Organização Morfo-funcional do sistema nervoso: central e periférico

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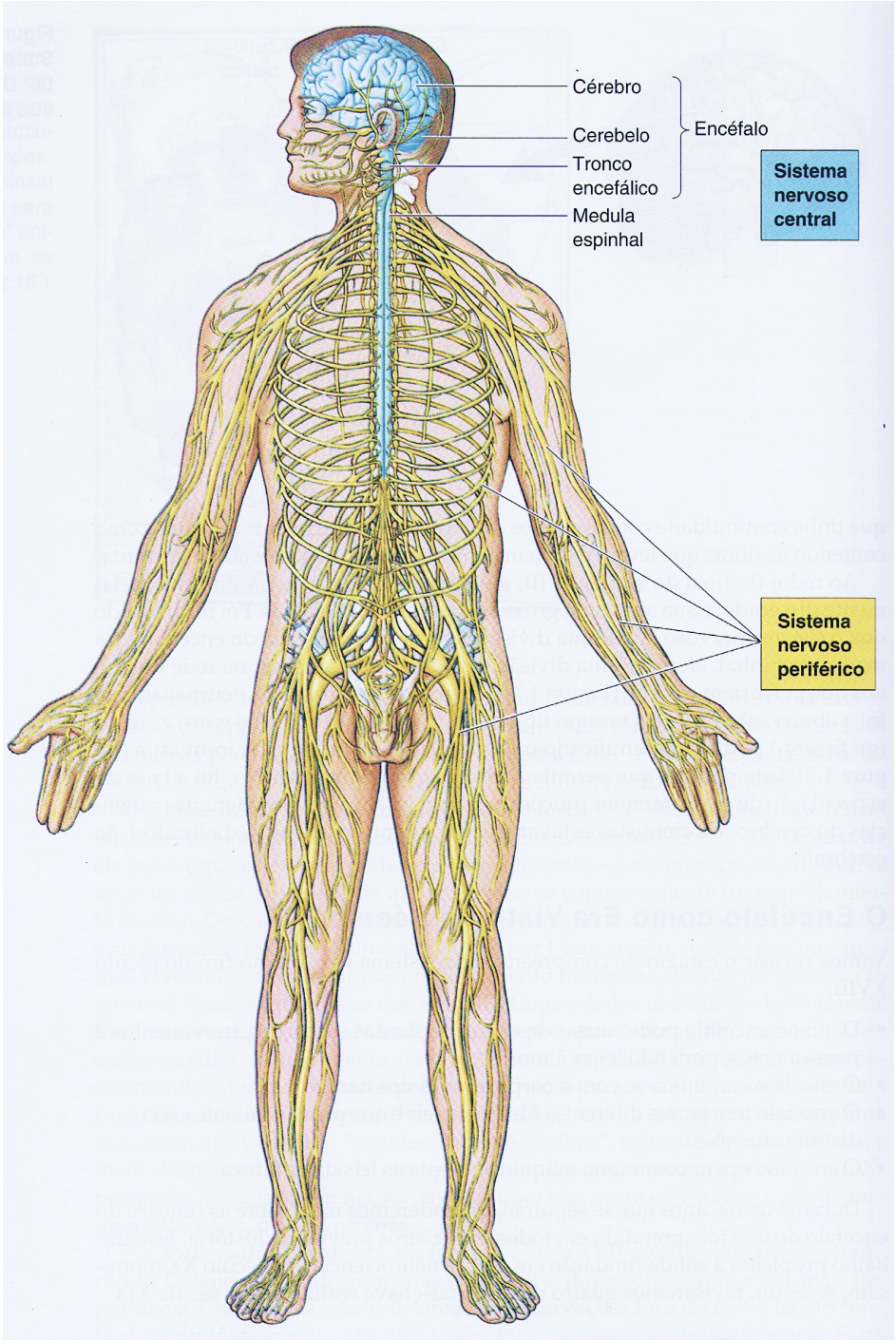
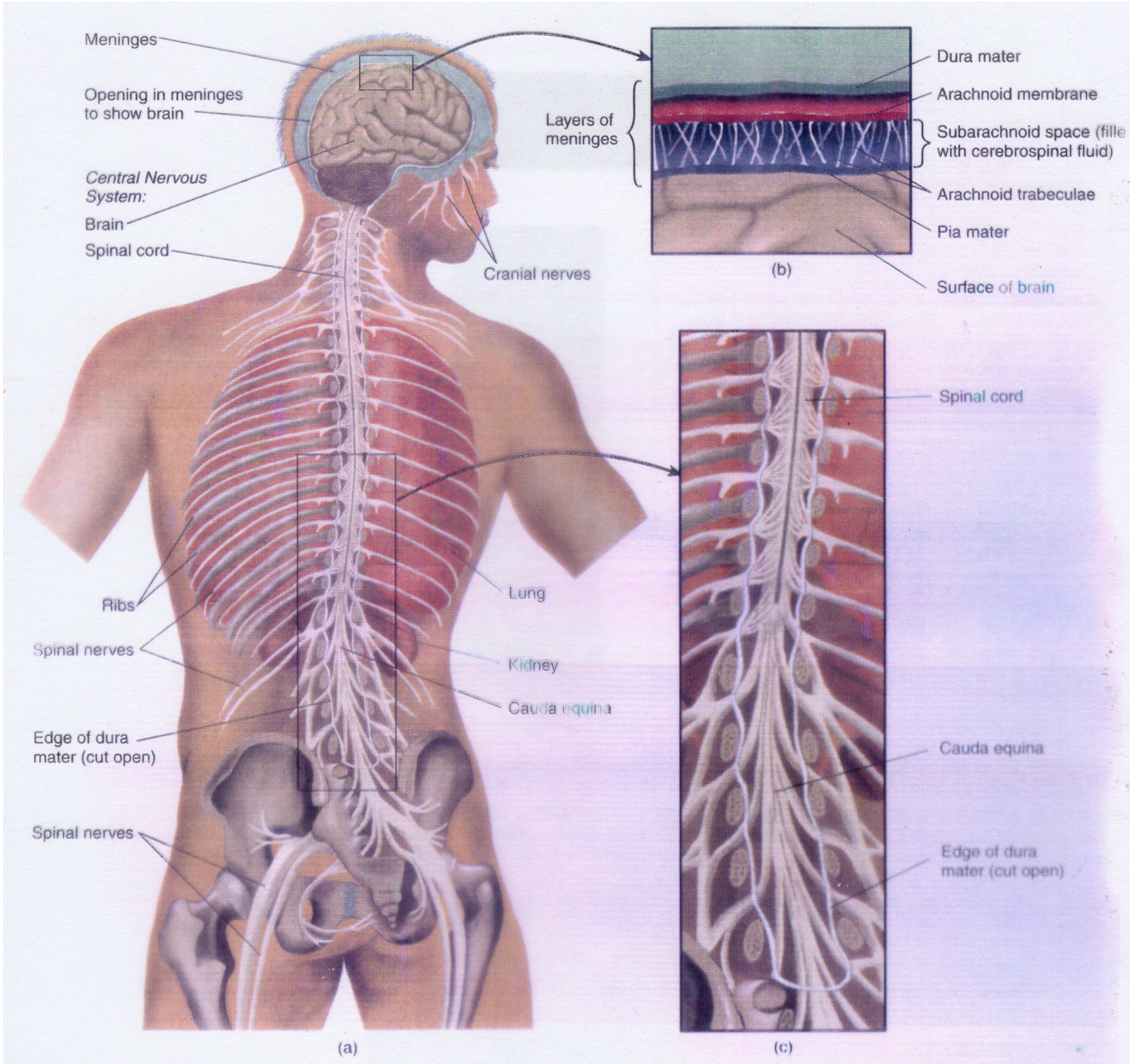
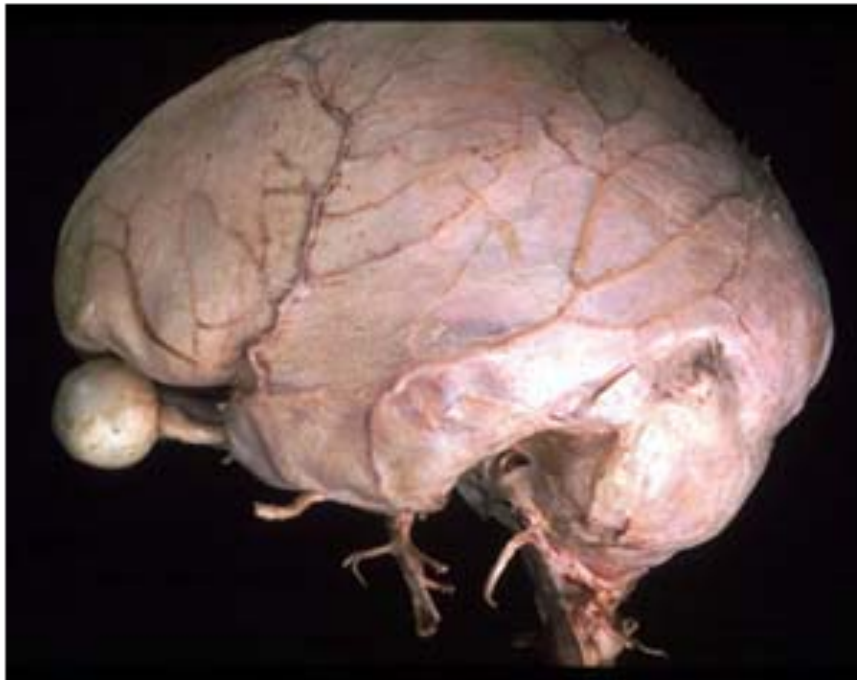
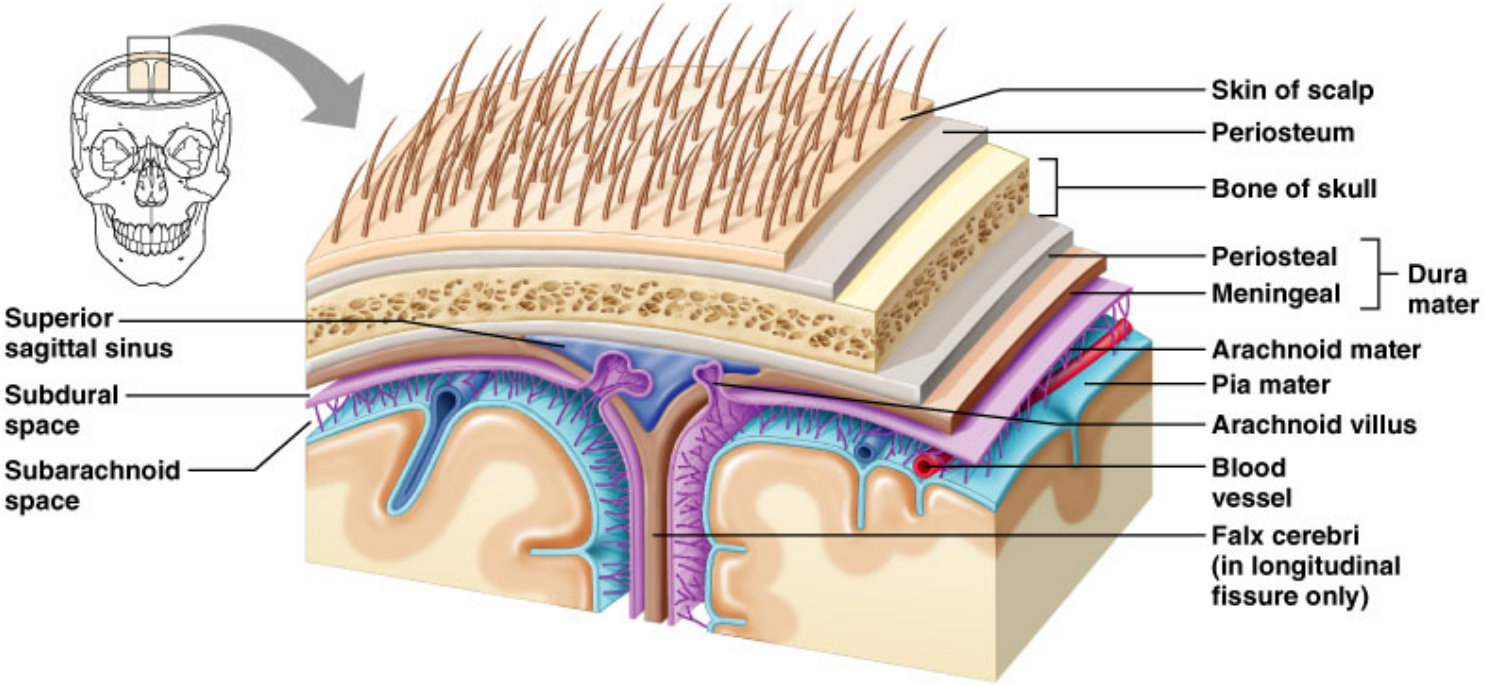

Cérebro
Cerebelo
Tronco encefálico
Medula espinhal
Encéfalo
Sistema nervoso central
Sistema nervoso periférico

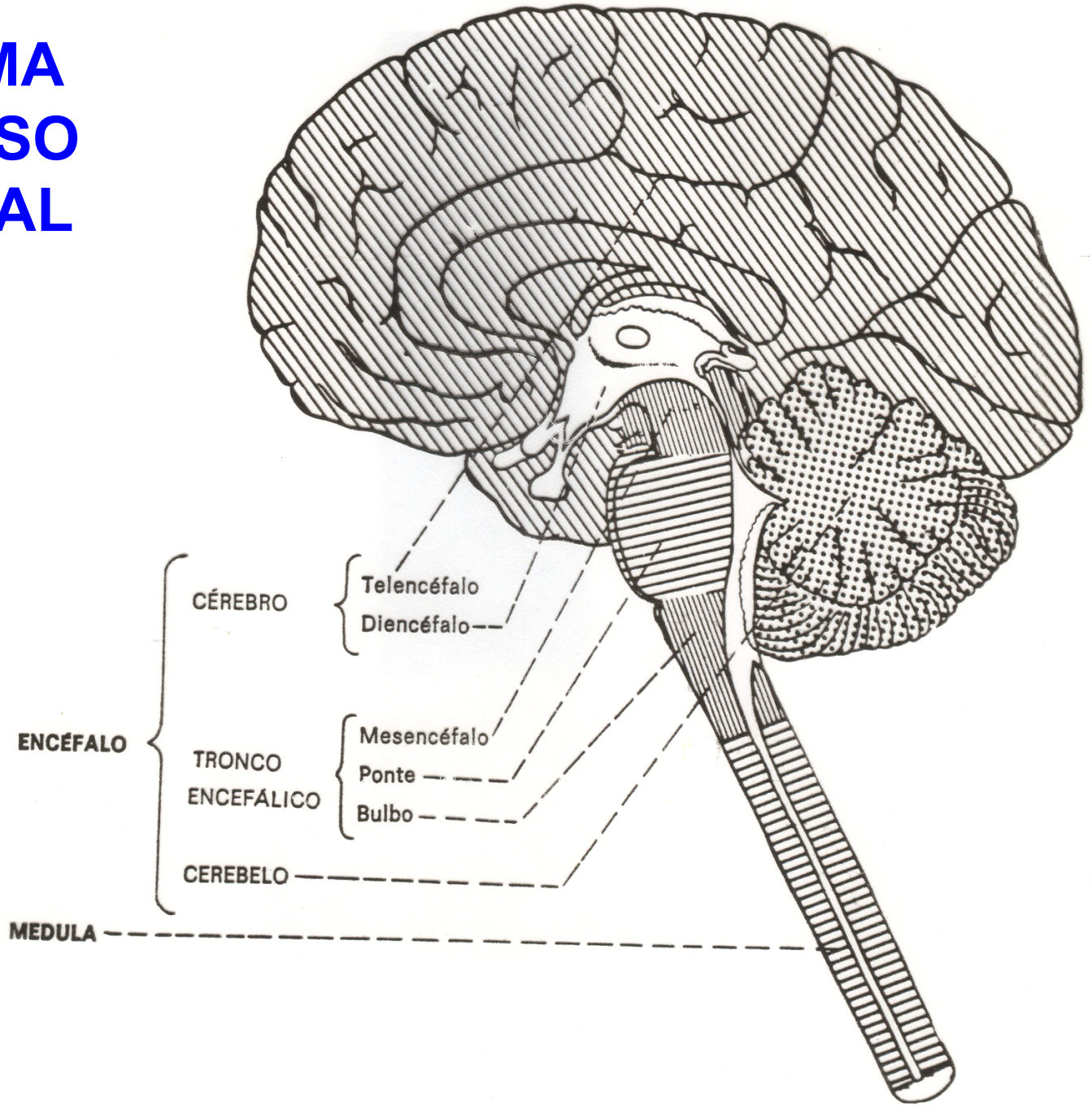

Meninges
Opening in meninges to show brain
Central Nervous System:
Brain
Spinal cord
Cranial nerves
Ribs
Spinal nerves
Edge of dura mater (cut open)
Spinal nerves
Lung
Kidney
Cauda equina
(a)
Layers of meninges
Dura mater
Arachnoid membrane
Subarachnoid space (filled with cerebrospinal fluid)
Arachnoid trabeculae
Pia mater
Surface of brain
(b)
Spinal cord
Cauda equina
Edge of dura mater (cut open)
(c)

Meninges

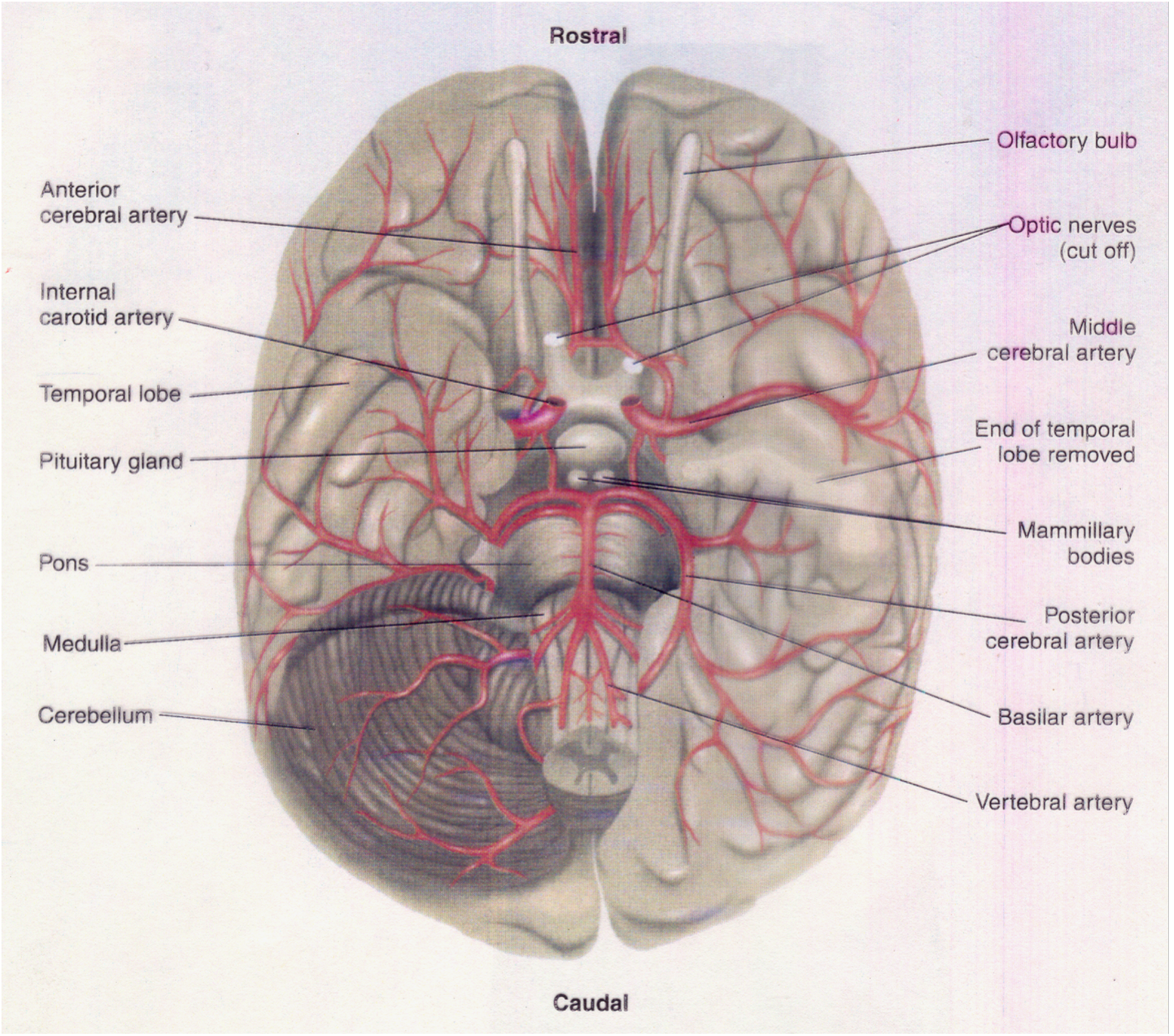


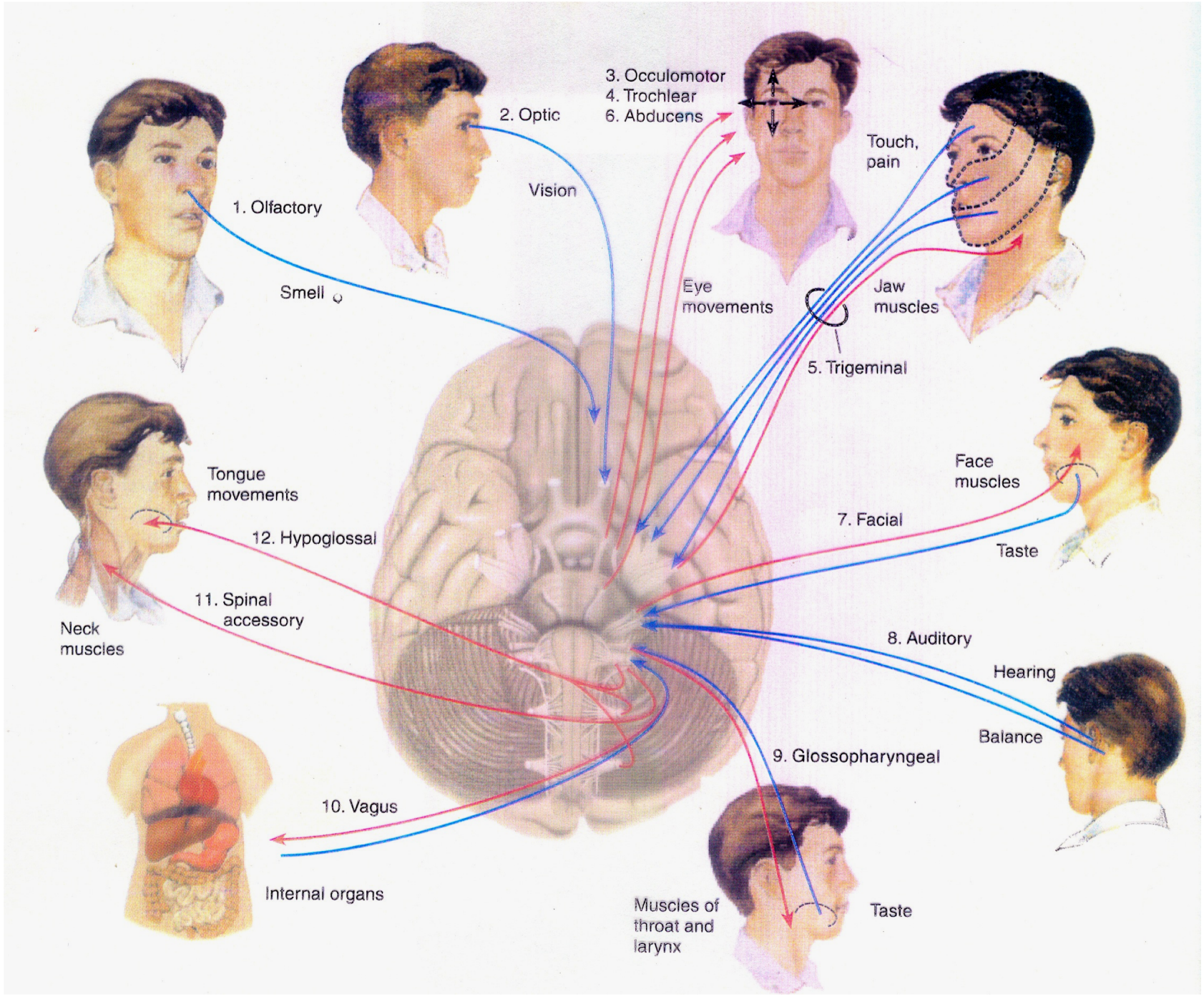

Skin of scalp
Periosteum
Bone of skull
Periosteal
Meningeal
Dura mater
Superior sagittal sinus
Arachnoid mater
Pia mater
Subdural space
Arachnoid villus
Subarachnoid space
Blood vessel
Falx cerebri (in longitudinal fissure only)

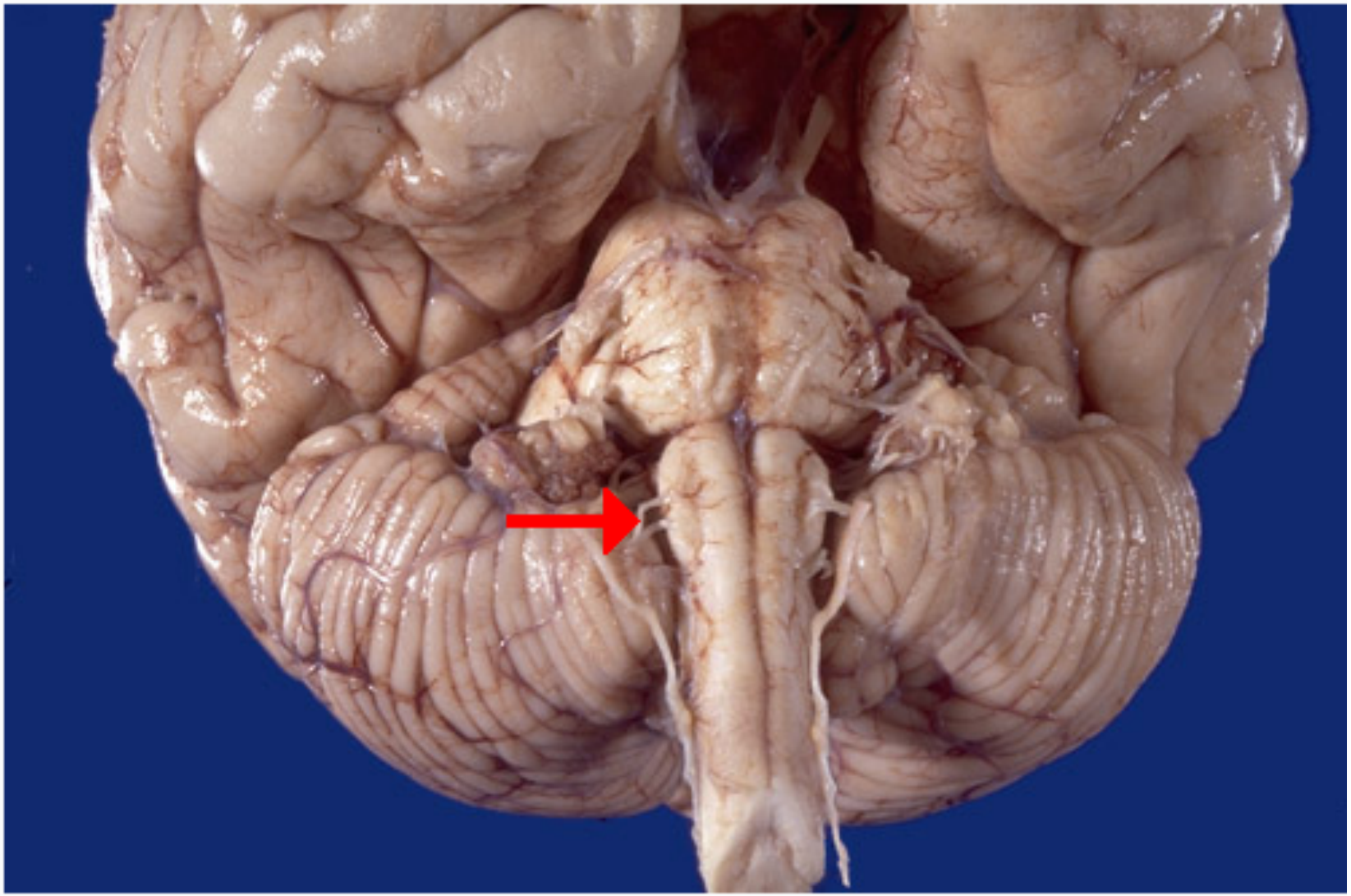
SISTEMA NERVOSO CENTRAL



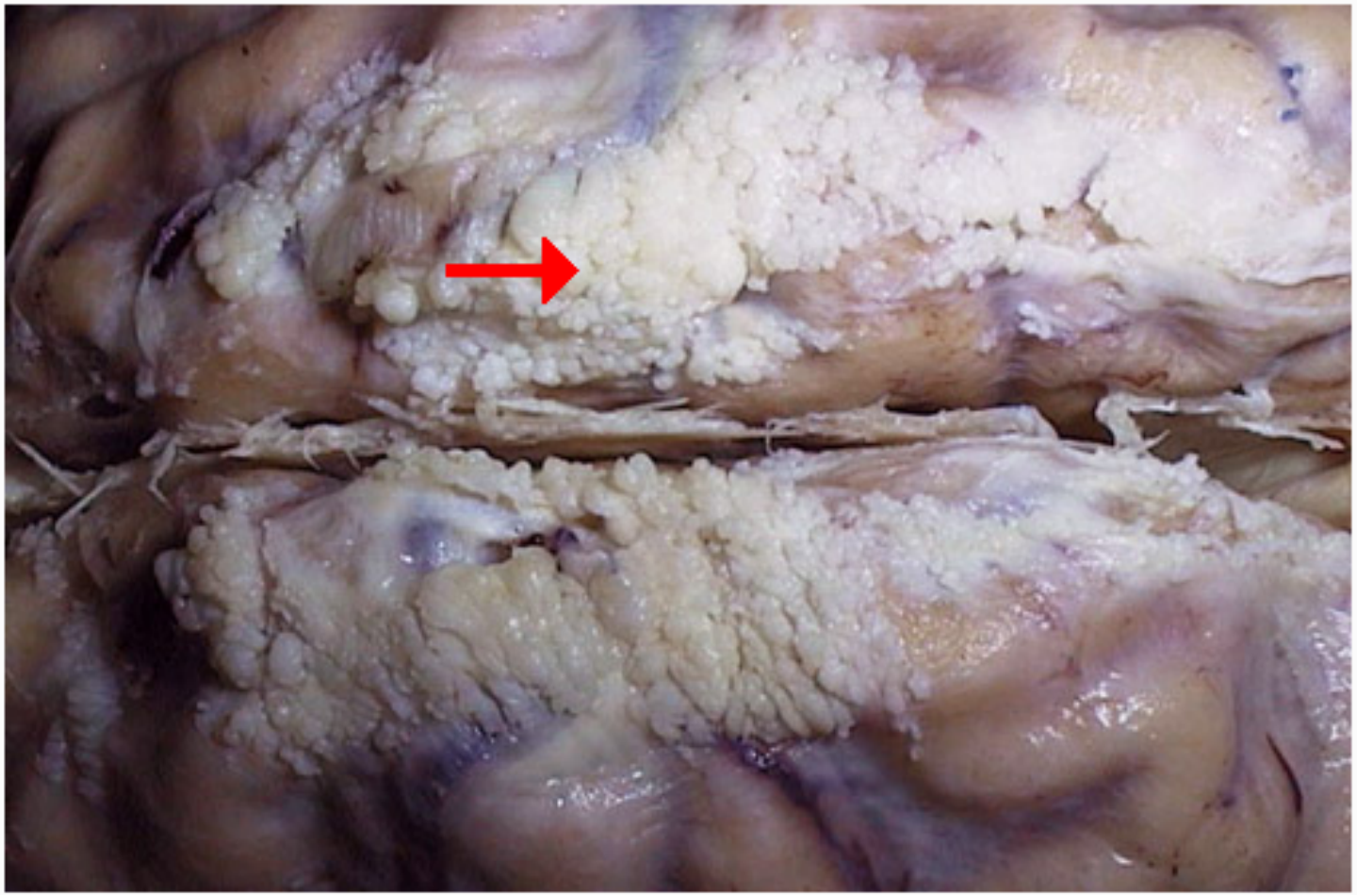
Sulcos, Giros, Vasos, Meninges


Rostral
Olfactory bulb
Anterior cerebral artery
Optic nerves (cut off)
Internal carotid artery
Middle cerebral artery
Temporal lobe
End of temporal lobe removed
Pituitary gland
Mammillary bodies
Pons
Posterior cerebral artery
Medulla
Basilar artery
Cerebellum
Vertebral artery
Caudal


1. Olfactory
Smell
2. Optic
Vision
3. Occulomotor
4. Trochlear
6. Abducens
Eye movements
Touch, pain
Jaw muscles
5. Trigeminal
Face muscles
7. Facial
Taste
8. Auditory
Hearing
Balance
9. Glossopharyngeal
Taste
Muscles of throat and larynx
10. Vagus
Internal organs
11. Spinal accessory
Neck muscles
12. Hypoglossal
Tongue movements

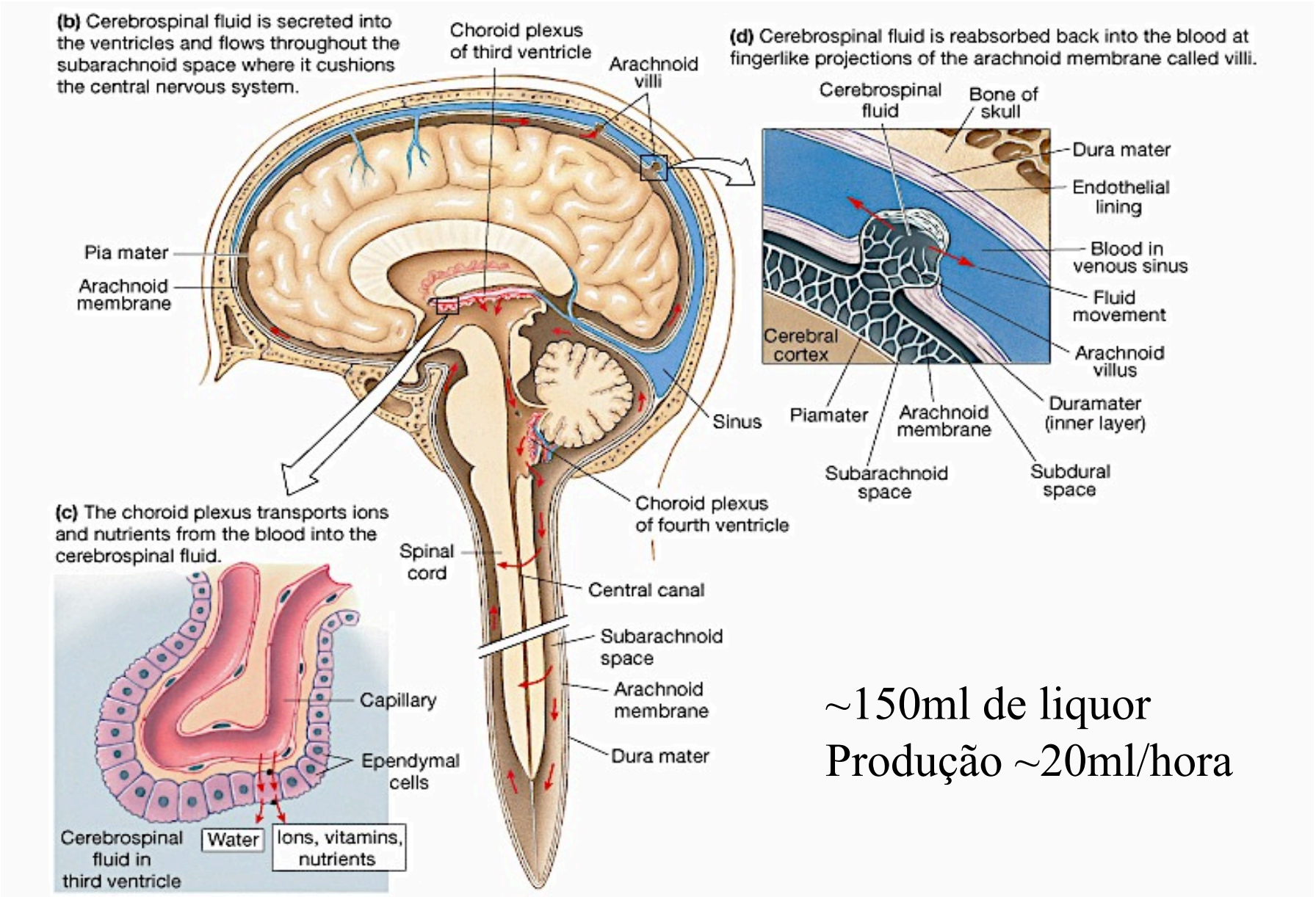


Renovação do líquor



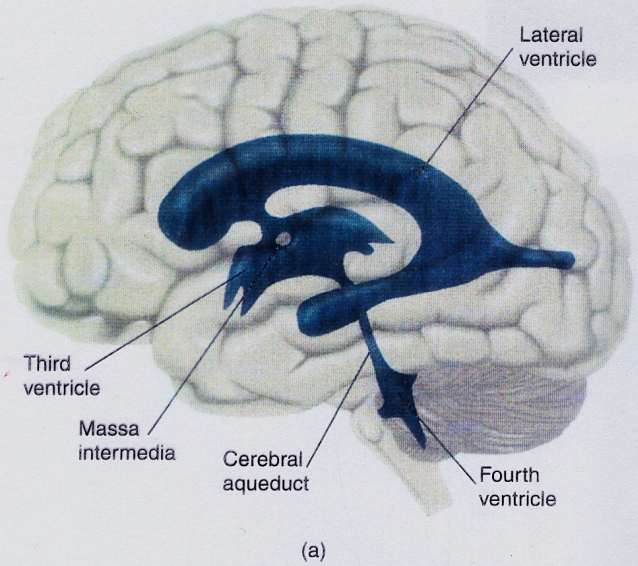
Granulações Aracnoídeas – absorção do líquor

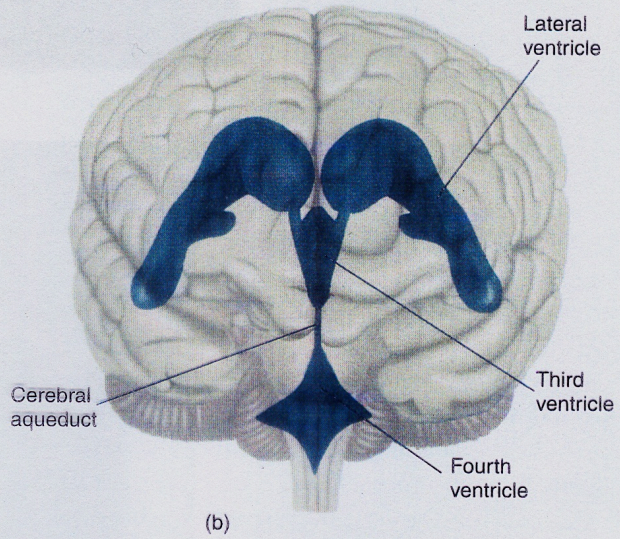
Produção do líquor (líquido cefalorraquidiano): plexo-coroide (ventrículos cerebrais)

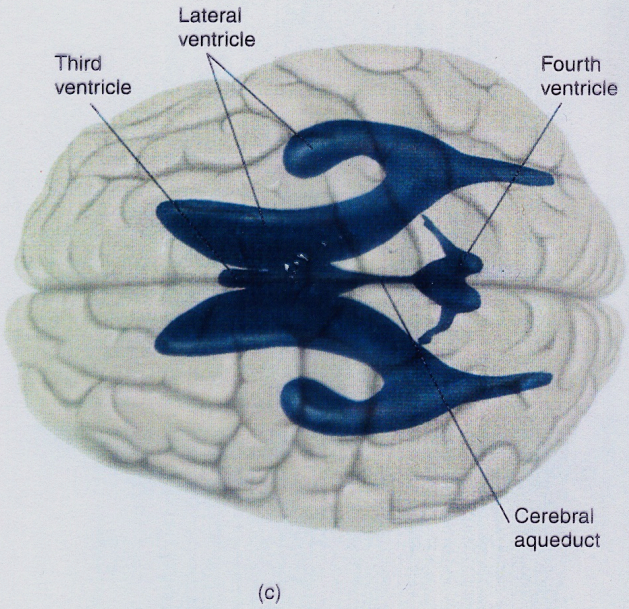


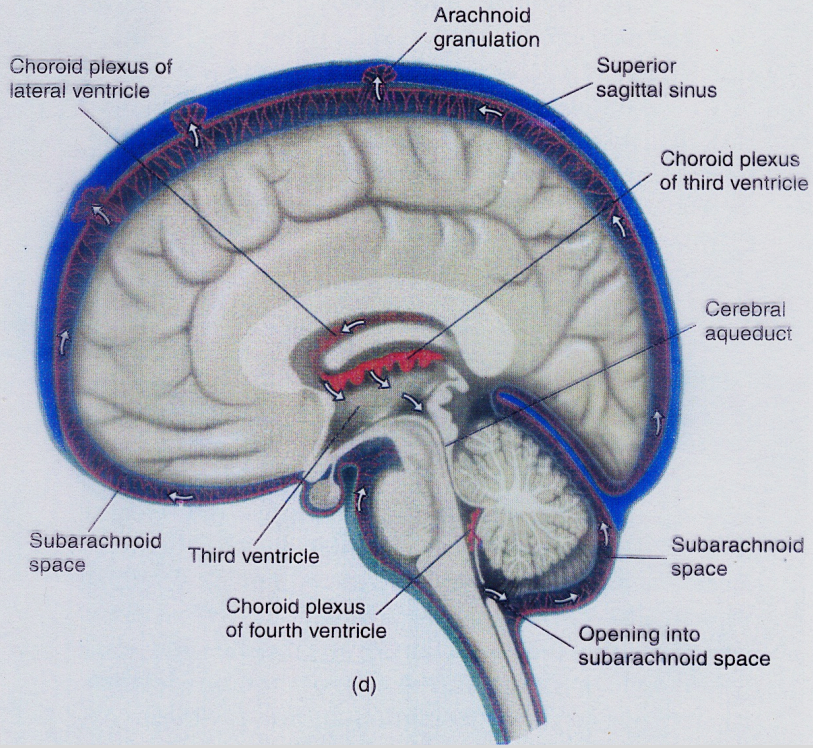
~150ml de liquor
Produção ~20ml/hora

SISTEMA VENTRICULAR



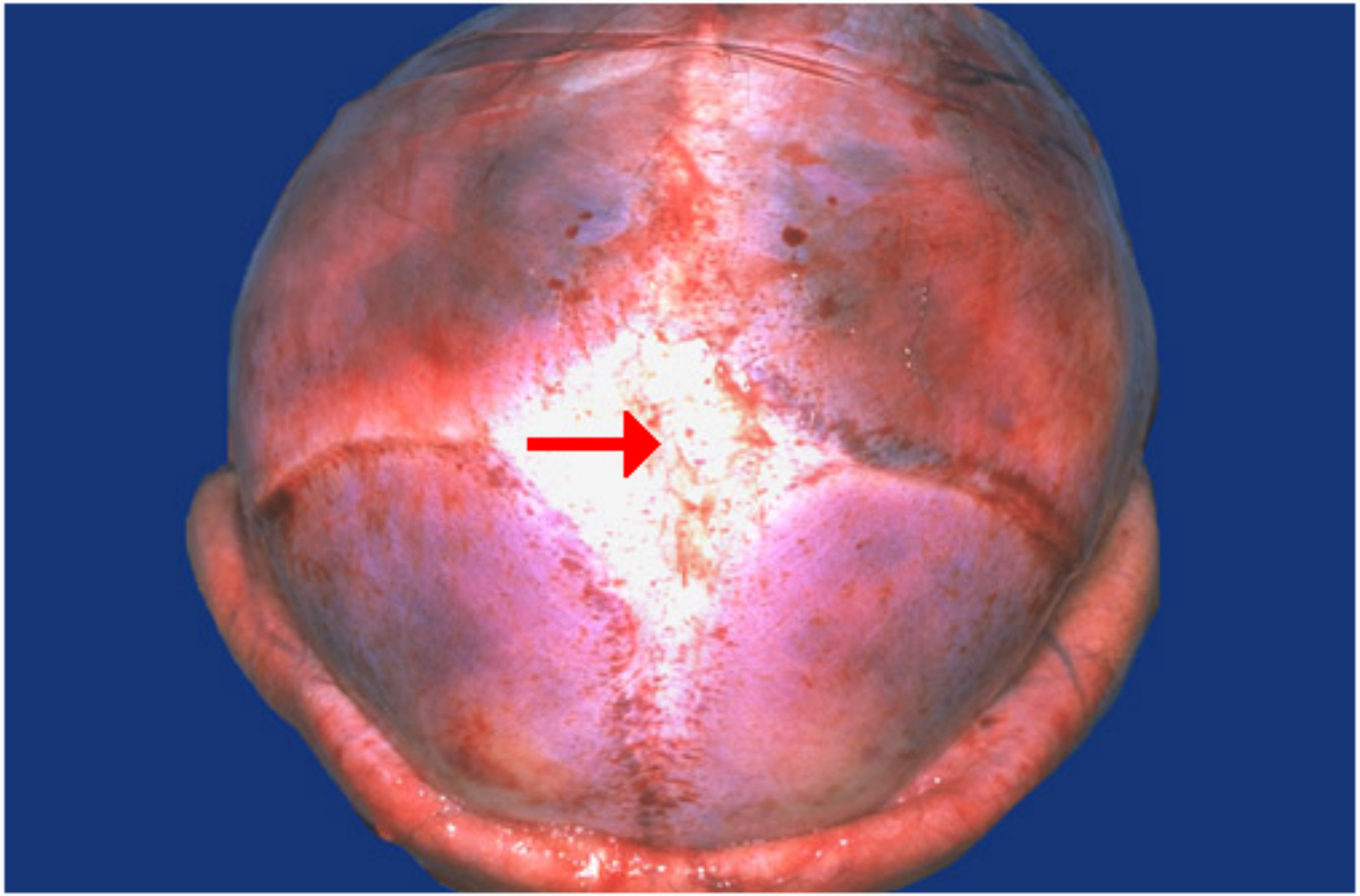




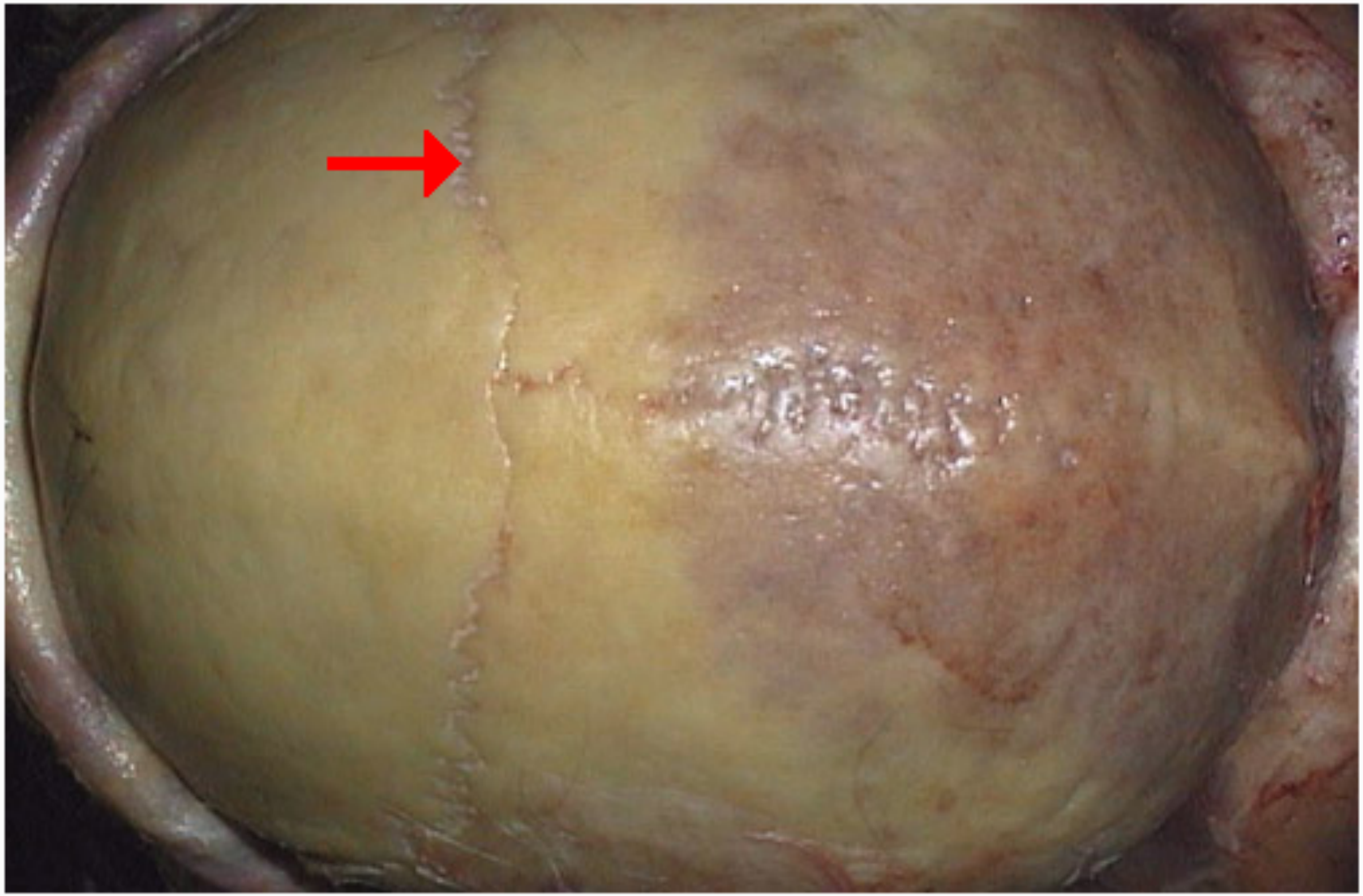


Líquido cefalorraquidiano encontra-se entre as meninges (espaço subaracnoide)

Proteção mecânica do encéfalo

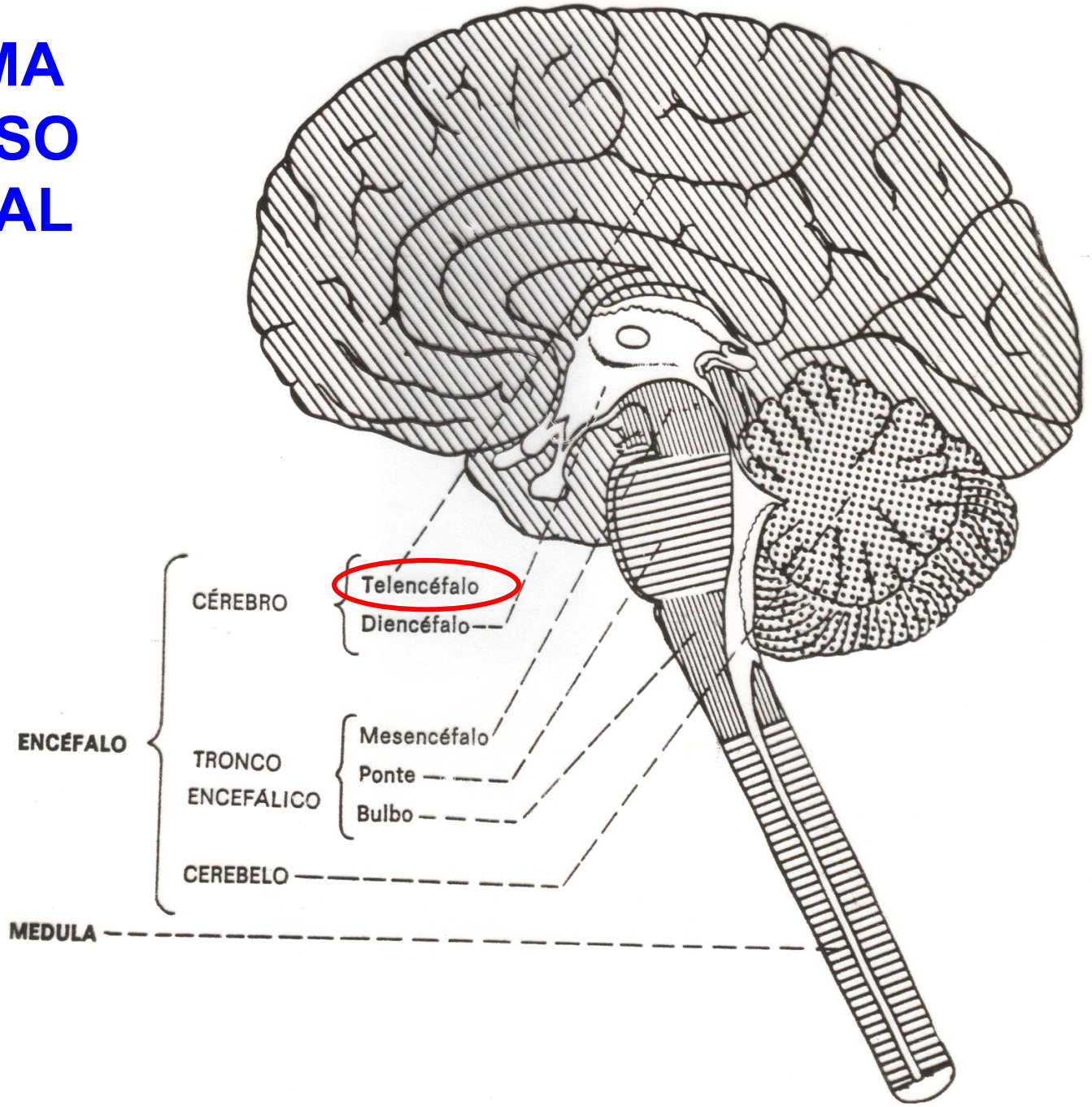


Crânio de criança: suturas ainda não completamente estabelecidas

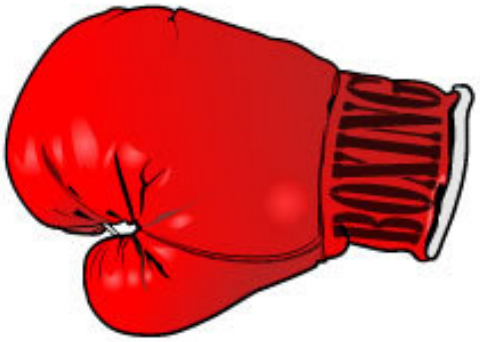


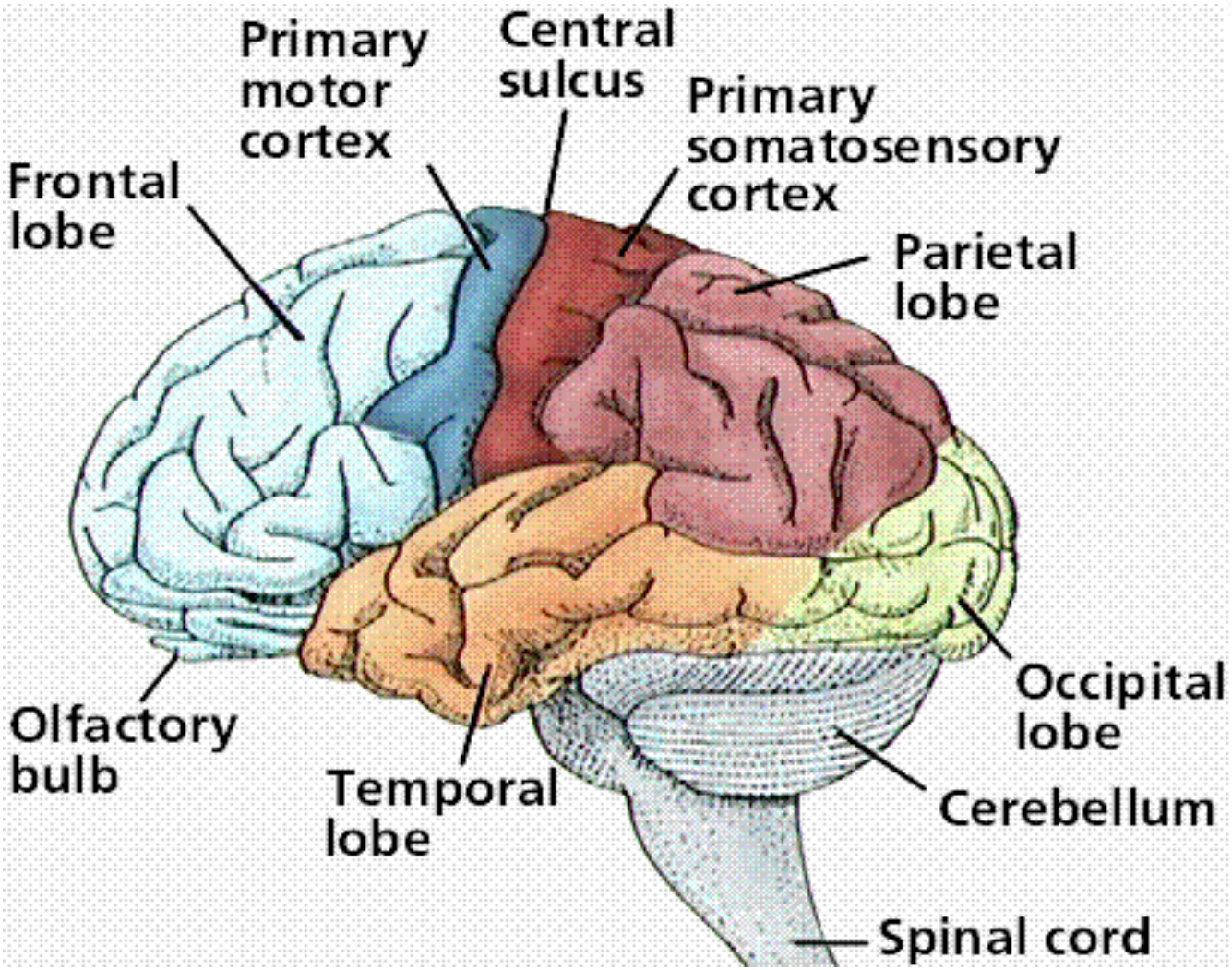
Crânio de idoso: calcificação das suturas

SISTEMA NERVOSO CENTRAL

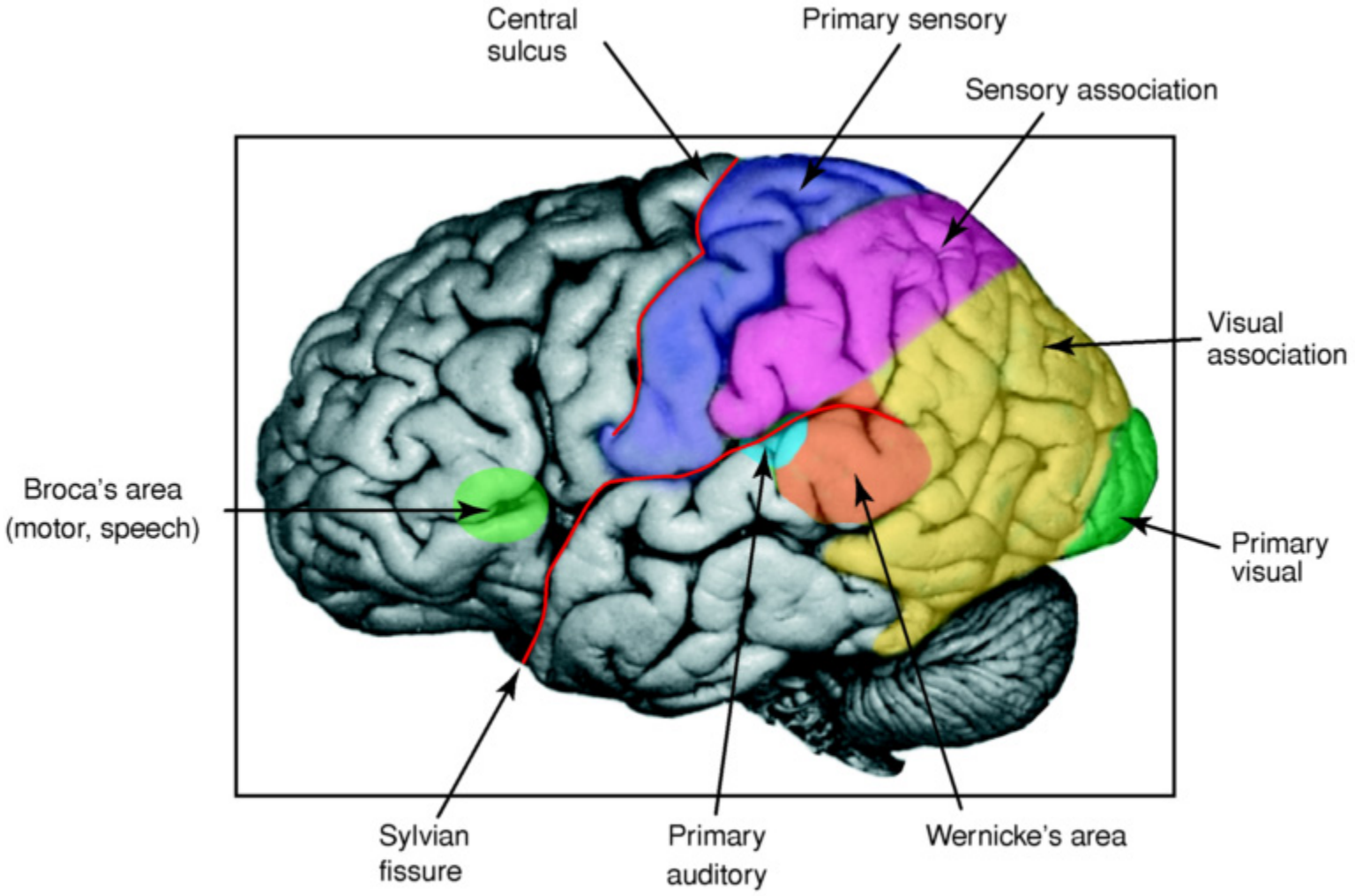


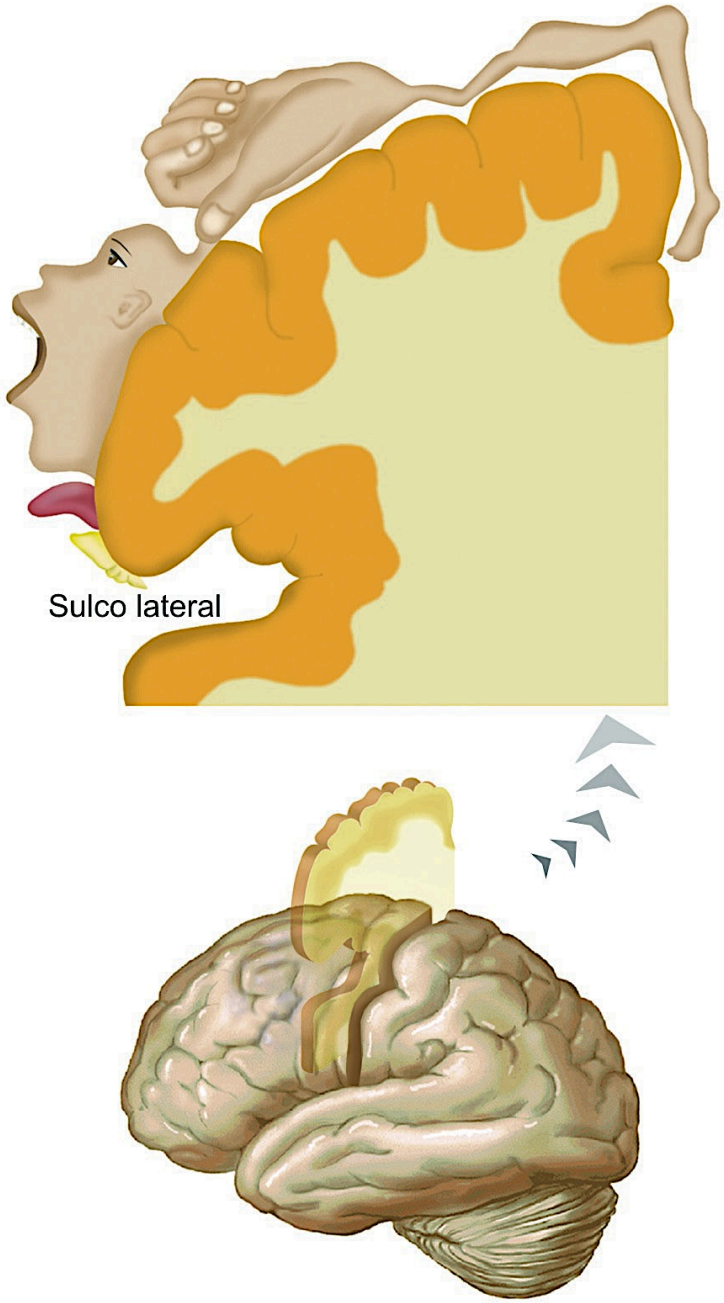
Telencéfalo





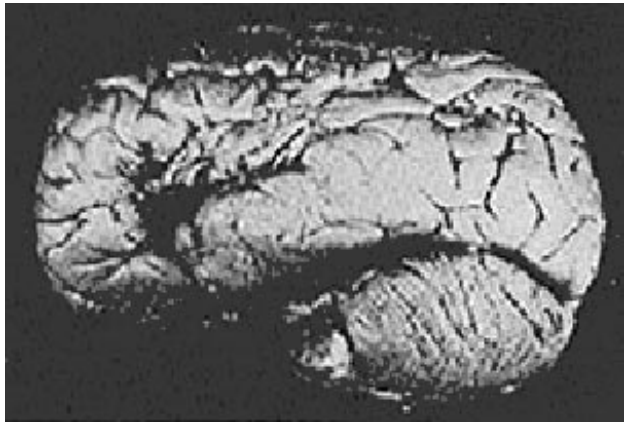
O sistema nervoso central é compartimentalizado para reconhecer os estímulos sensoriais

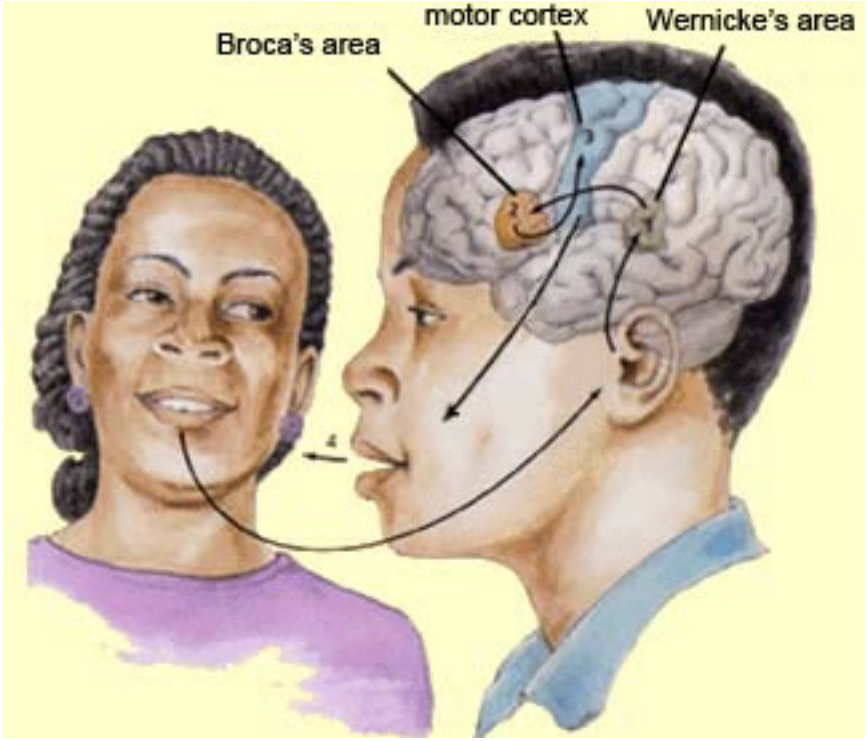




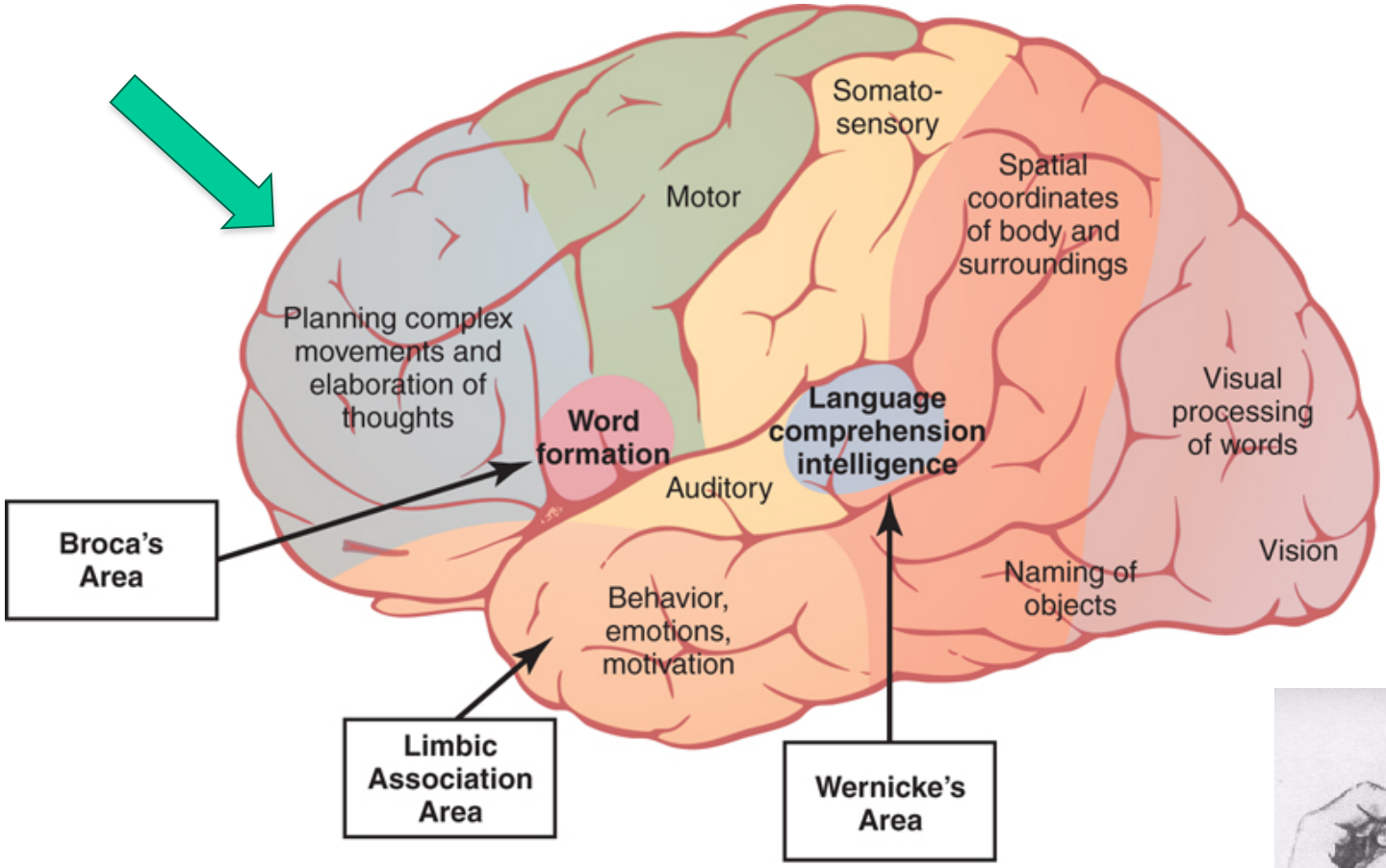
Compartimentalização do córtex motor

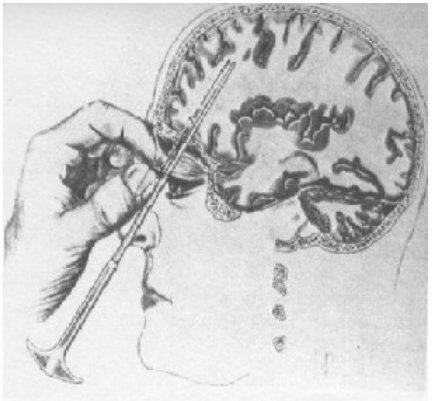
Fala e compreensão: Área de Broca e área de Wernicke





Mapa funcional do córtex cerebral: lobo frontal

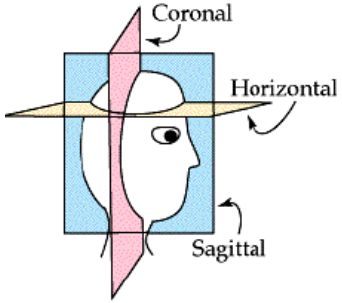




Doença de Pick – demencia frontotemporal

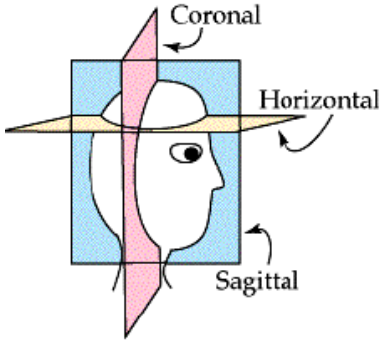
- **Distúrbios comportamentais**
- **Desinibição**
- **Negligência com os cuidados pessoais e de higiene**
- **Desatenção, Agressividade**
- **Labilidade emocional**
- **Dificuldade em resolver problemas cotidianos**

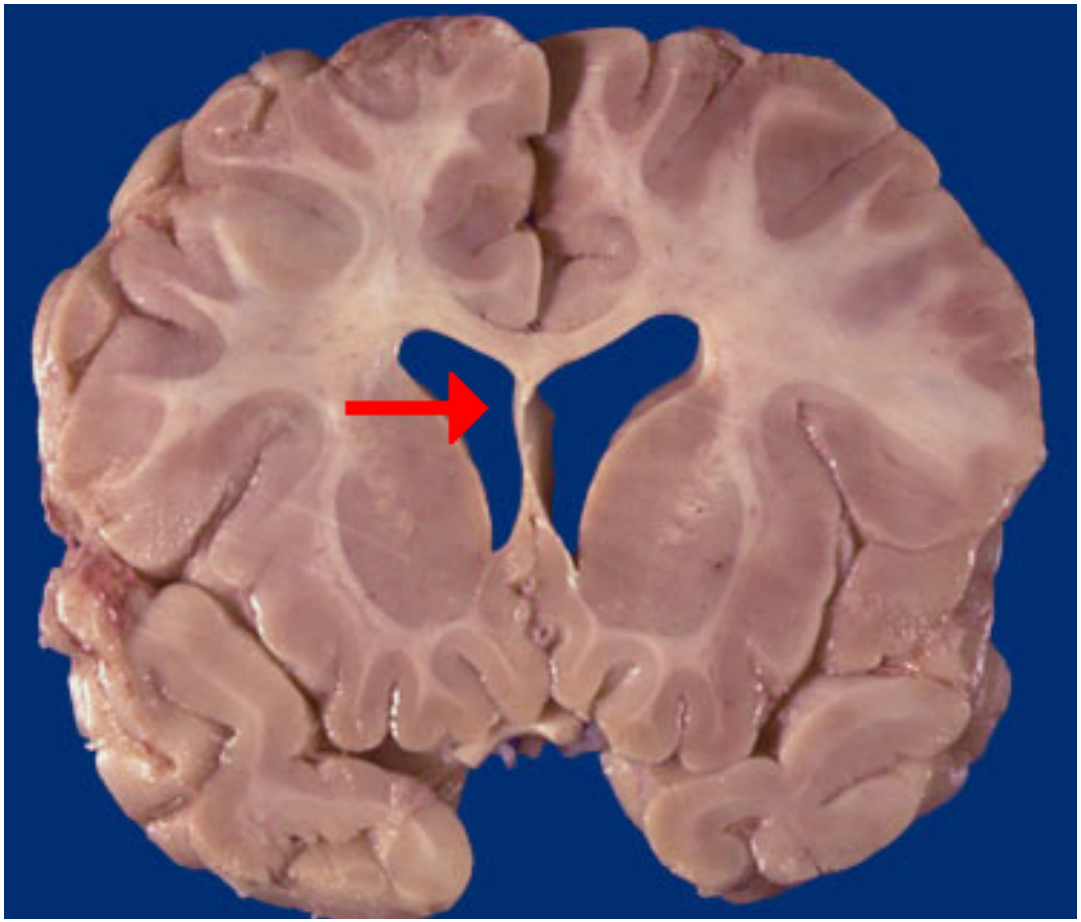
Corpo caloso
Giro do cíngulo
Tronco encefálico
Cerebelo



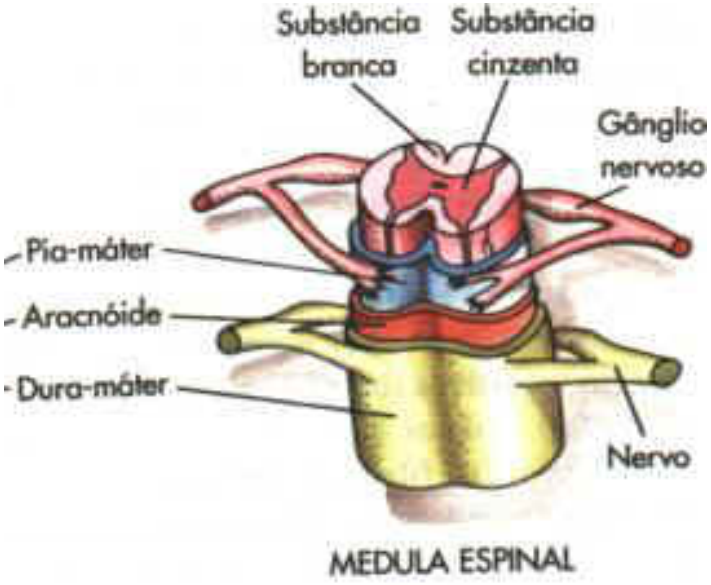
Plano sagital

Ventrículos laterais
Substância branca (interna)
Substância cinzenta (externa)



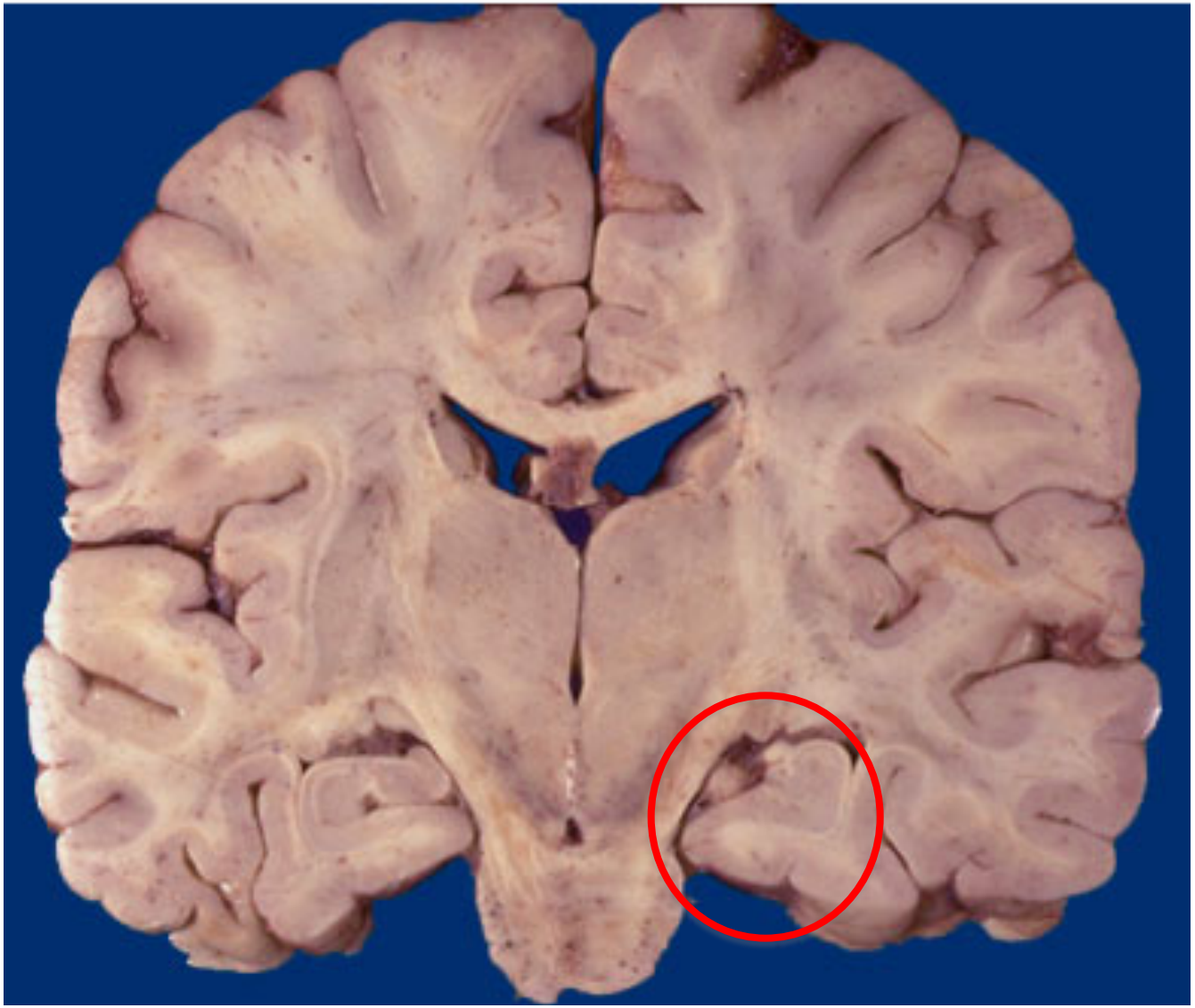


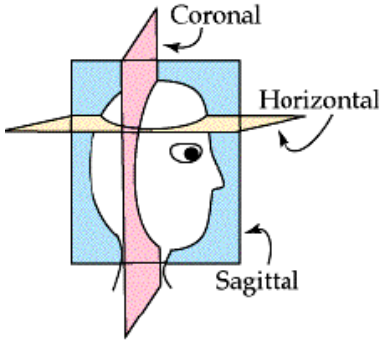
Plano coronal



Substância branca (externa)
Substância cinzenta (interna)

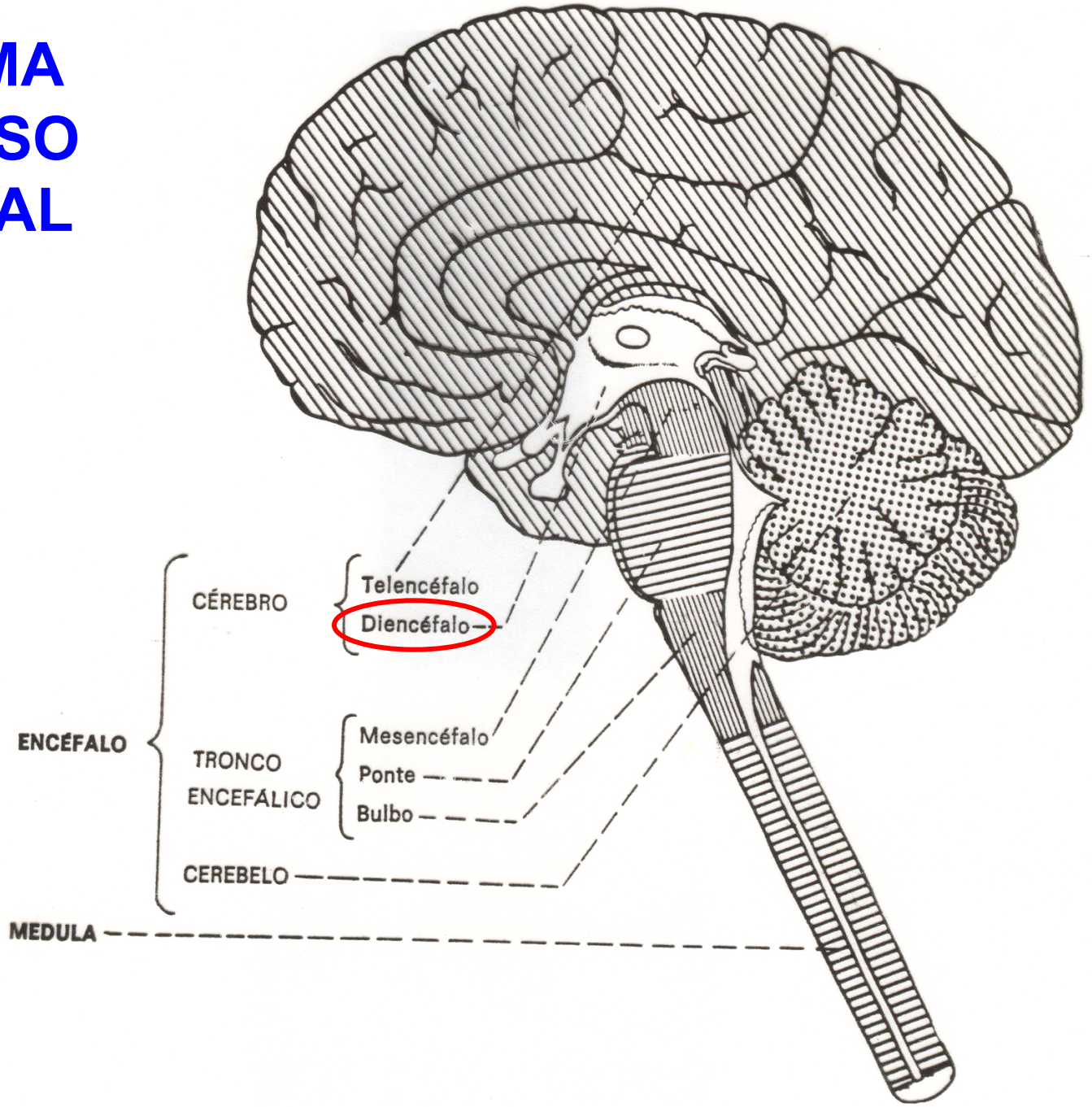
Hipocampo



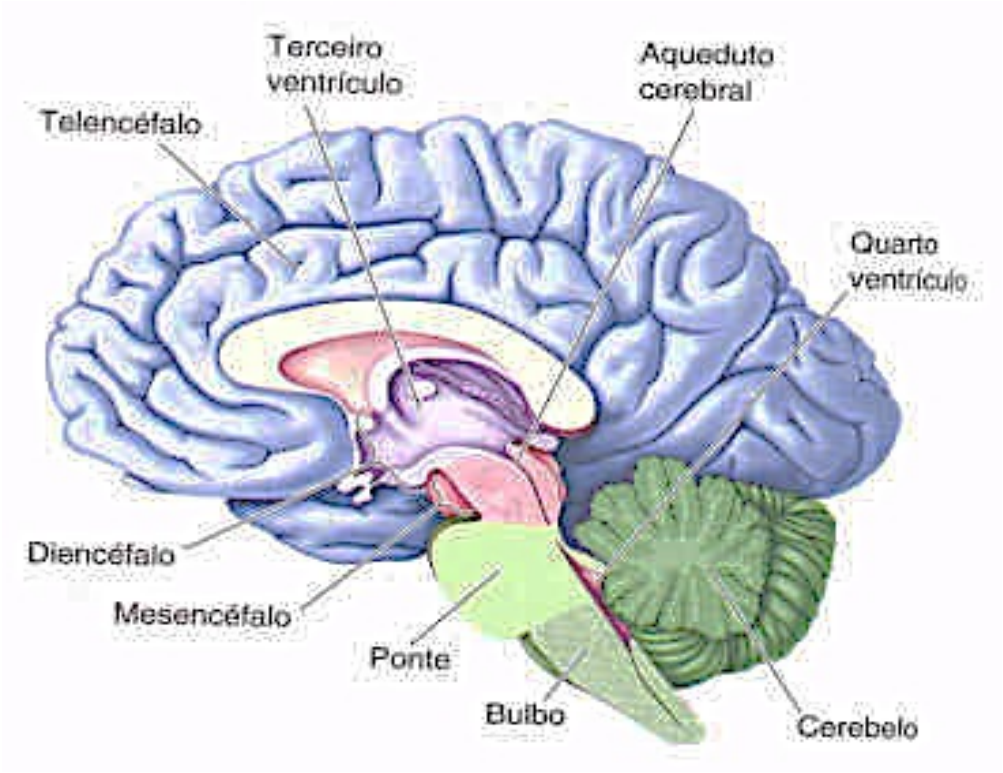


Plano coronal

SISTEMA NERVOSO CENTRAL



Diencéfalo: Tálamo, Hipotálamo e Estriado



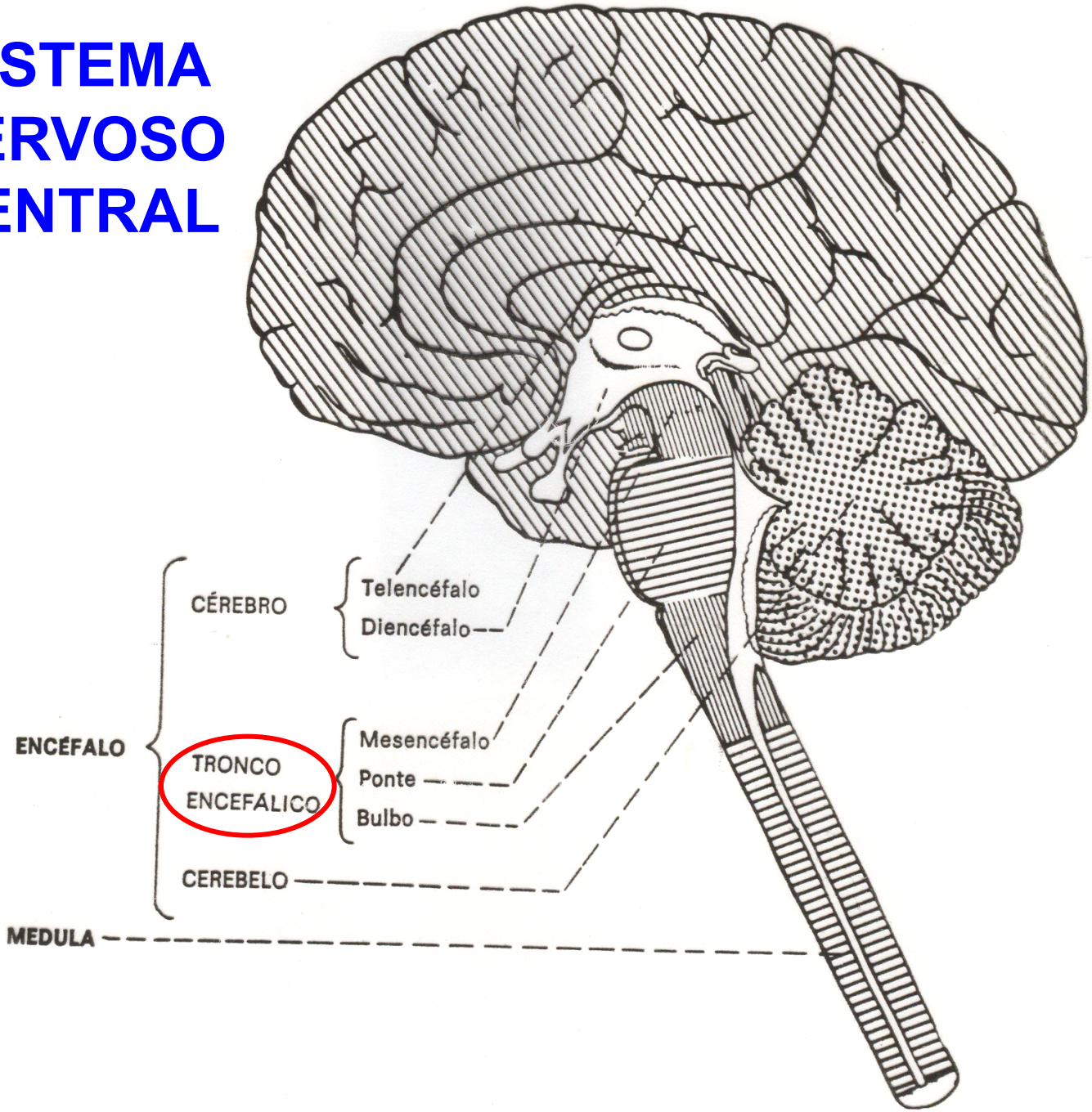
TÁLAMO:
Comportamento emocional
Motricidade;
Funções viscerais;
Sistema sensorial

HIPOTÁLAMO:
Sistema nervoso autônomo
Regulação da temperatura
Regulação do sono e vigília
Regulação da fome e sede
Regulação da neurohipófise.

ESTRIADO (Caudato/Putamen):
Controle motor

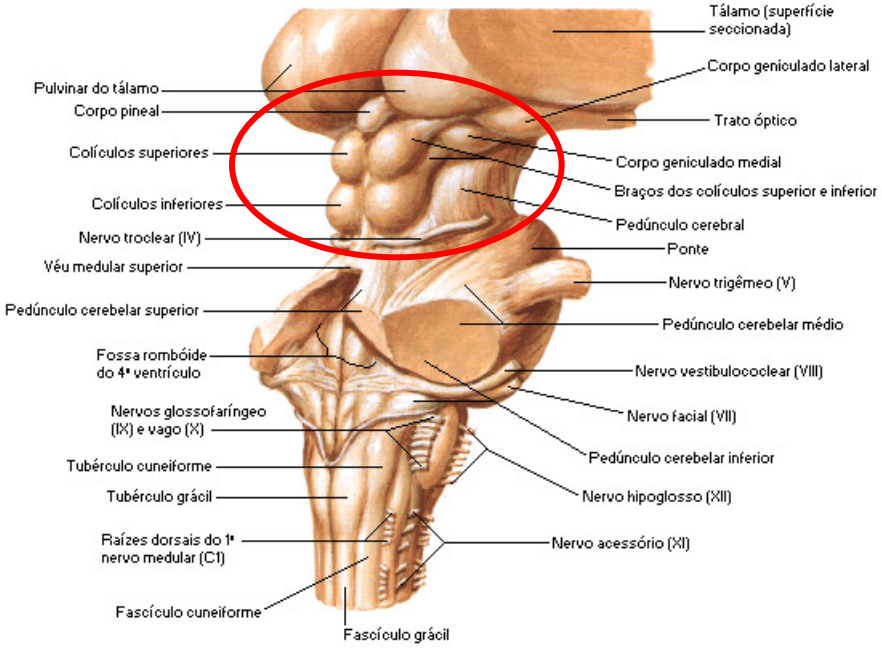
http://www.afh.bio.br/nervoso/nervoso3.asp

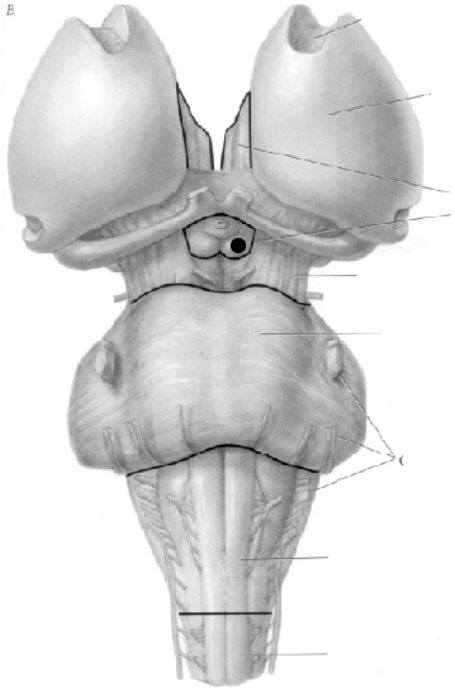
SISTEMA NERVOSO CENTRAL



Mesencéfalo

Corpos mamilares: sistema límbico
Pedúnculo hipofisário
Colículos superiores (reflexo visual)
Colículos inferiores (reflexo auditivo)
Pineal

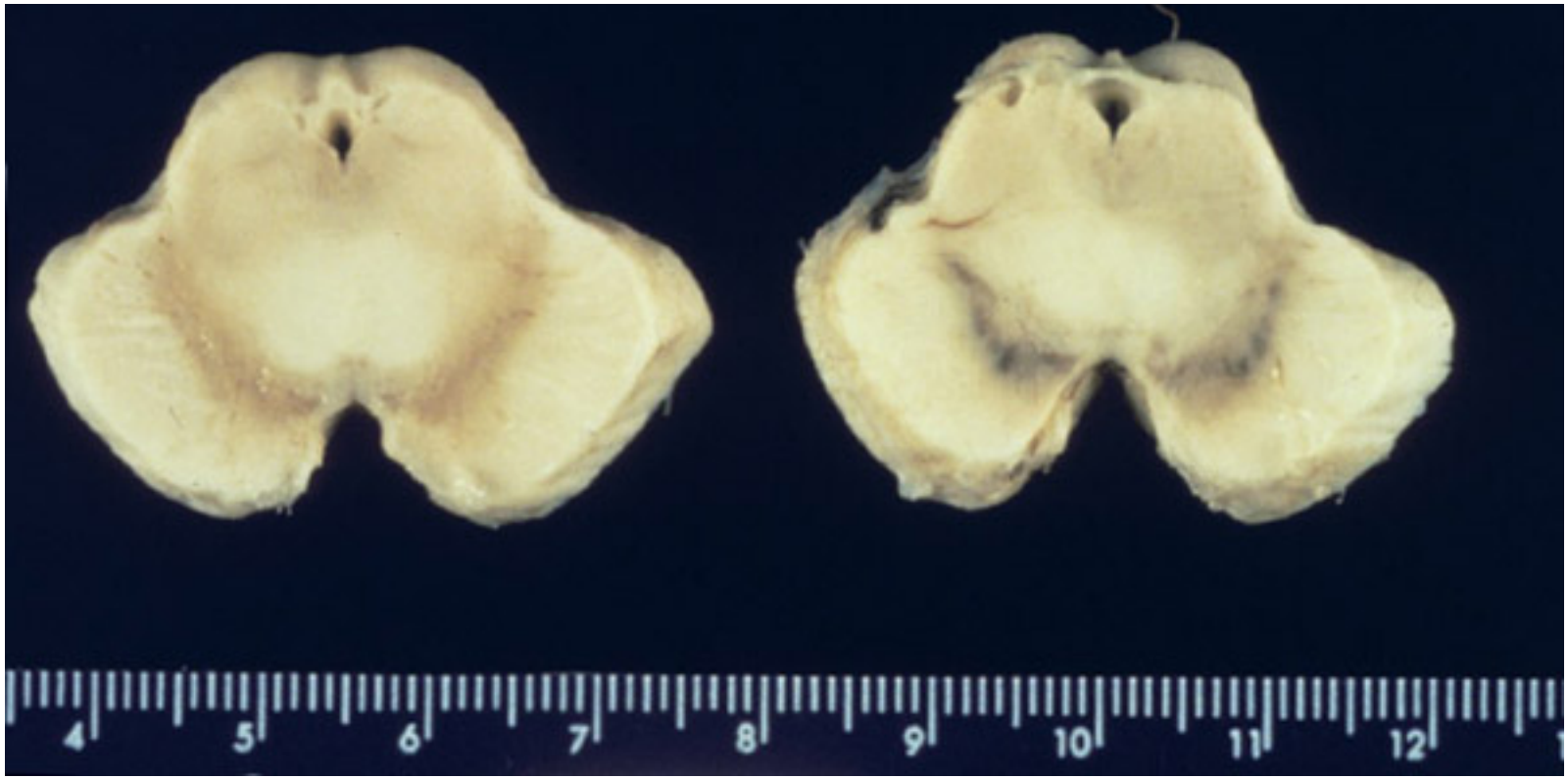




DOENÇA DE PARKINSON

Tremor de repouso
Bradicinesia
Postura curvada

Degeneração da substância negra



SUBSTÂNCIA CINZENTA PERIAQUEDUTAL

- **Dor**
- **Comportamento aversivo**

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PONTE

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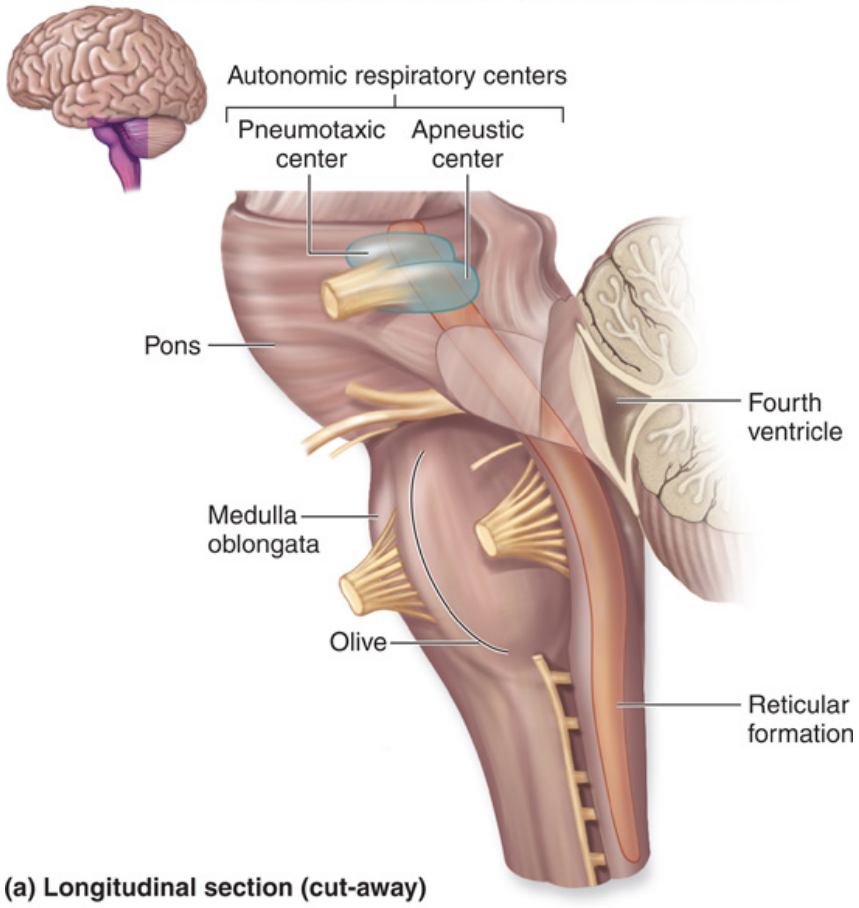


(a) Longitudinal section (cut-away)

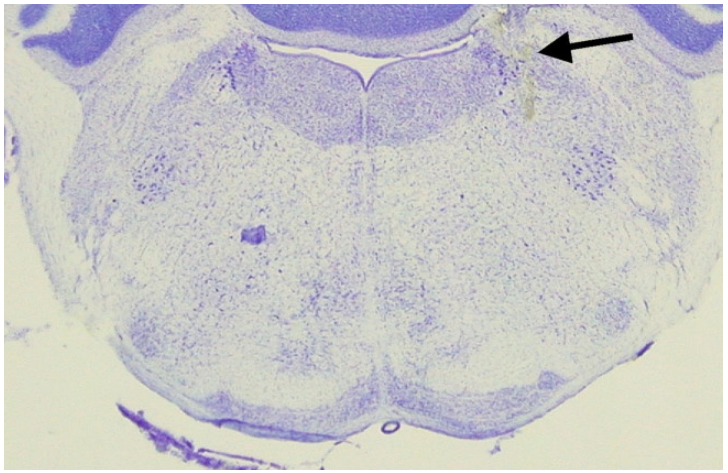
PEDÚNCULO CEREBELAR

LOCUS COERULEUS:

SONO/VIGÍLIA

NORADRENALINA

REGULAÇÃO DA RESPIRAÇÃO



Bulbo (medula oblonga)

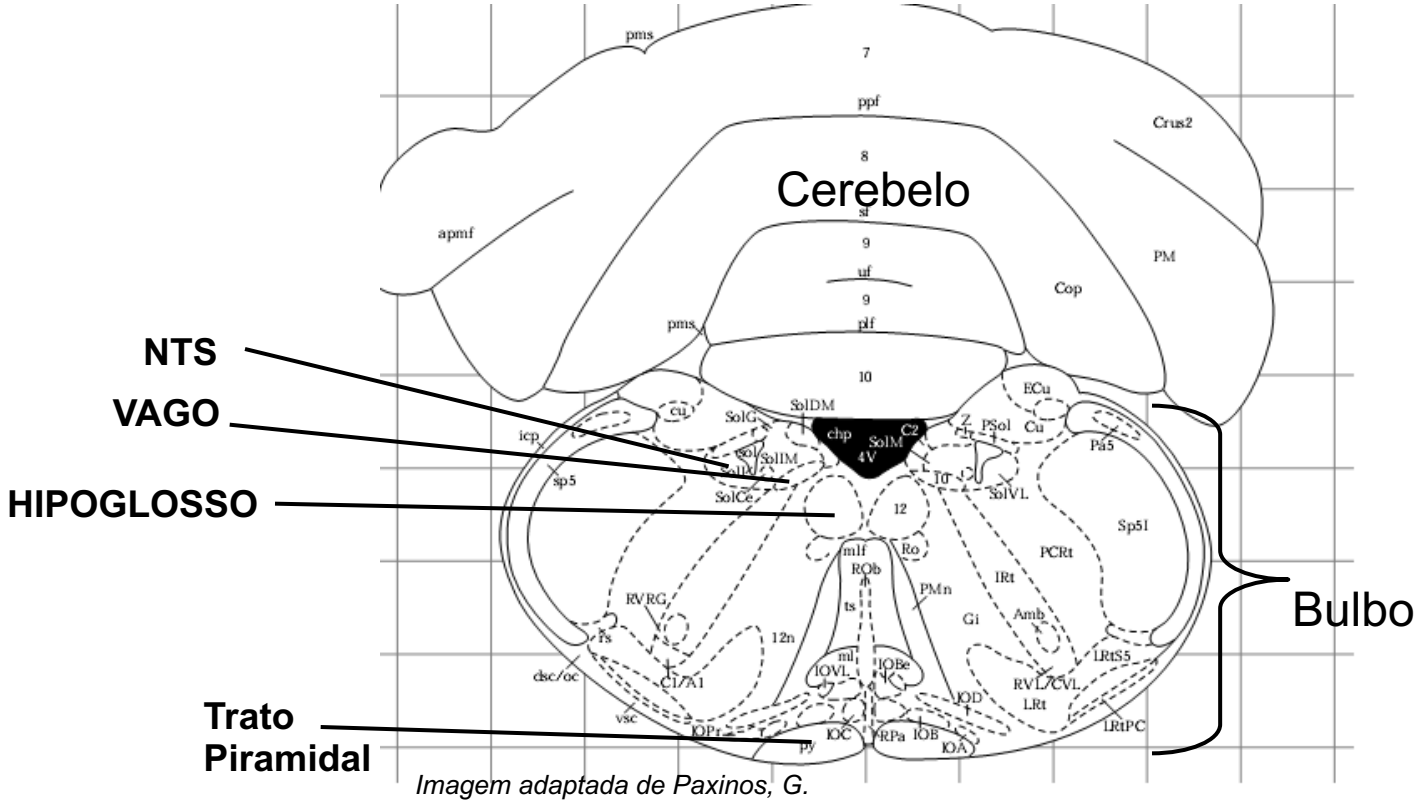
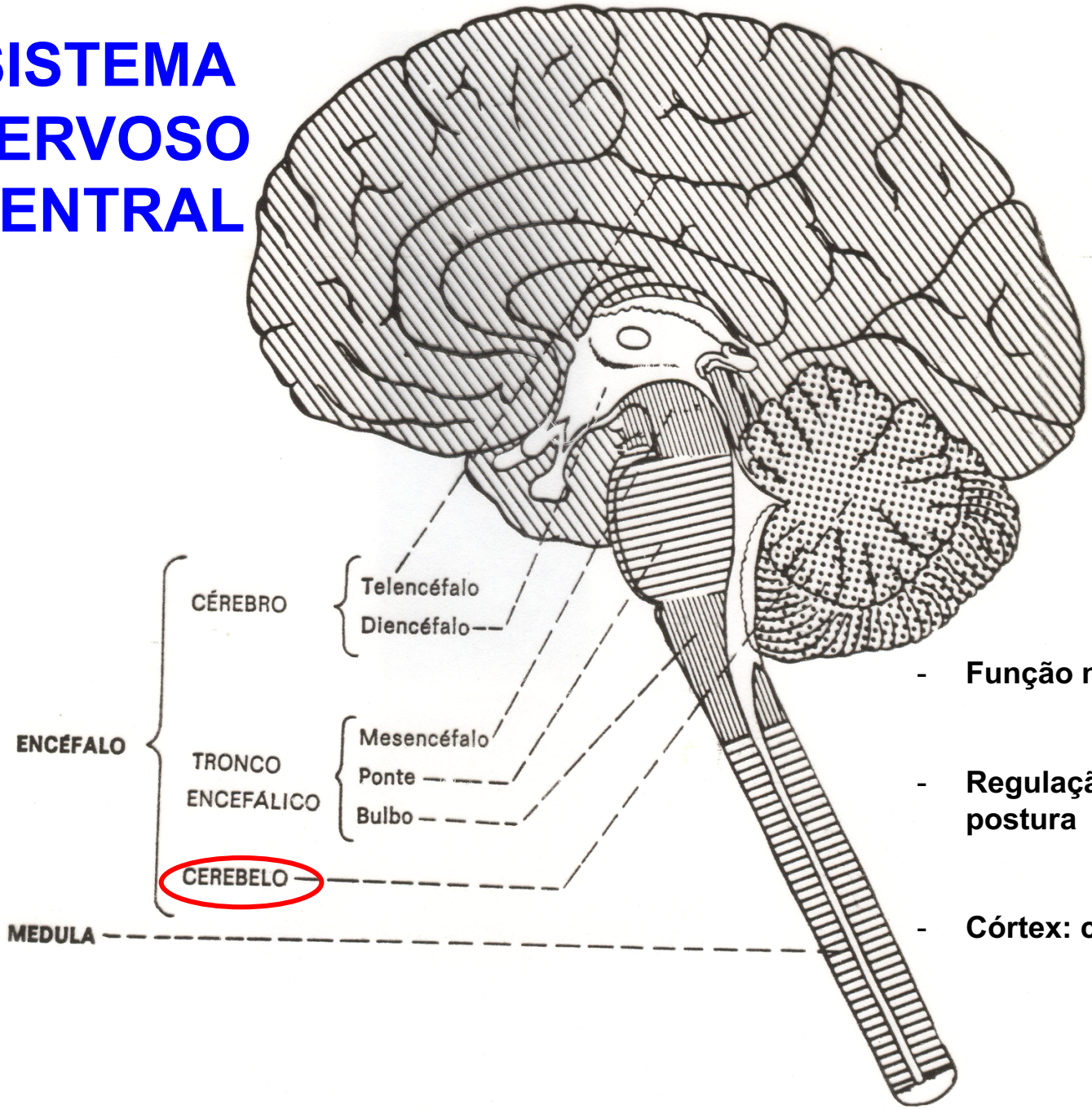
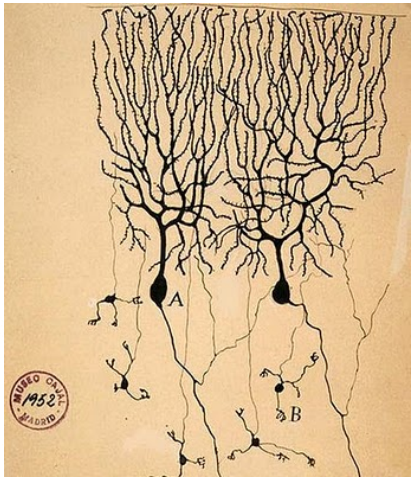


Imagem adaptada de Paxinos, G.

Corte transversal de bulbo de rato.

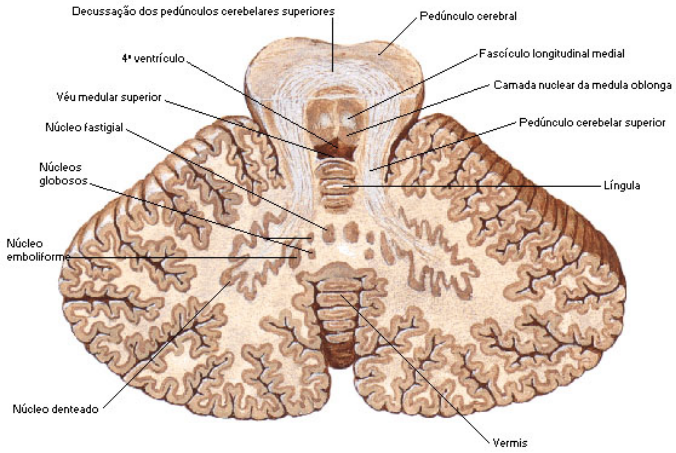
SISTEMA NERVOSO CENTRAL

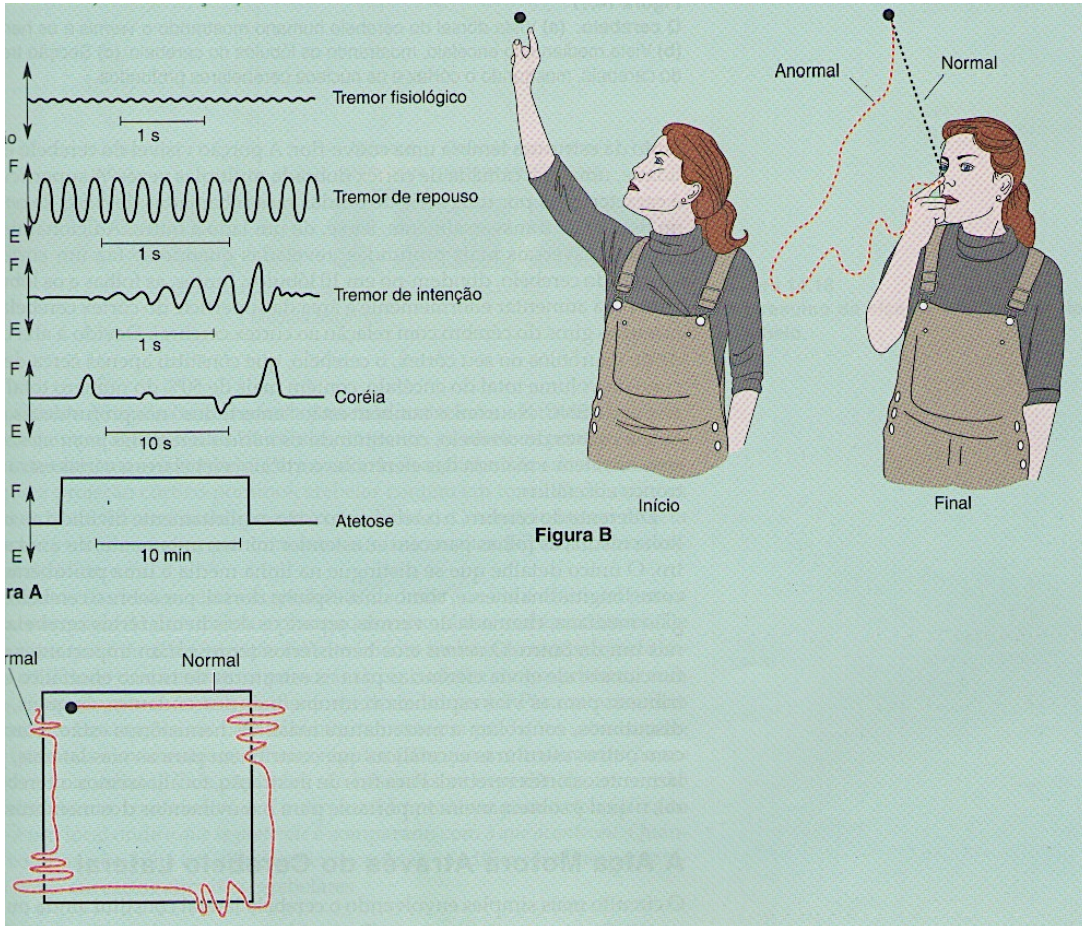




- **Função motora**
- **Regulação do movimento fino, postura**
- **Córtex: células de Purkinje**

Cerebelo


Decussação dos pedúnculos cerebelares superiores
Pedúnculo cerebral
4º ventrículo
Fascículo longitudinal medial
Véu medular superior
Camada nuclear da medula oblonga
Núcleo fastigial
Pedúnculo cerebelar superior
Núcleos globosos
Língula
Núcleo emboliforme
Núcleo denteado
Vermis


Tremor fisiológico
1 s
Tremor de repouso
1 s
Tremor de intenção
1 s
Coréia
10 s
Atetose
10 min
F
E
Normal
Anormal
Normal
Início
Final
Figura B