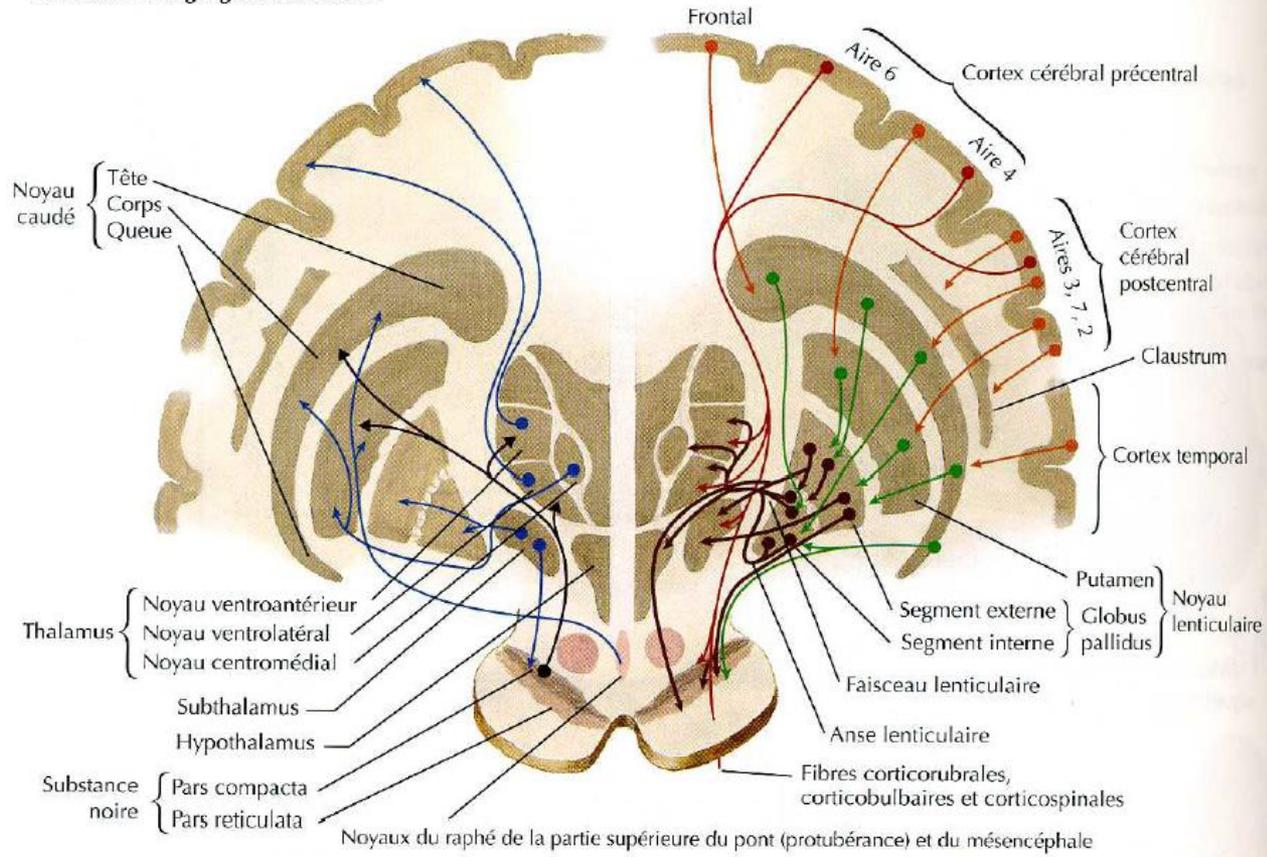




Connexions cortico- cérébelleuses



Connexions des ganglions de la base



Projections vers le cortex et les ganglions de la base

- Projection dopaminergique de la substance noire
- Projections thalamique et subthalamique

Projections du cortex et des ganglions de la base

- Projection corticale
- Projection corticostriatale
- Projection striatale
- Projection pallidale

F. Netter M.D.