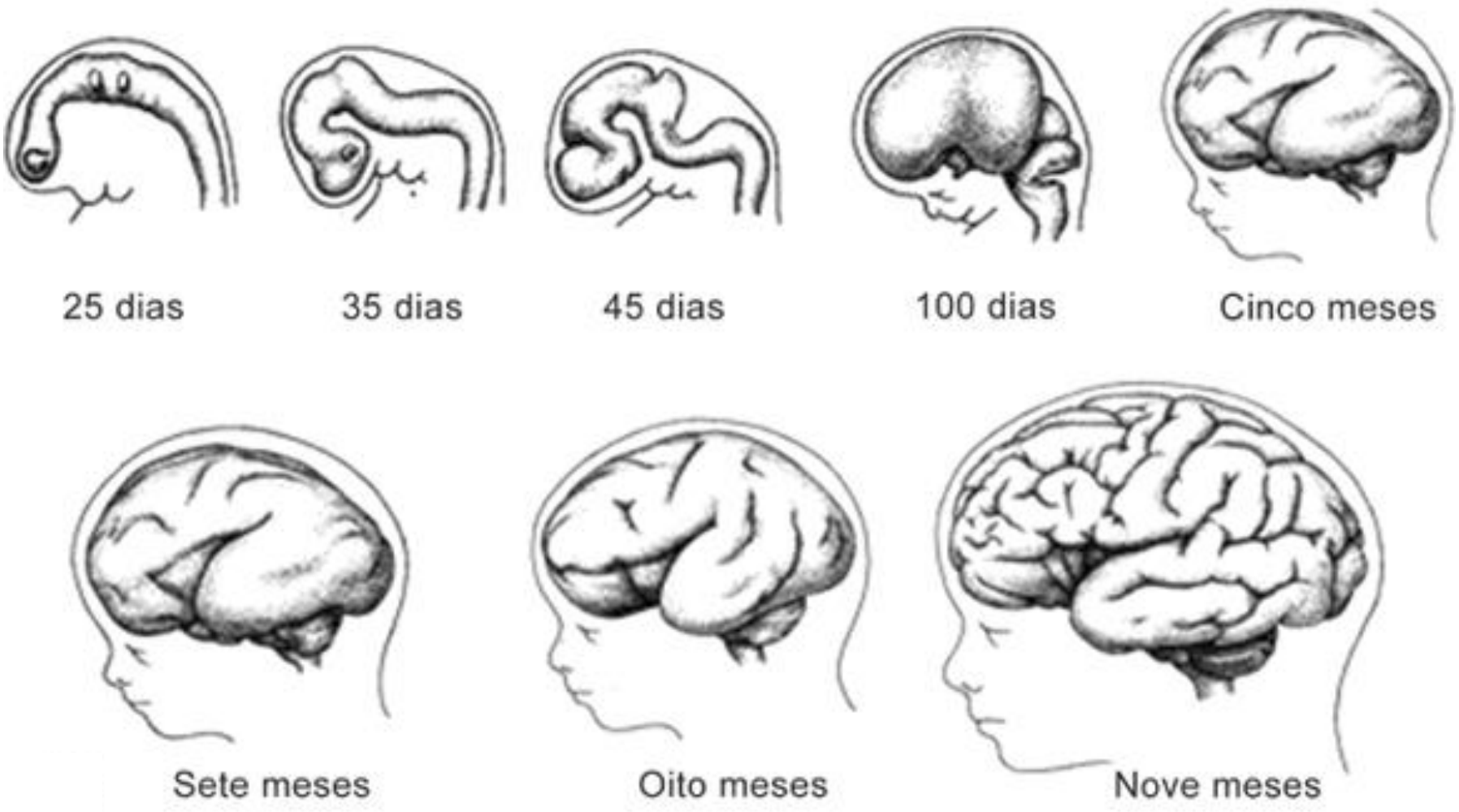
NEUROANATOMIA

ORGANIZAÇÃO ANATÔMICA DO DIENCÉFALO E DO TELENCÉFALO

Luiza da Silva Lopes

ORGANIZAÇÃO ANATÔMICA DO DIENCÉFALO



DIENCÉFALO

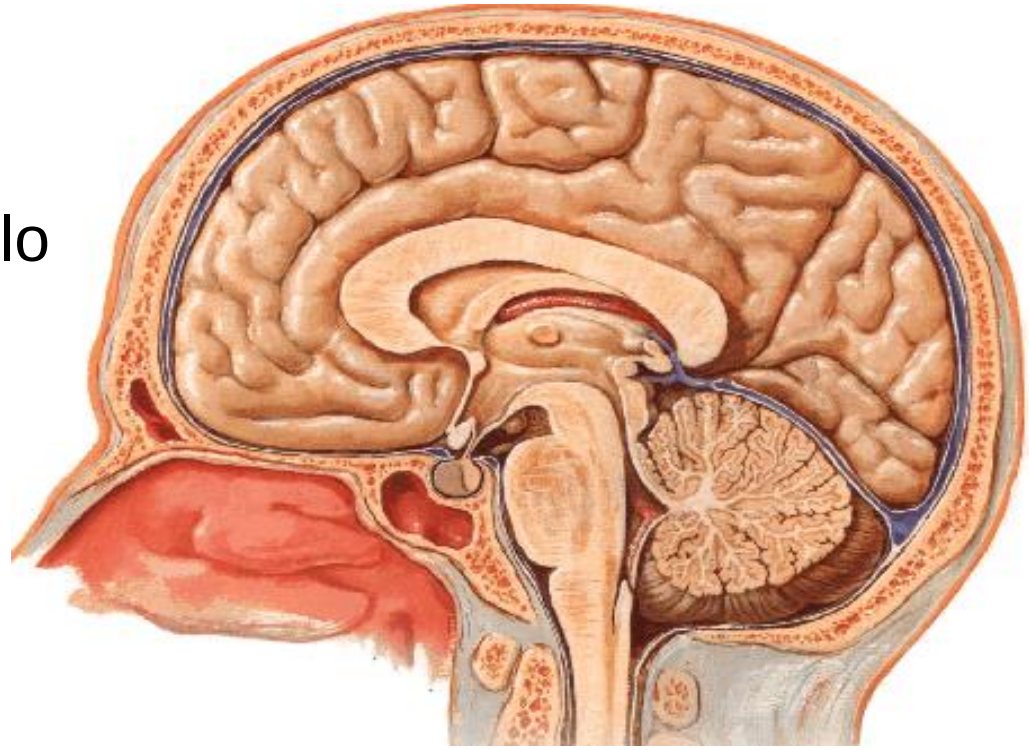
Parte do cérebro

Ímpar e mediano

Envolvido pelo telencéfalo

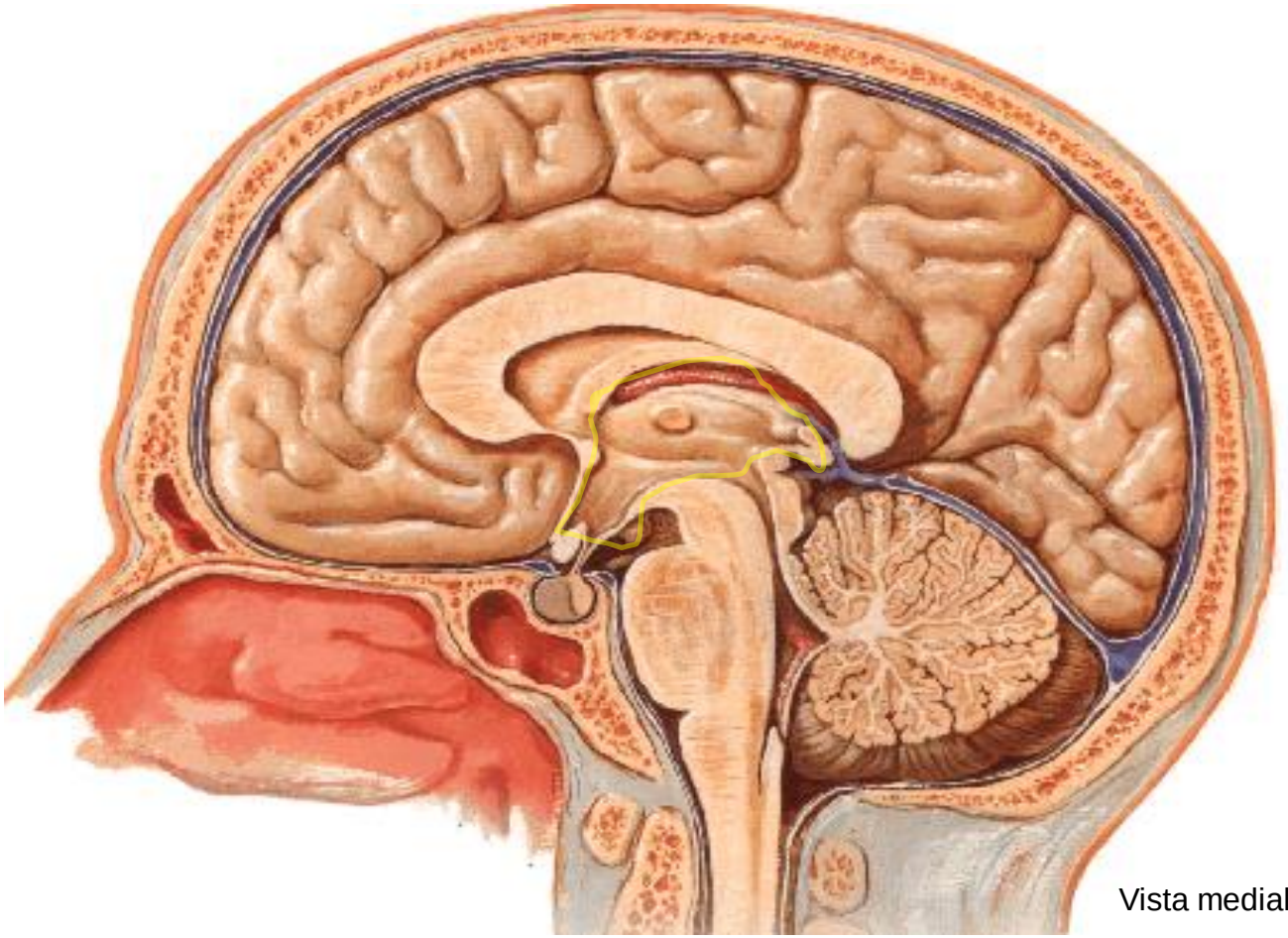
Subdivisões:

- Tálamo
- Hipotálamo
- Epitálamo
- Subtálamo



Vista medial – corte sagital

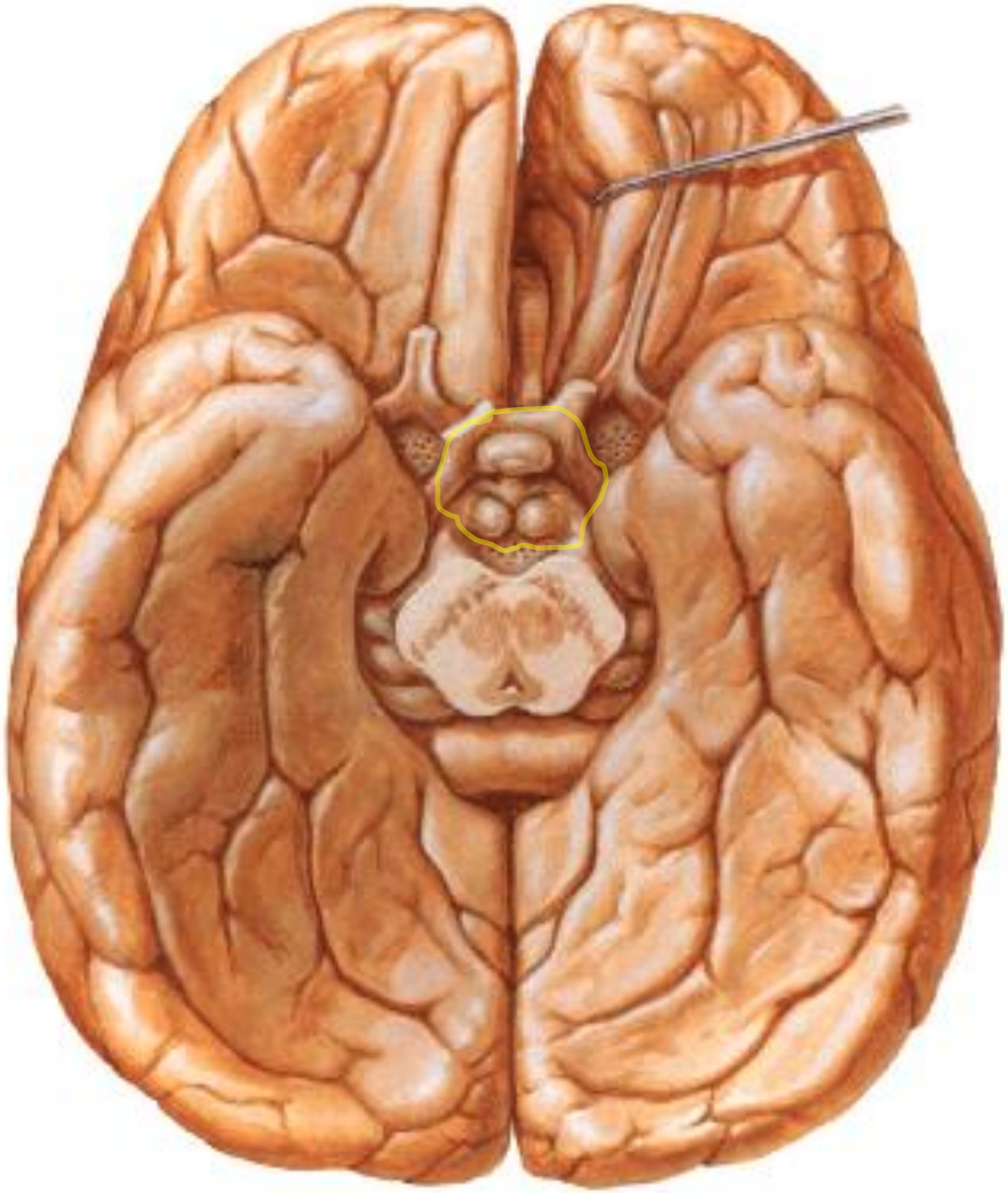
DIENCÉFALO



Vista medial – corte sagital

Diencéfalo

DIENCÉFALO



Diencéfalo

Vista inferior

DIENCÉFALO

<u>IIIº ventrículo</u>

-cavidade do sistema ventricular = fenda, no interior do diencéfalo

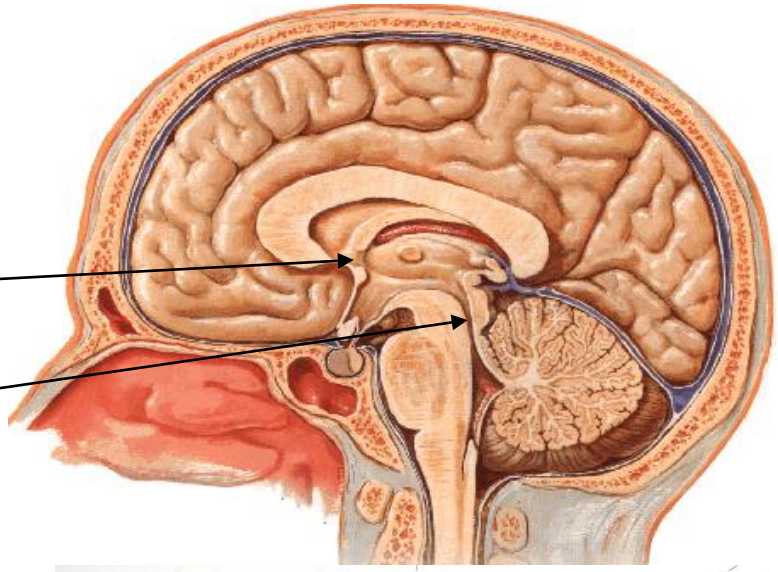
-comunicações com

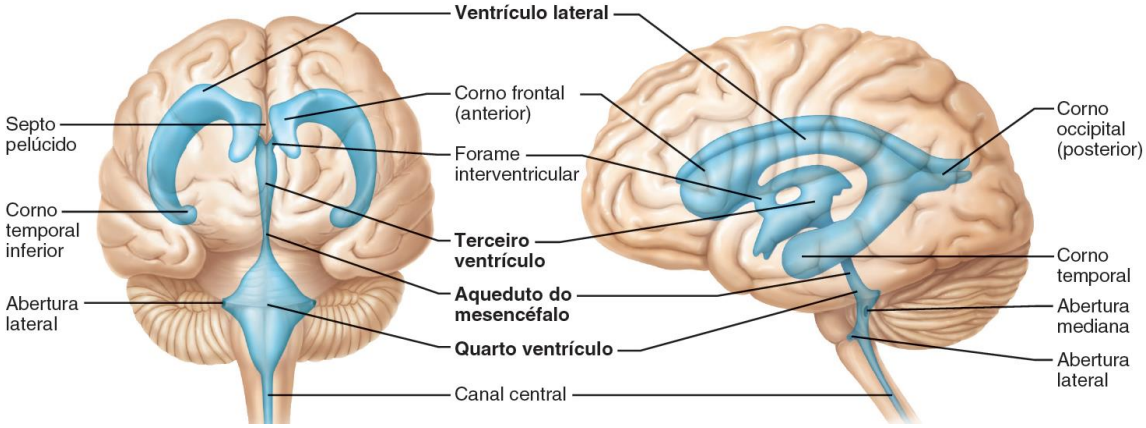
ventrículos laterais (telencéfalo): forames interventriculares (Monro)

IVº ventrículo (entre ponte/bulbo e cerebelo): aqueduto do mesencéfalo (Sylvius)

-sulco hipotalâmico (entre tálamo, acima, e hipotálamo, abaixo) – do forame interventricular à abertura superior do aqueduto

-aderência intertalâmica (massa de substância cinzenta entre as 2 metades do tálamo)





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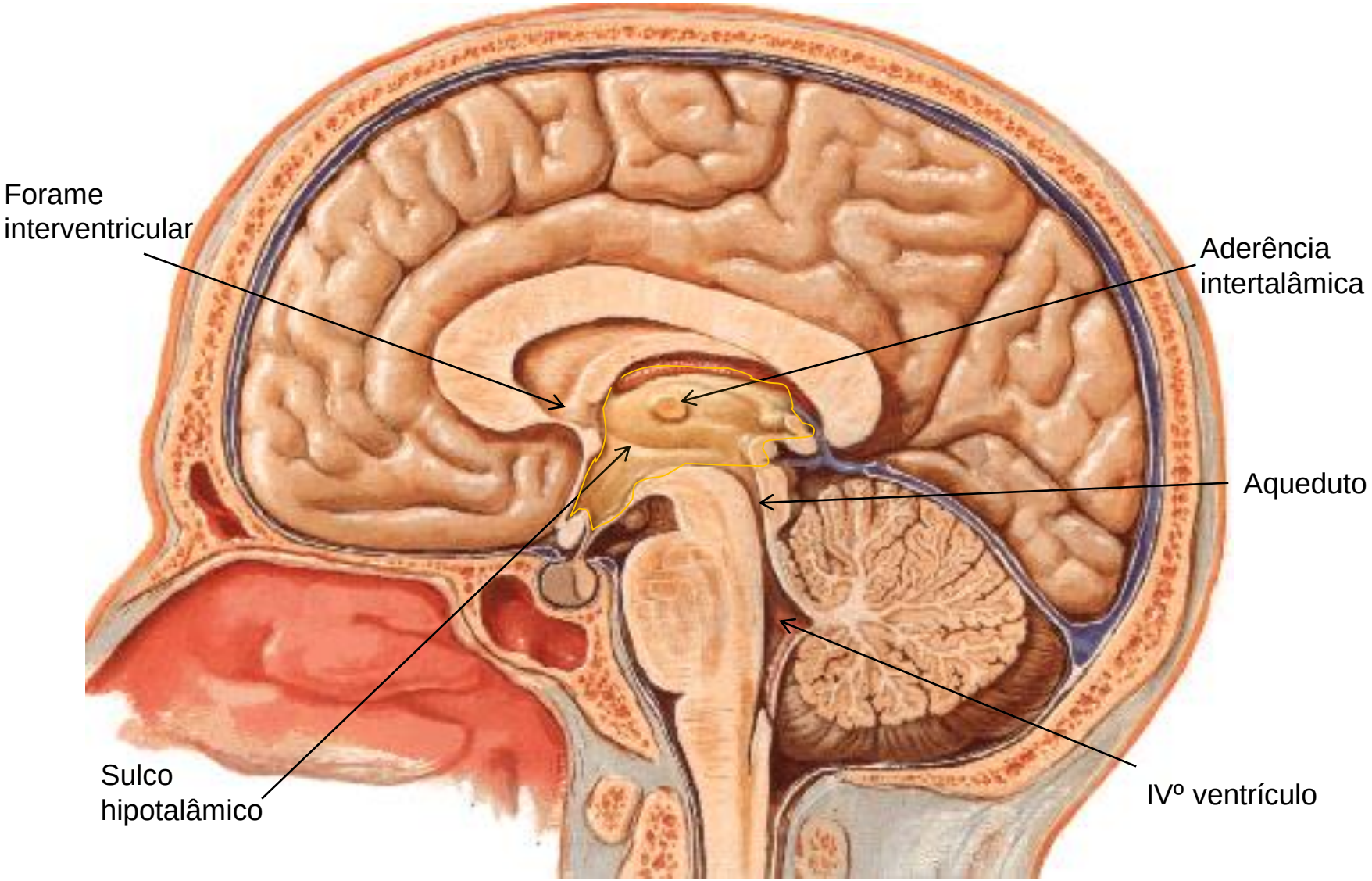
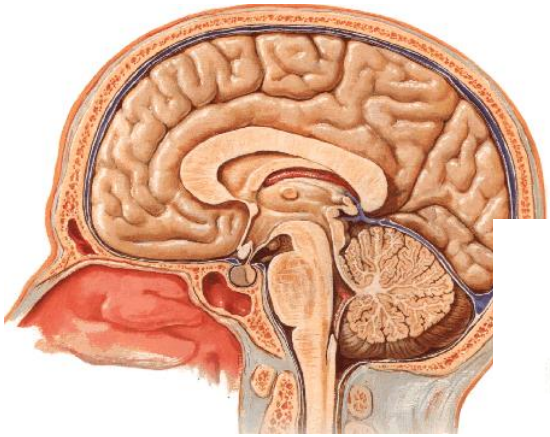
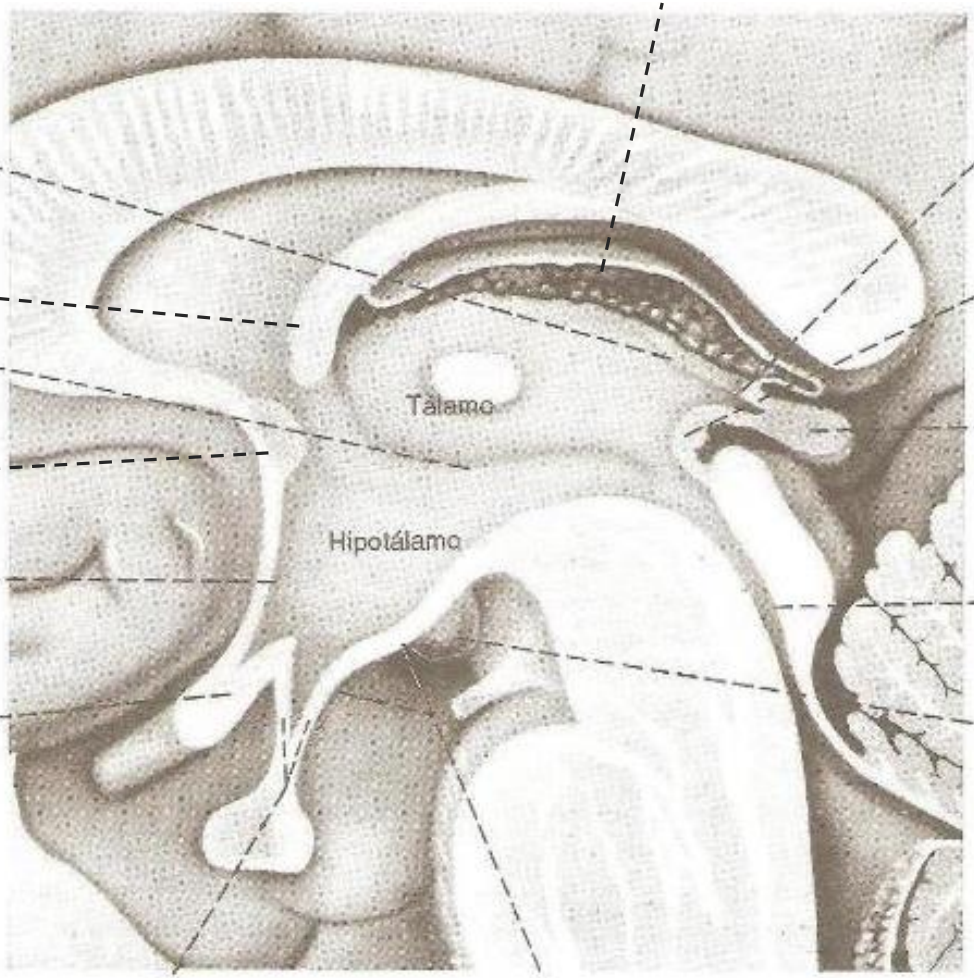


Vista medial – corte sagital

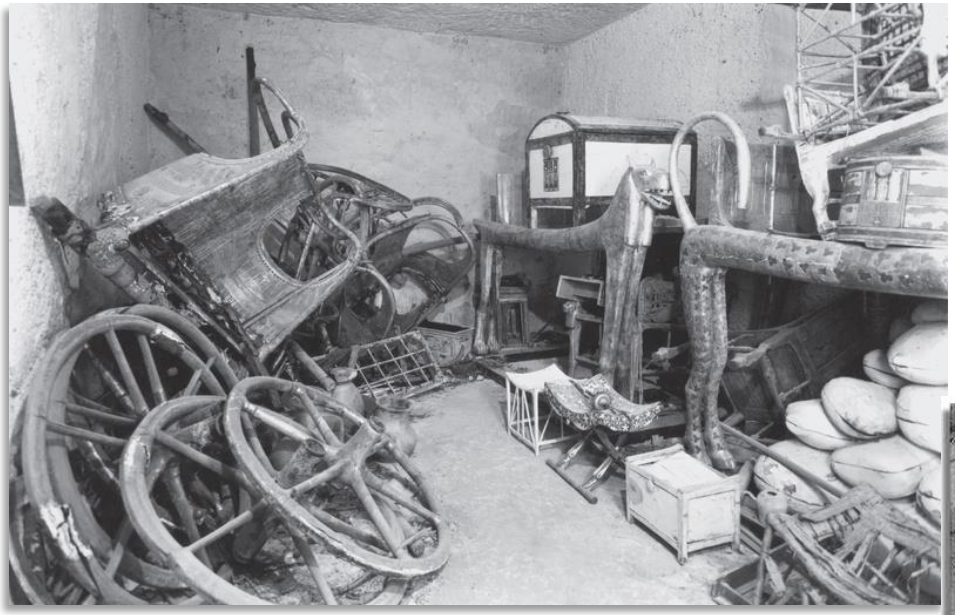
DIENCÉFALO





Vista medial – corte sagital

DIENCÉFALO



TÁLAMO

(antecâmara)

DIENCÉFALO

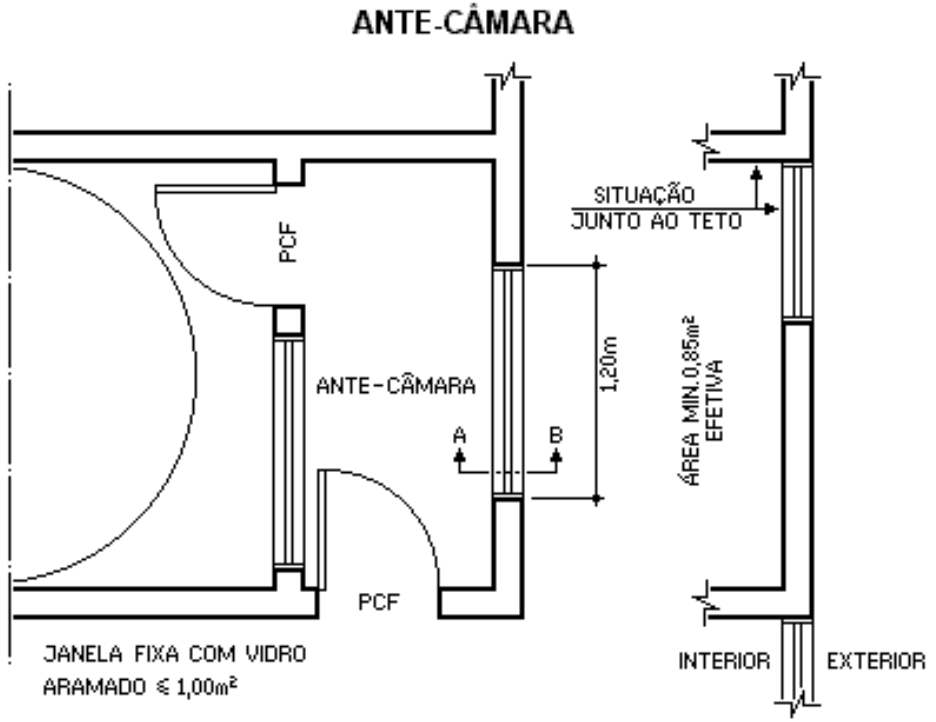
Tálamo (grego = antecâmara)

motricidade (extrapiramidal)

comportamento emocional

sensibilidade

grau de ativação do córtex



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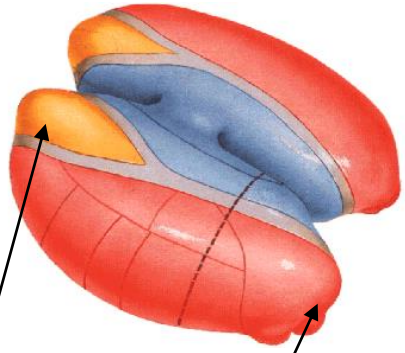
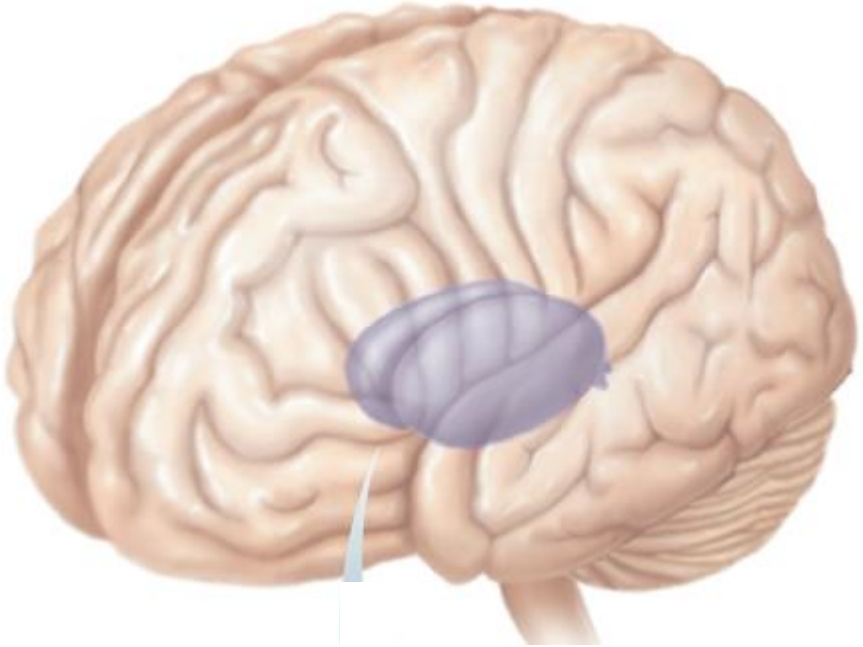
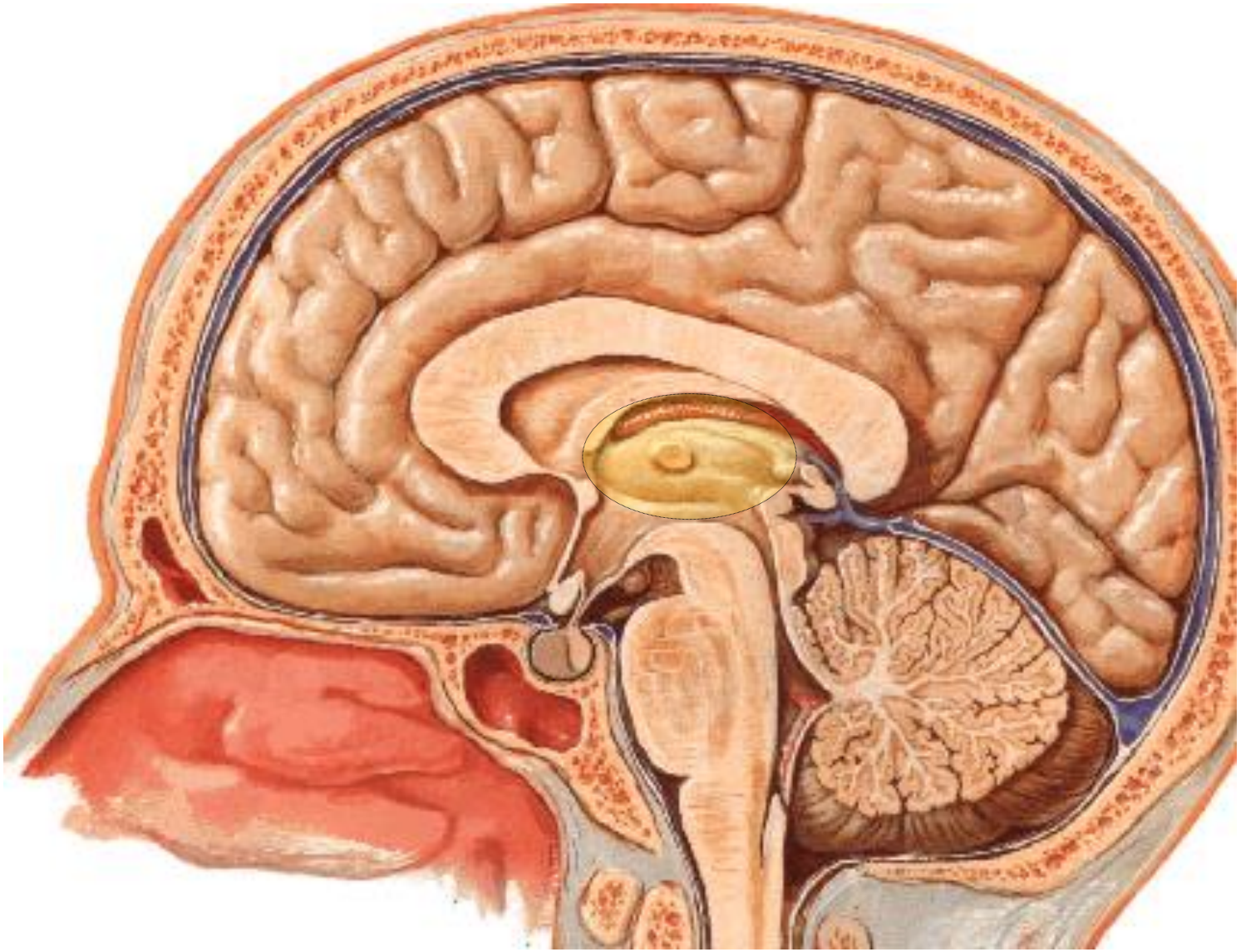


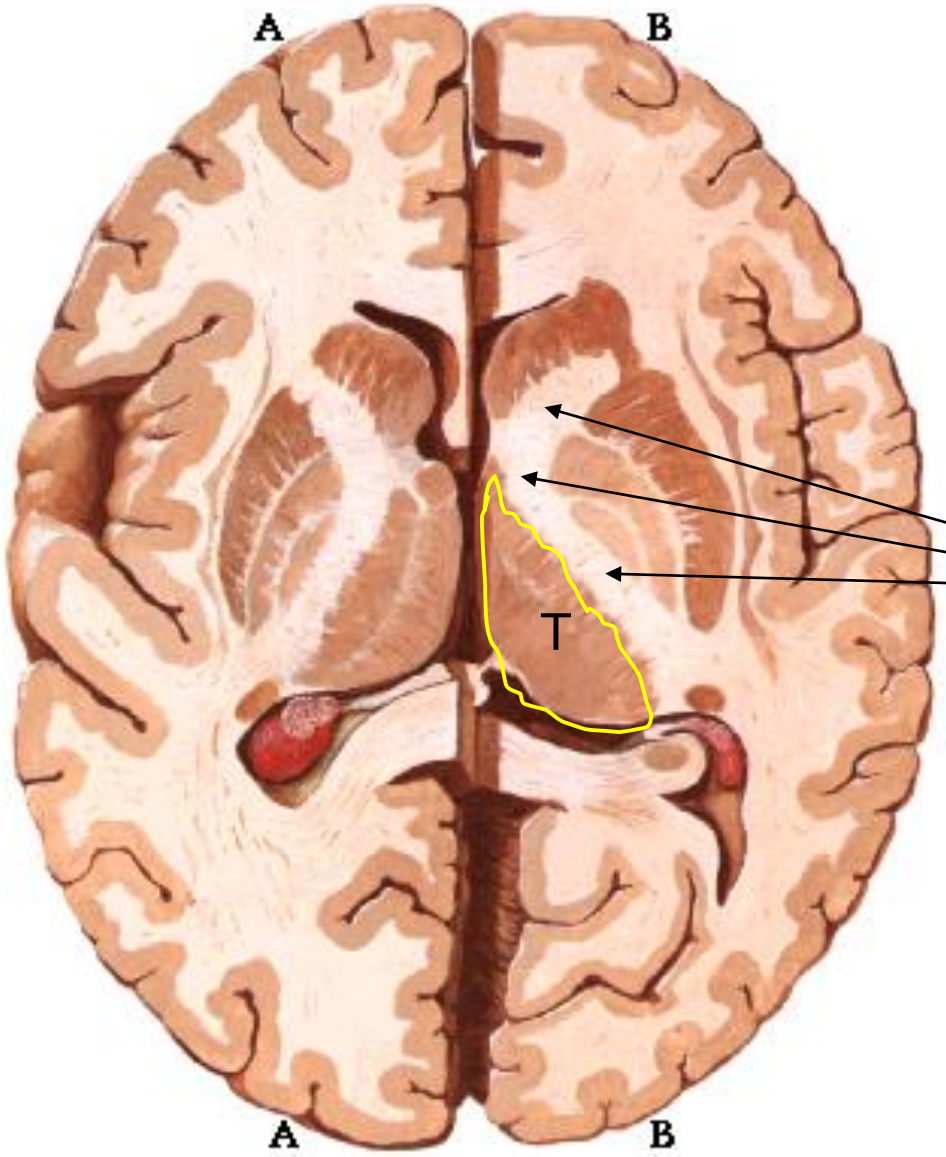


Tálamo

massas ovóides
tubérculo anterior
pulvinar (tubérculo posterior)
face superior: assoalho do VL
face medial: III° ventrículo
face lateral: cápsula interna
face inferior: hipotálamo e subtálamo
estrias medulares do tálamo: entre faces superior e medial



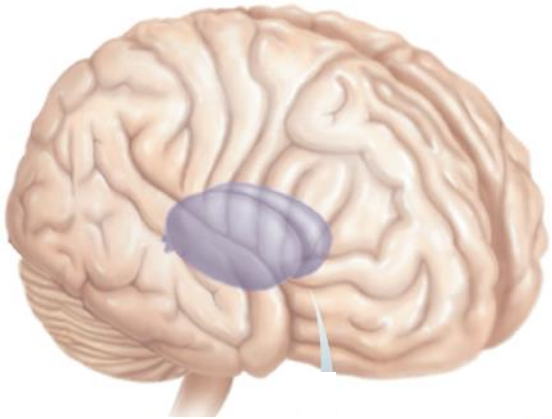
Face medial



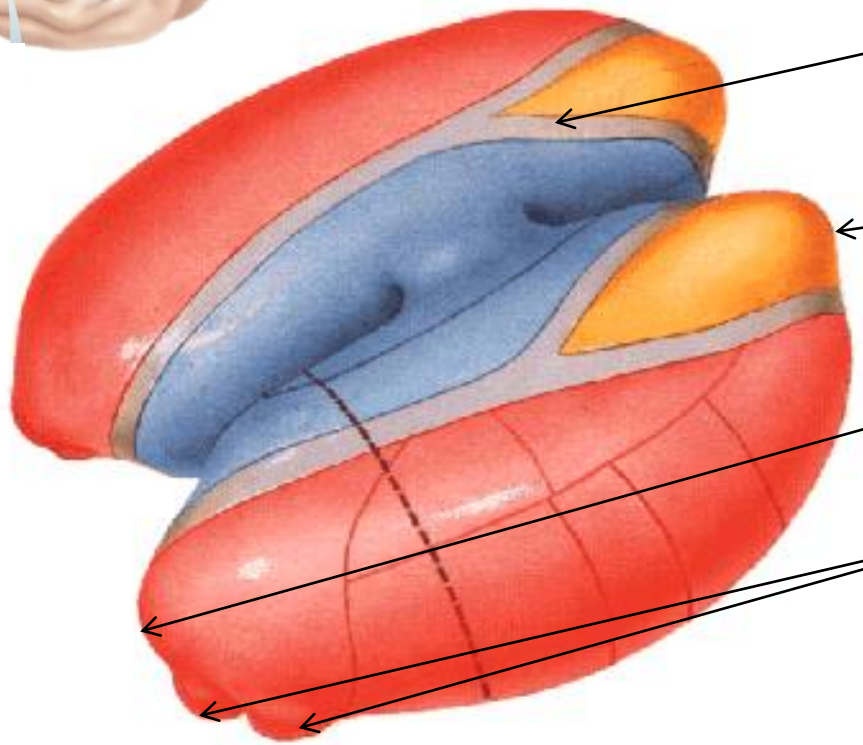
Tálamo

Separado do telencéfalo pela cápsula interna

Corte transversal



Tálamo

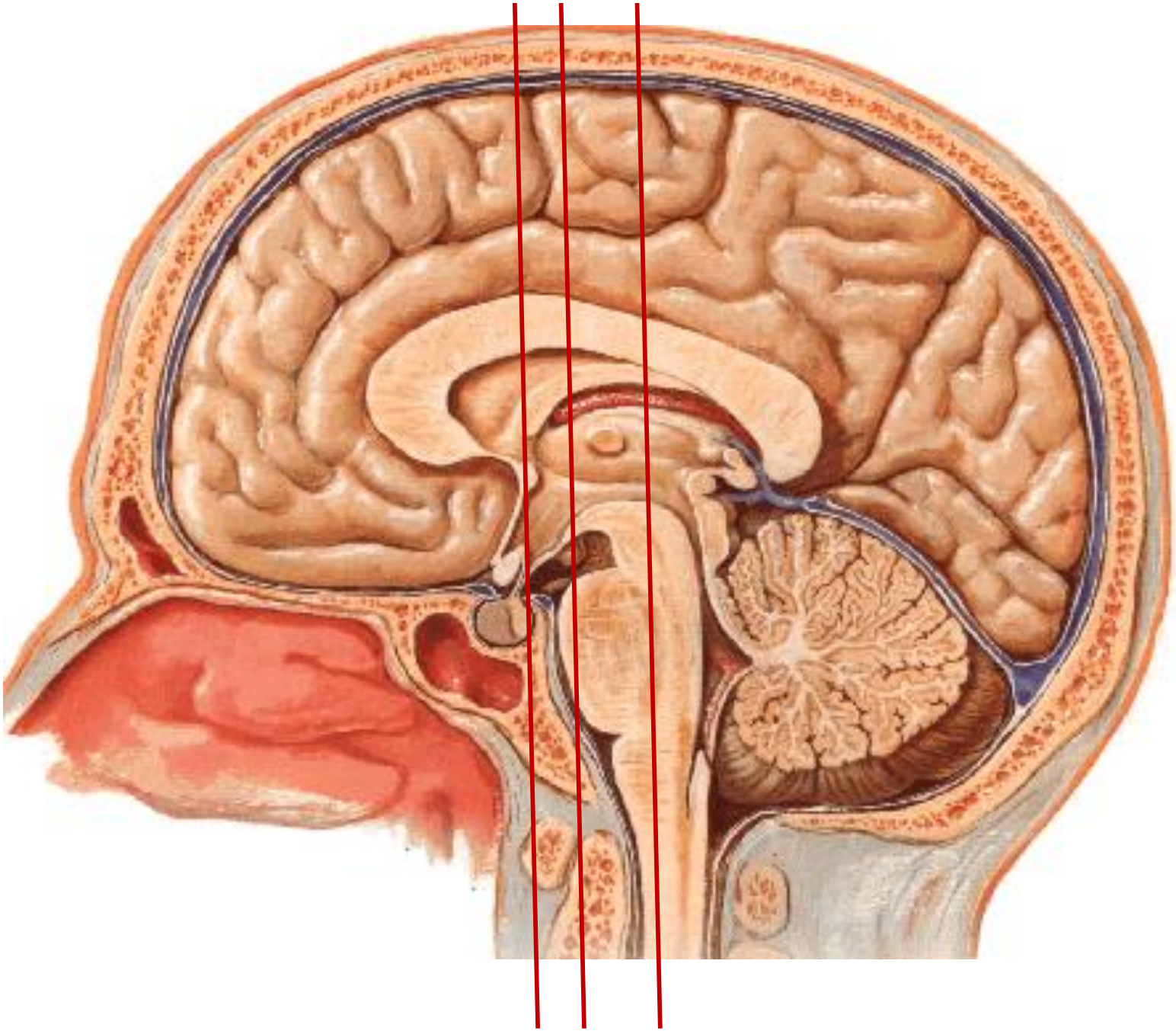


Lâminas medulares

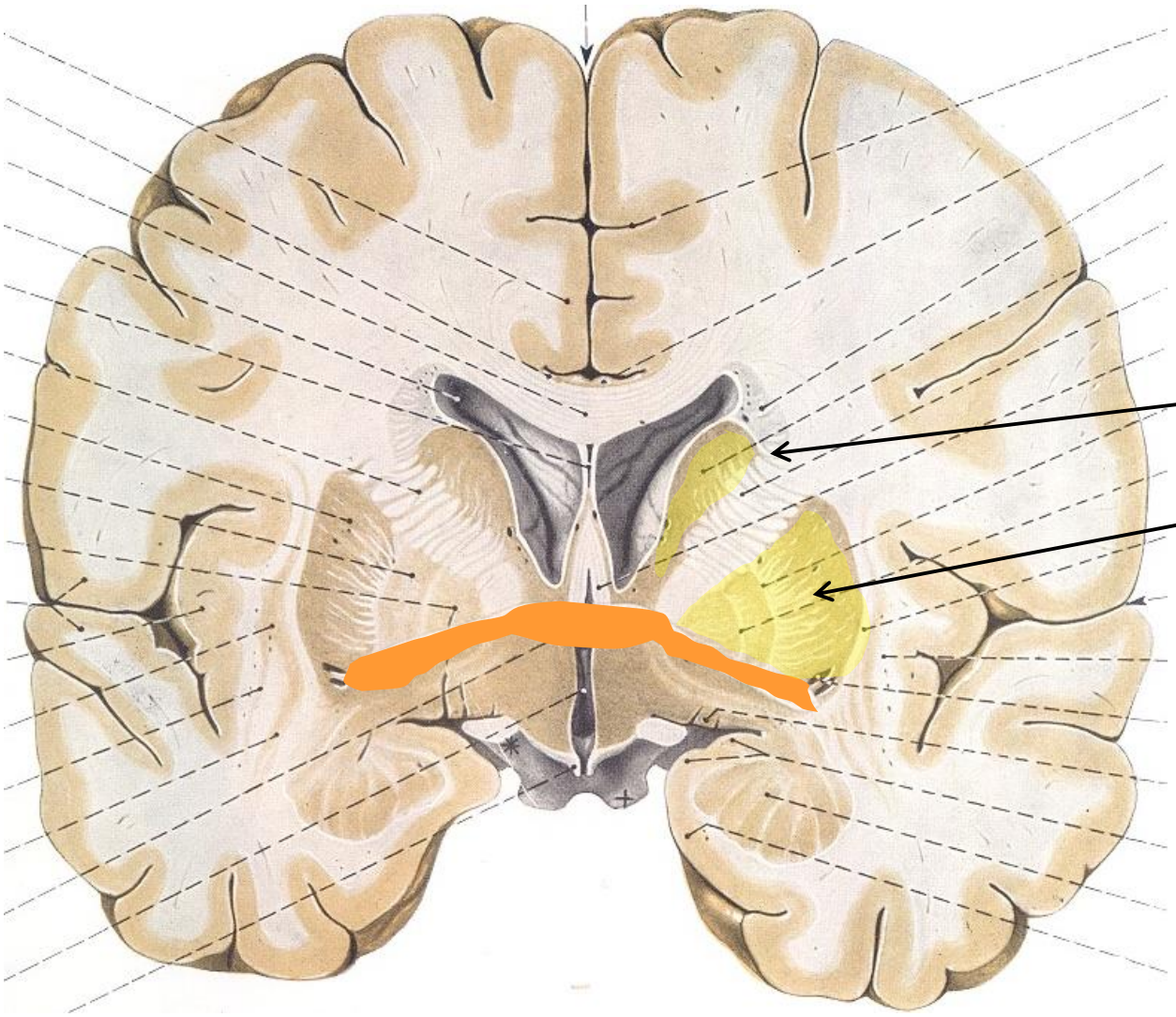
Tubérculo anterior

Pulvinar

Corpos geniculados



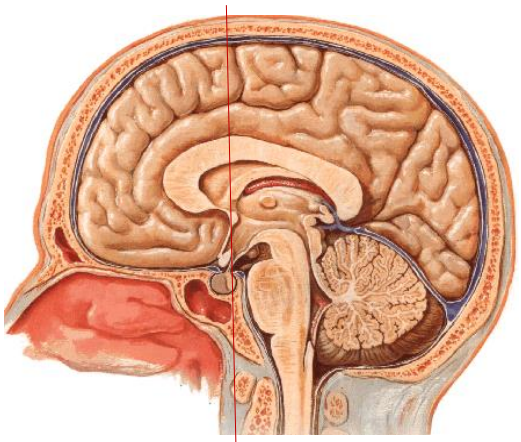
Corte frontal passando pela comissura anterior

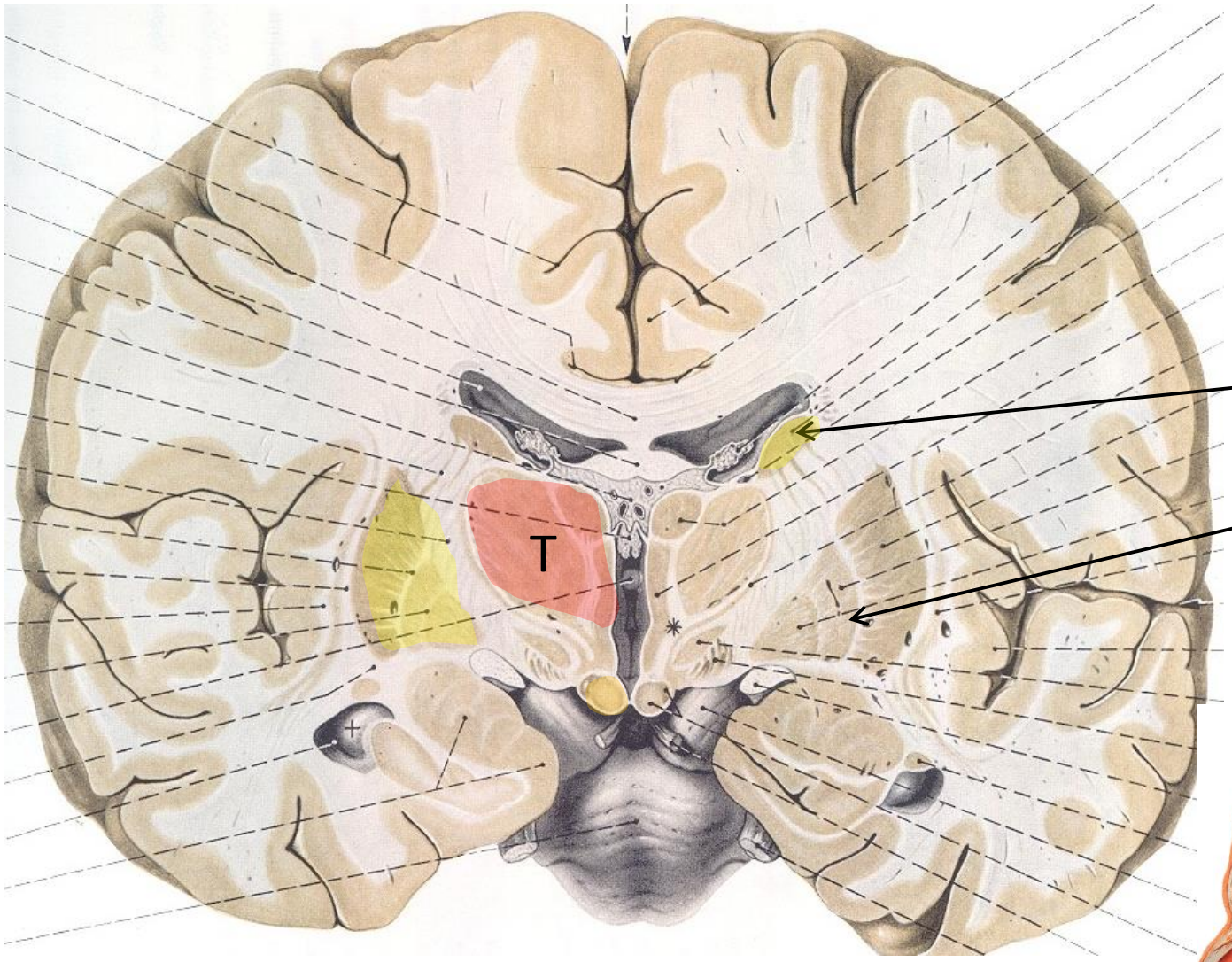


Anterior ao Tálamo

Núcleo caudado

Núcleo lentiforme



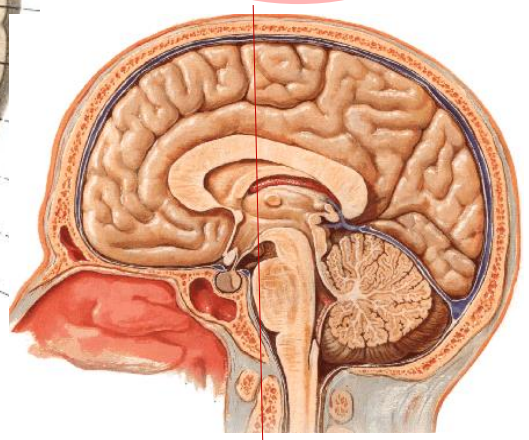


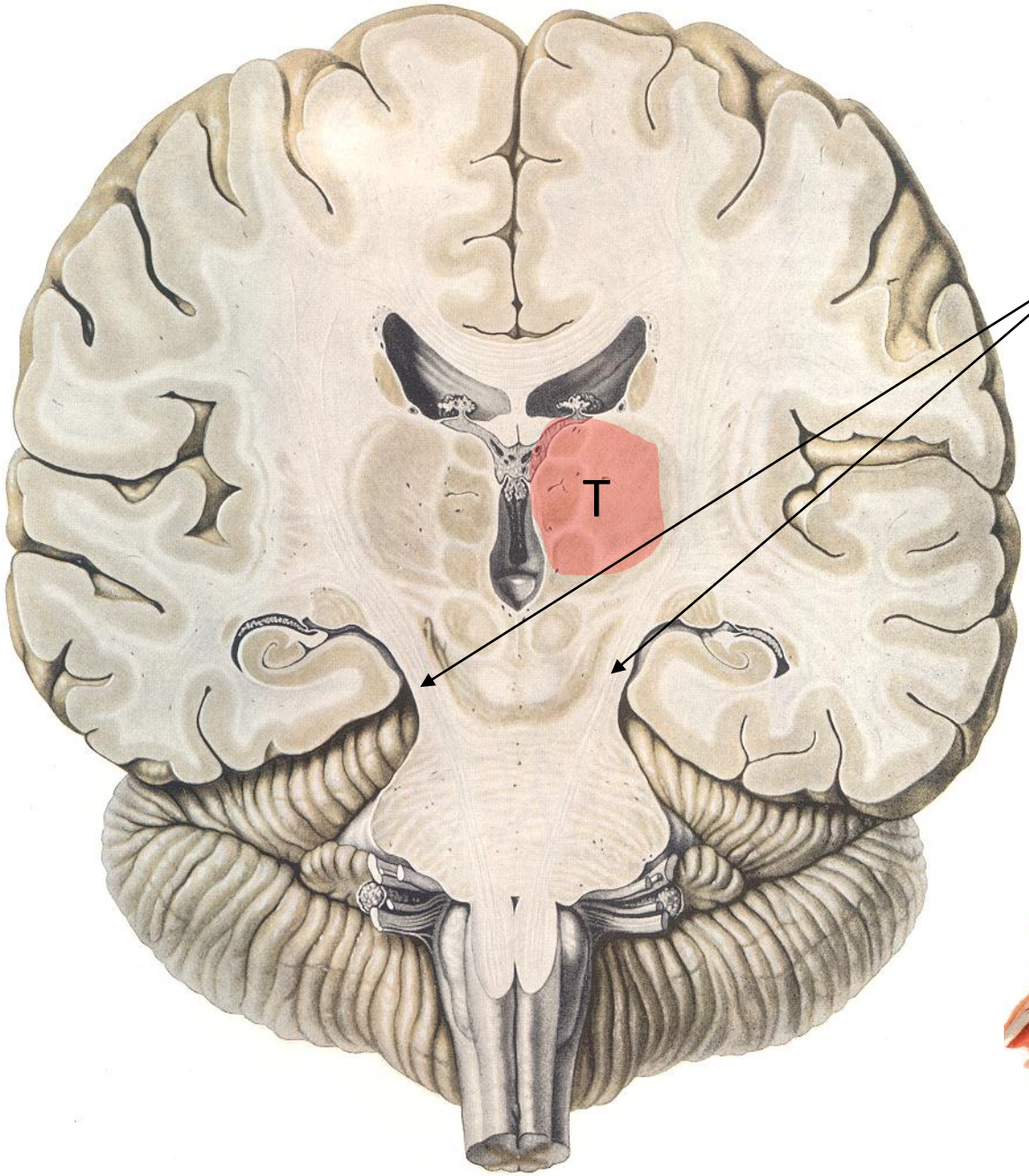
Corte frontal passando pelos <u>Corpos mamilares</u>

Caudado

Lentiforme

Tálamo





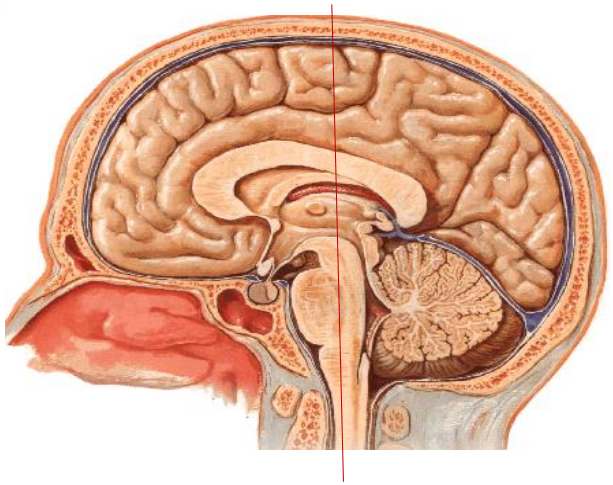
Corte frontal passando pelos

Pedúnculos cerebrais

Tálamo

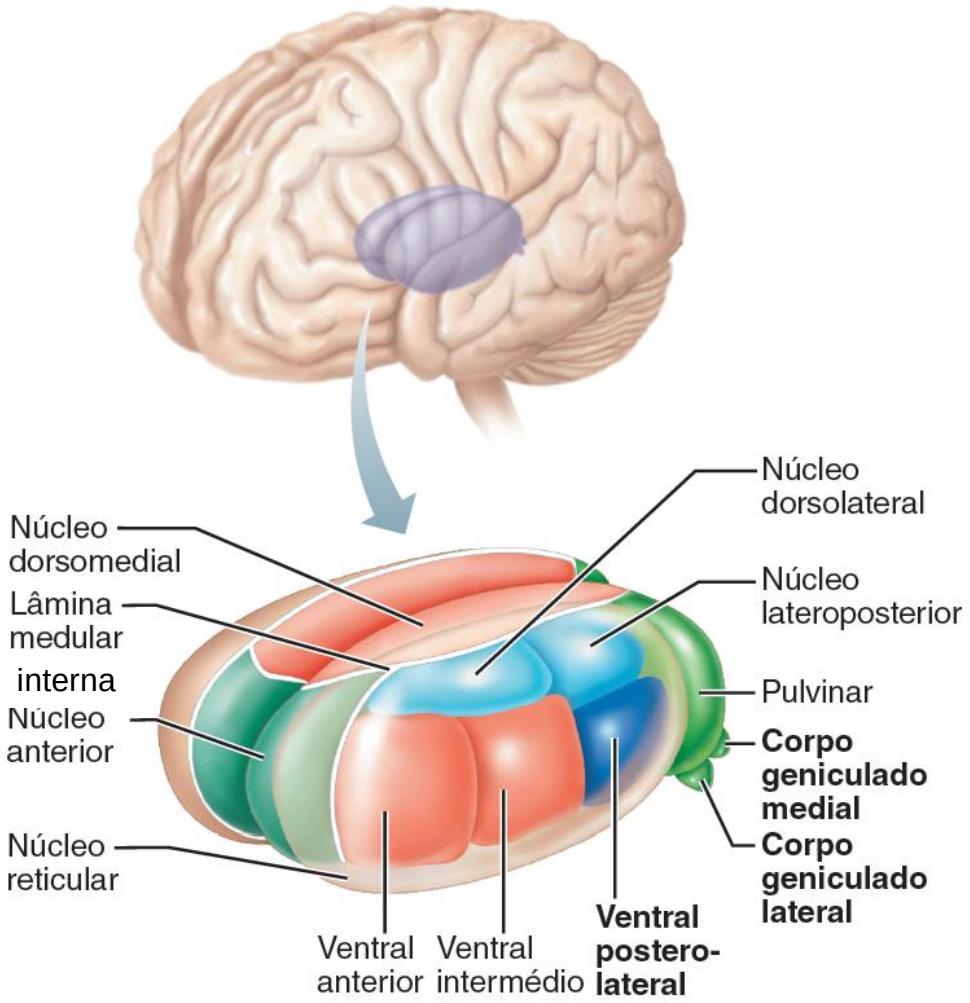
Cápsula interna

Núcleo caudado



Tálamo

Núcleos principais



Principais núcleos do tálamo. Os núcleos reticulares que "recobrem" o tálamo lateralmente são retratados como estruturas transparentes curvas.

<u>Tálamo</u> – divisão funcional

- *Núcleos inespecíficos*: projeção difusa para o córtex cerebral

  <u>Intralaminares</u>

  <u>Reticulares</u>

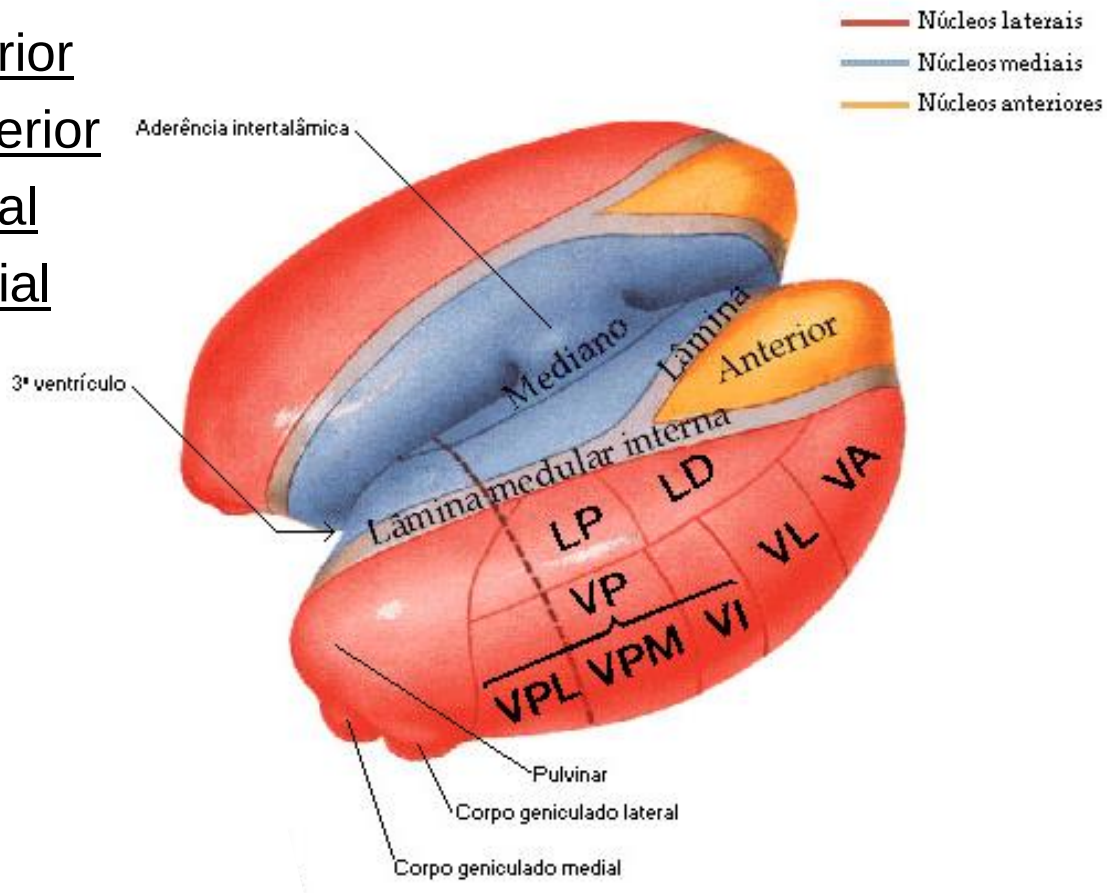
- *Núcleos específicos* (relê): projeção para regiões específicas do córtex cerebral

  <u>Grupo anterior</u>

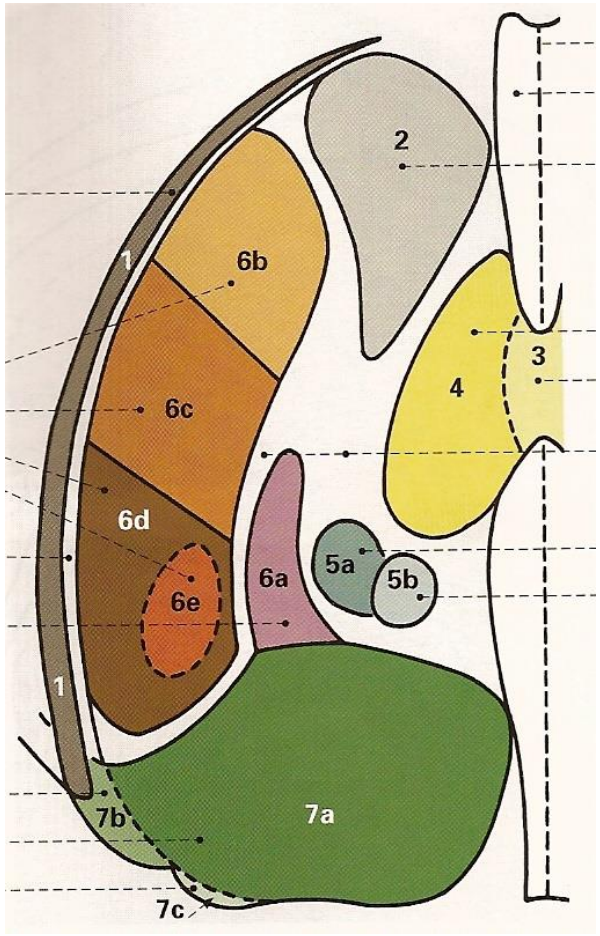
  <u>Grupo posterior</u>

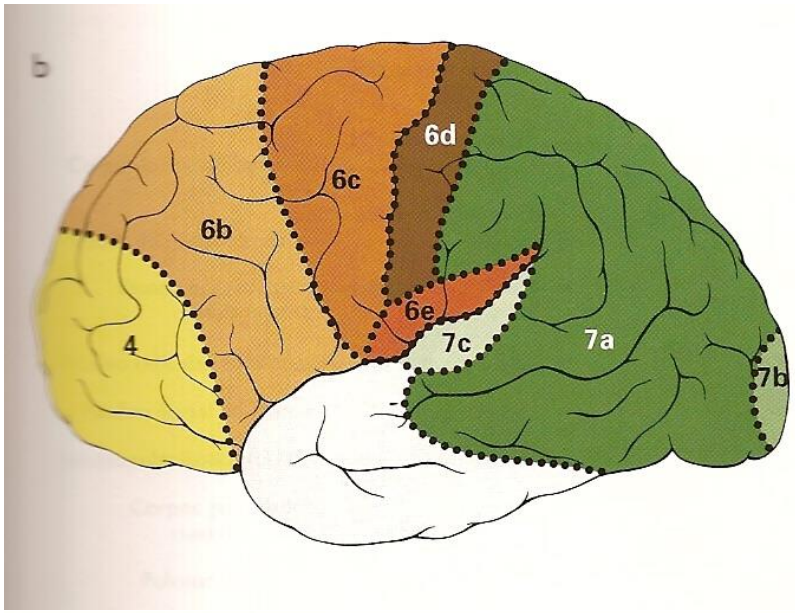
  <u>Grupo lateral</u>

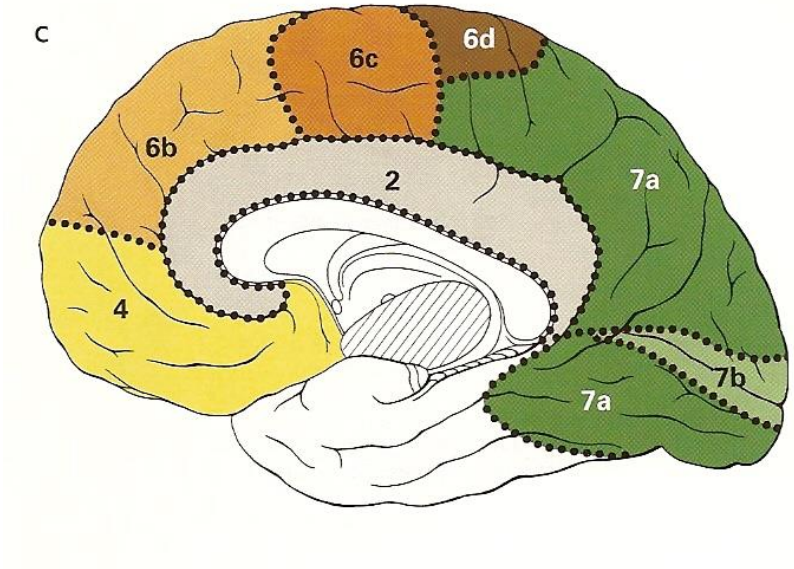
  <u>Grupo medial</u>



Tálamo

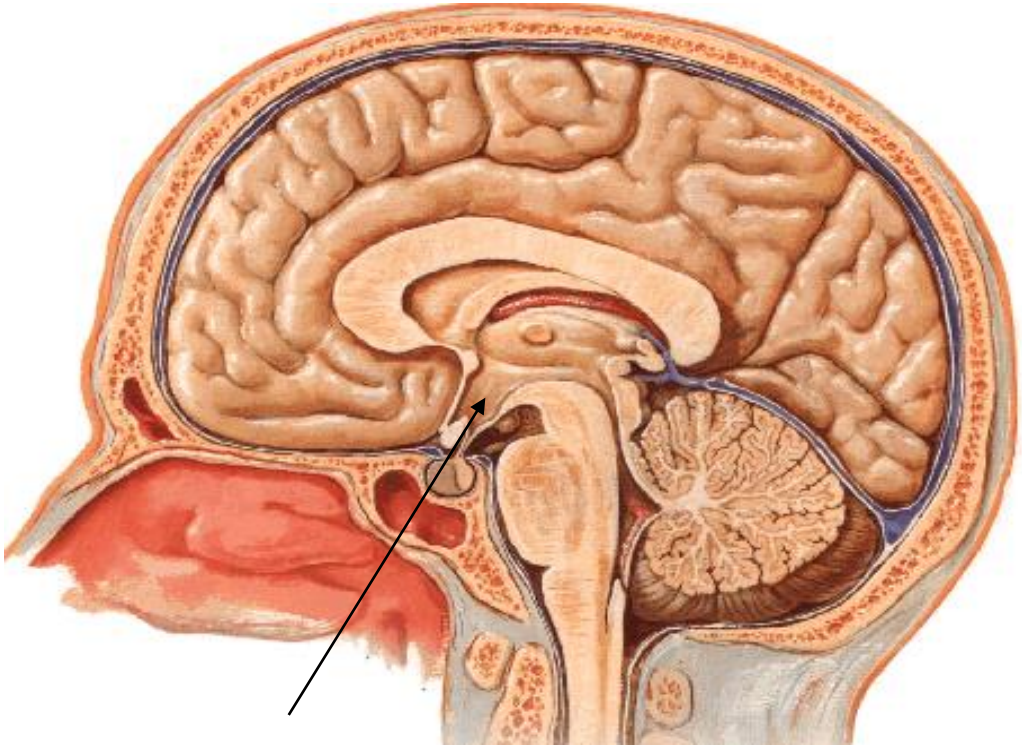

1
6b
2
6c
3
4
6d
6a
5a
5b
6e
1
7b
7a
7c


b
6d
6c
6b
6e
4
7c
7a
7b

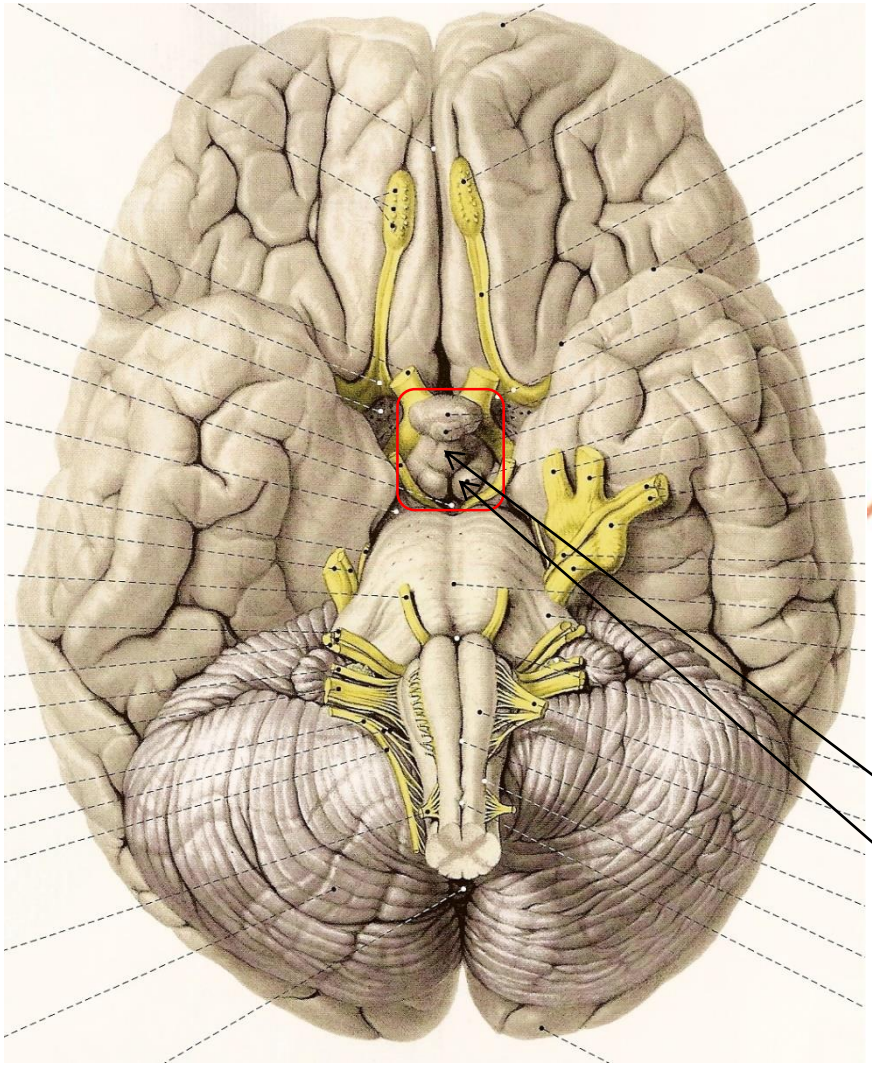

c
6c
6d
6b
2
7a
4
7b
7a

HIPOTÁLAMO

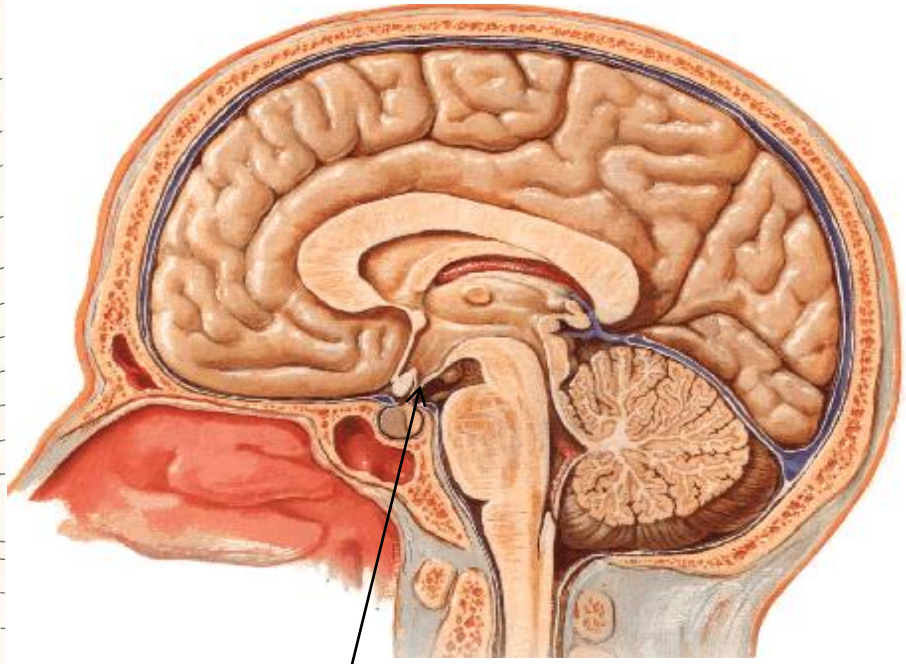
Controle da atividade visceral
Regulação da temperatura
Controle emocional
Regulação do sono / vigília
Regulação da fome / sede
Regulação da diurese
Regulação do metabolismo
Regulação da adenohipófise



HIPOTÁLAMO



Vista inferior



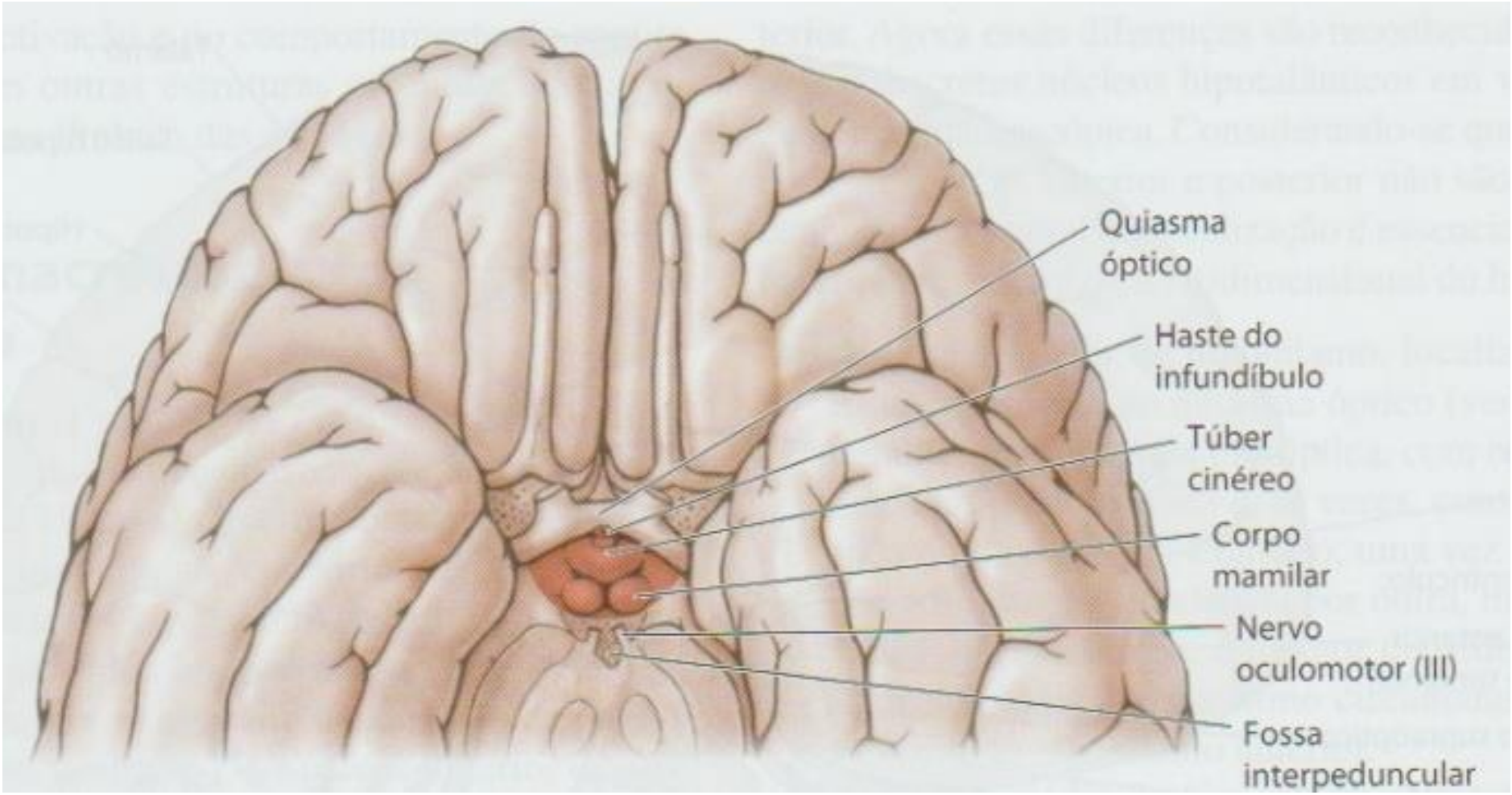
Vista medial

Infundíbulo

Tuber cinéreo

Corpos mamilares

HIPOTÁLAMO



Hipotálamo – vista inferior do encéfalo

HIPOTÁLAMO

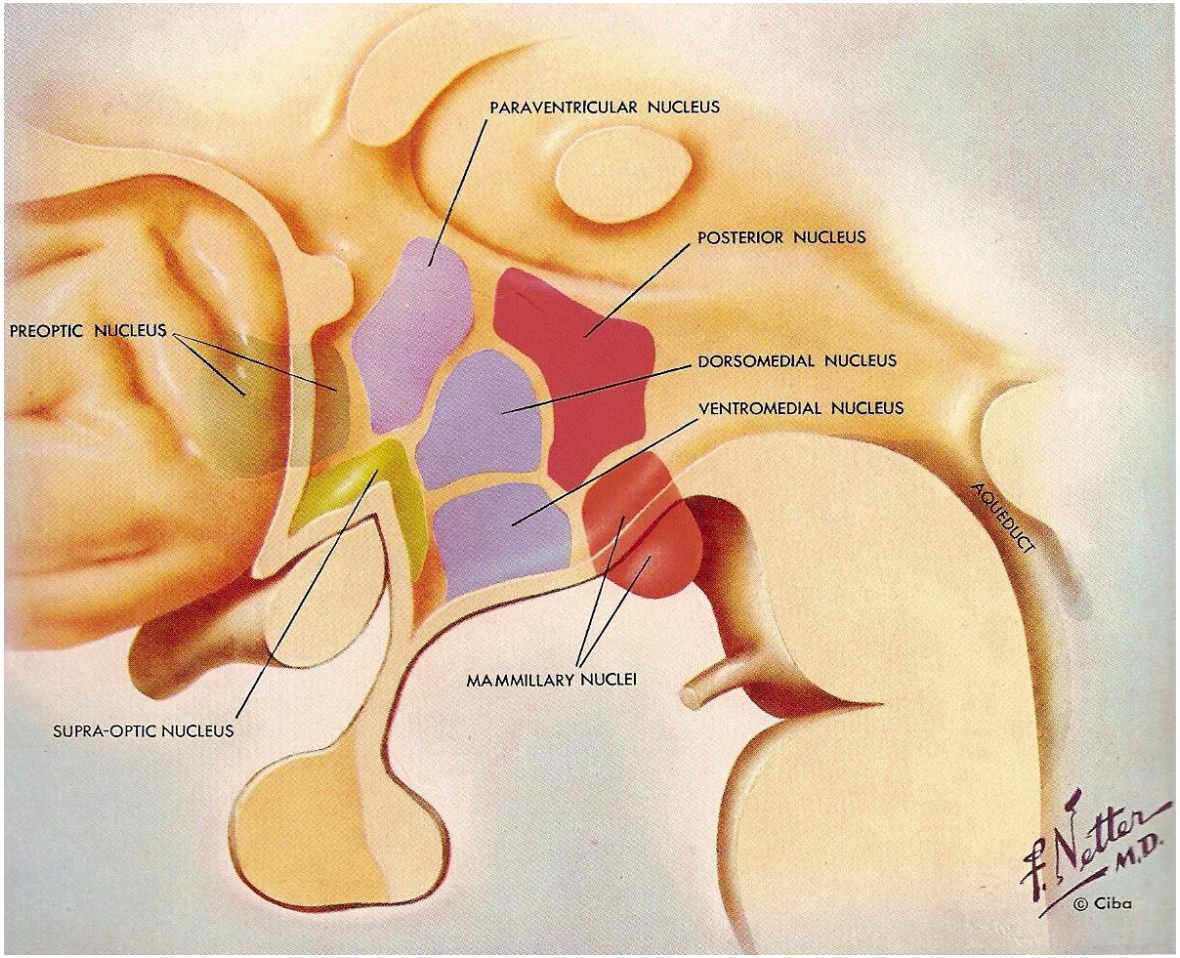
Grupos nucleares

-pré-óptico

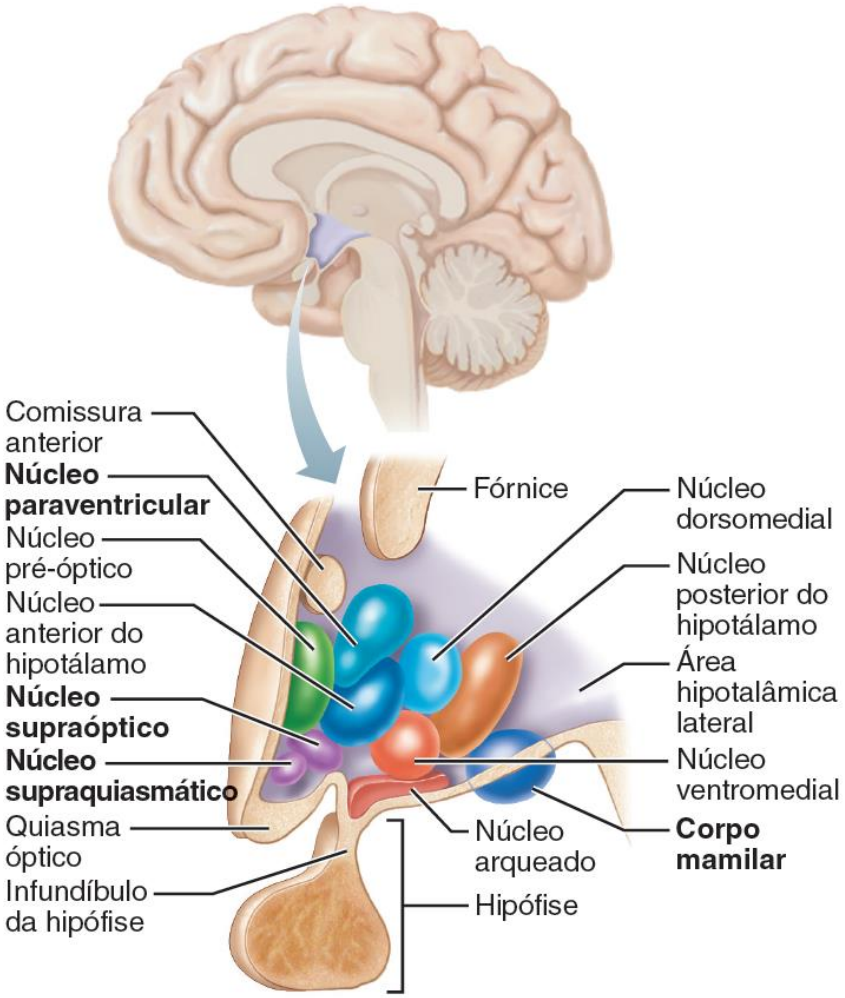
-supra-óptico

-túbero-infundibular

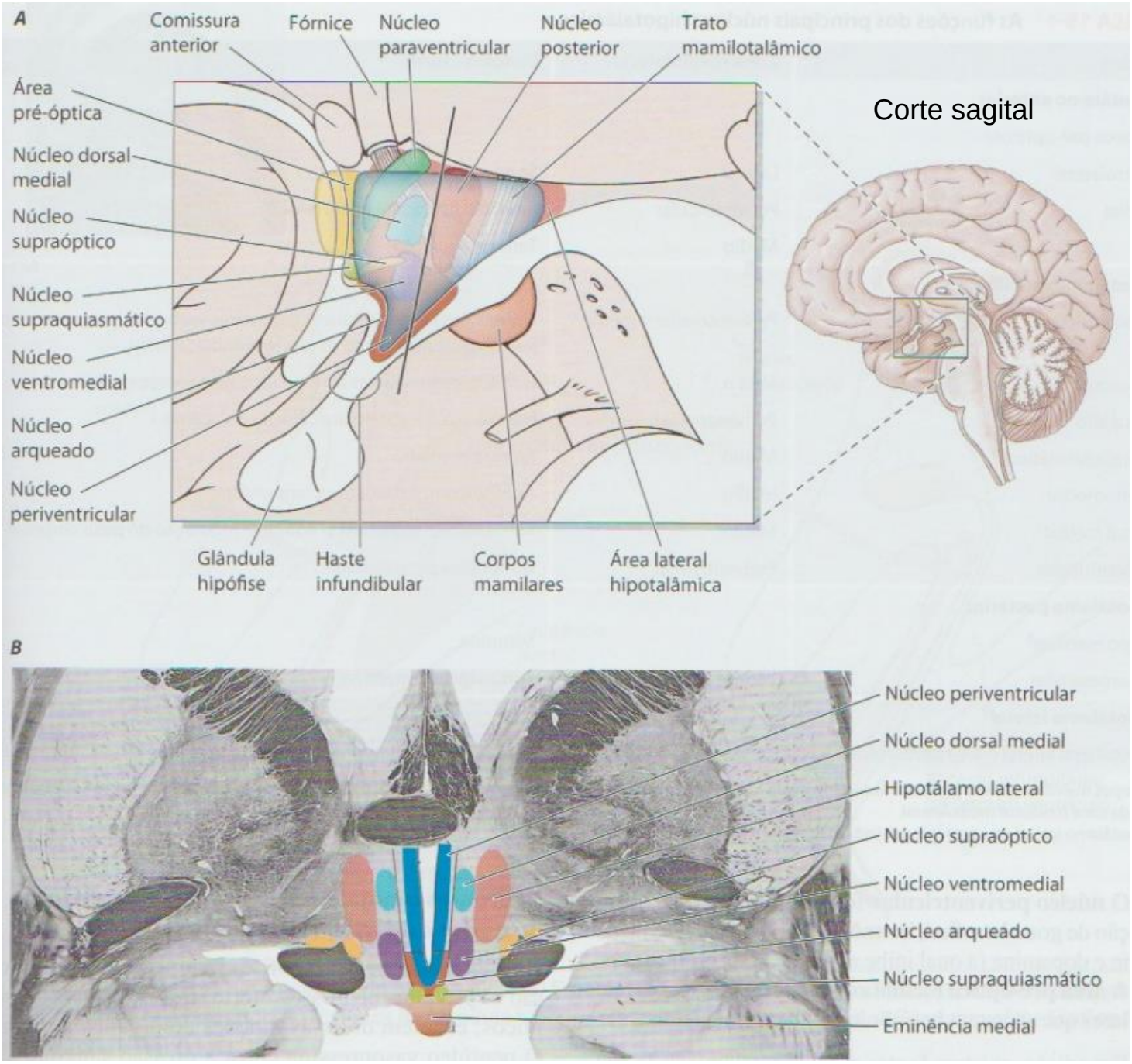
-mamilar



HIPOTÁLAMO



Principais núcleos do hipotálamo



Hipotálamo
Grupos nucleares

Corte frontal

EPITÁLAMO

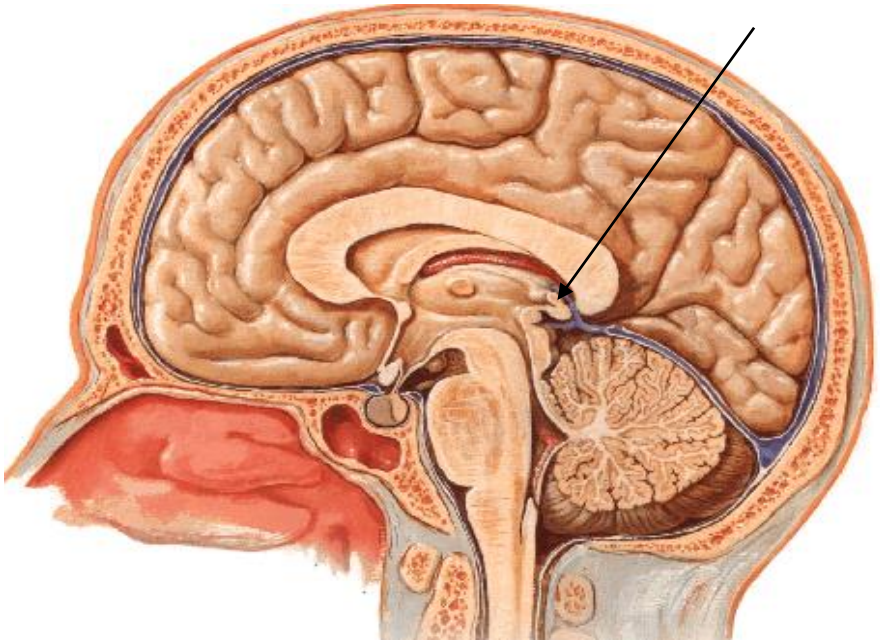
Corpo pineal (epífise)

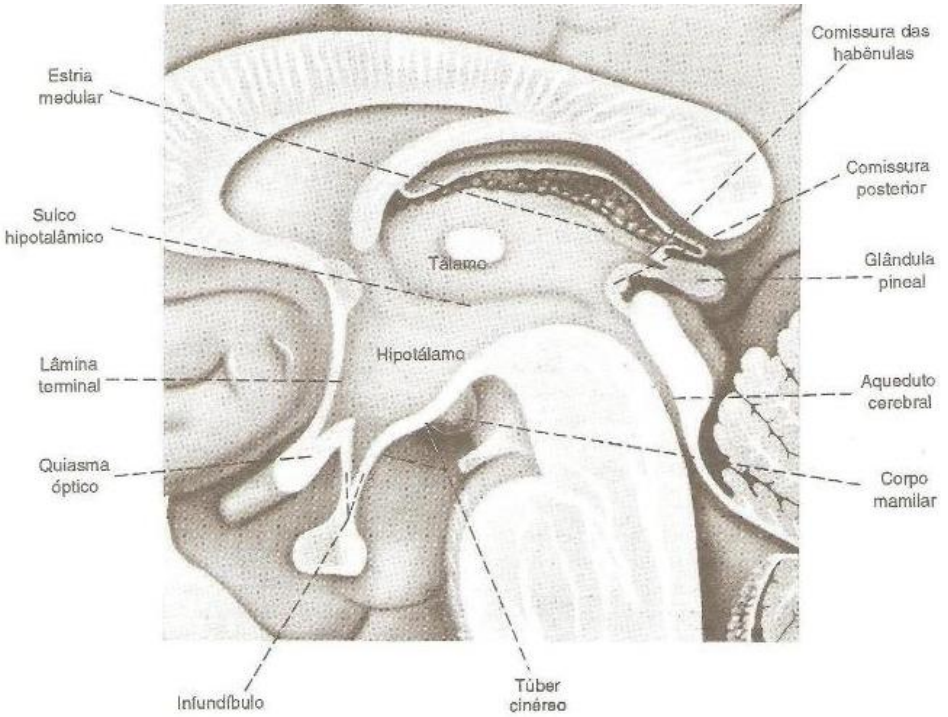
-endócrino (melatonina)

Trígono habenular (habênulas)

-não-endócrino (sist. límbico)

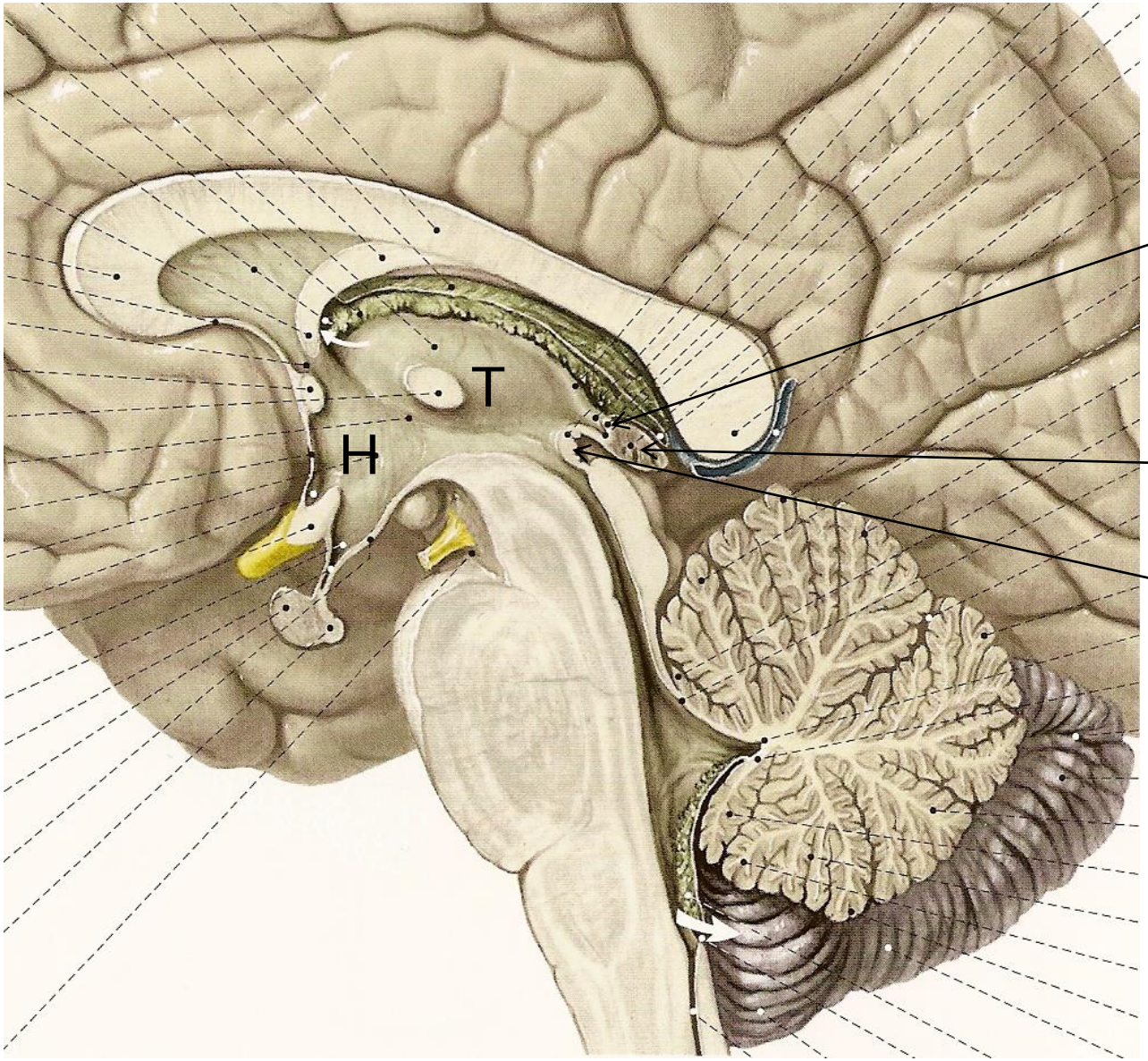
Comissura da habênulas





Corte sagital

EPITÁLAMO



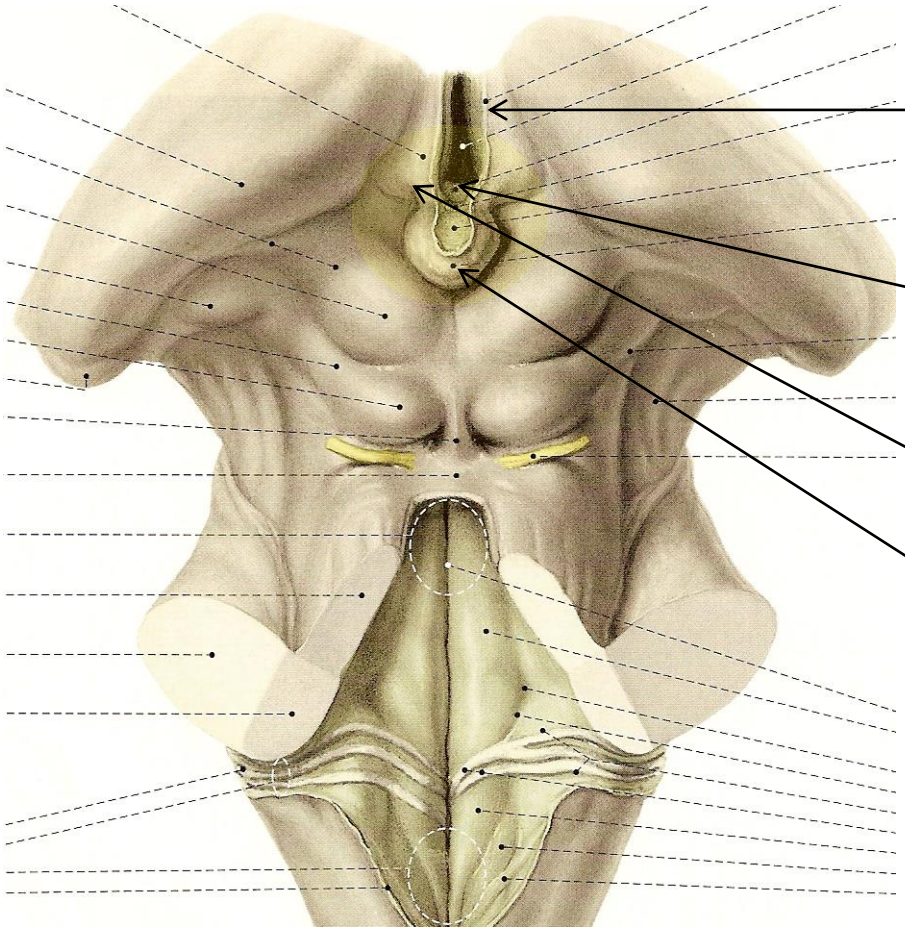
Comissura das habênulas

pineal

comissura posterior

Corte sagital
Vista medial

EPITÁLAMO



Estria medular do tálamo (entre face dorsal e medial)

Comissura posterior

Trígono das habênulas

Corpo pineal

Vista posterior
(cerebelo retirado)

SUBTÁLAMO

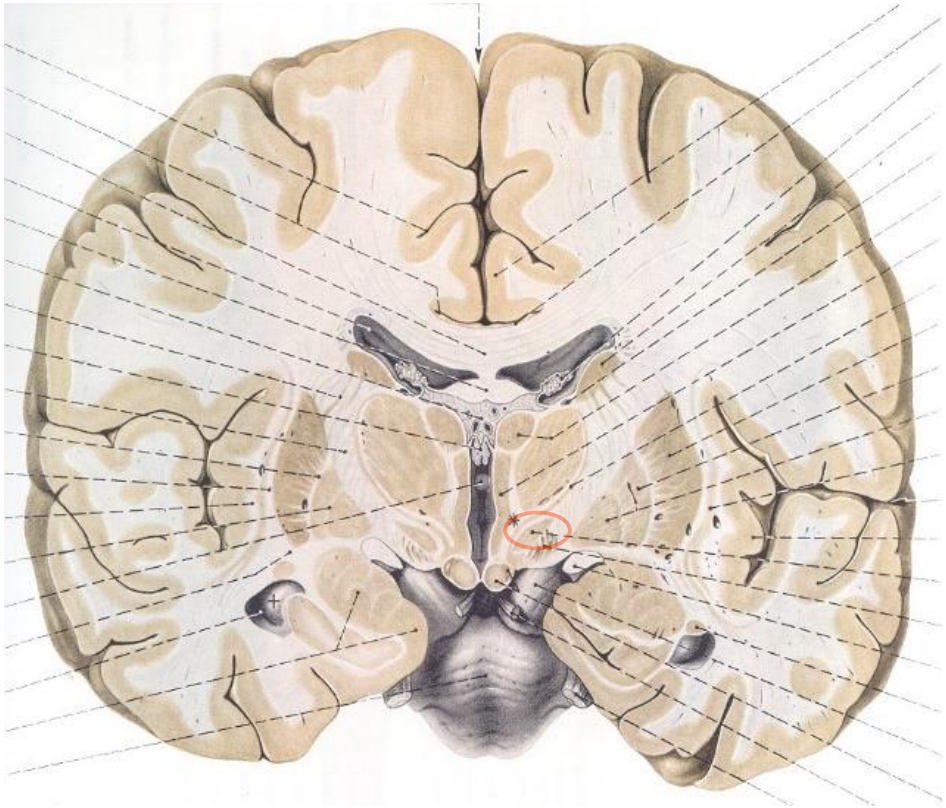
Controle motor (extrapiramidal)

Lesão: hemibalismo

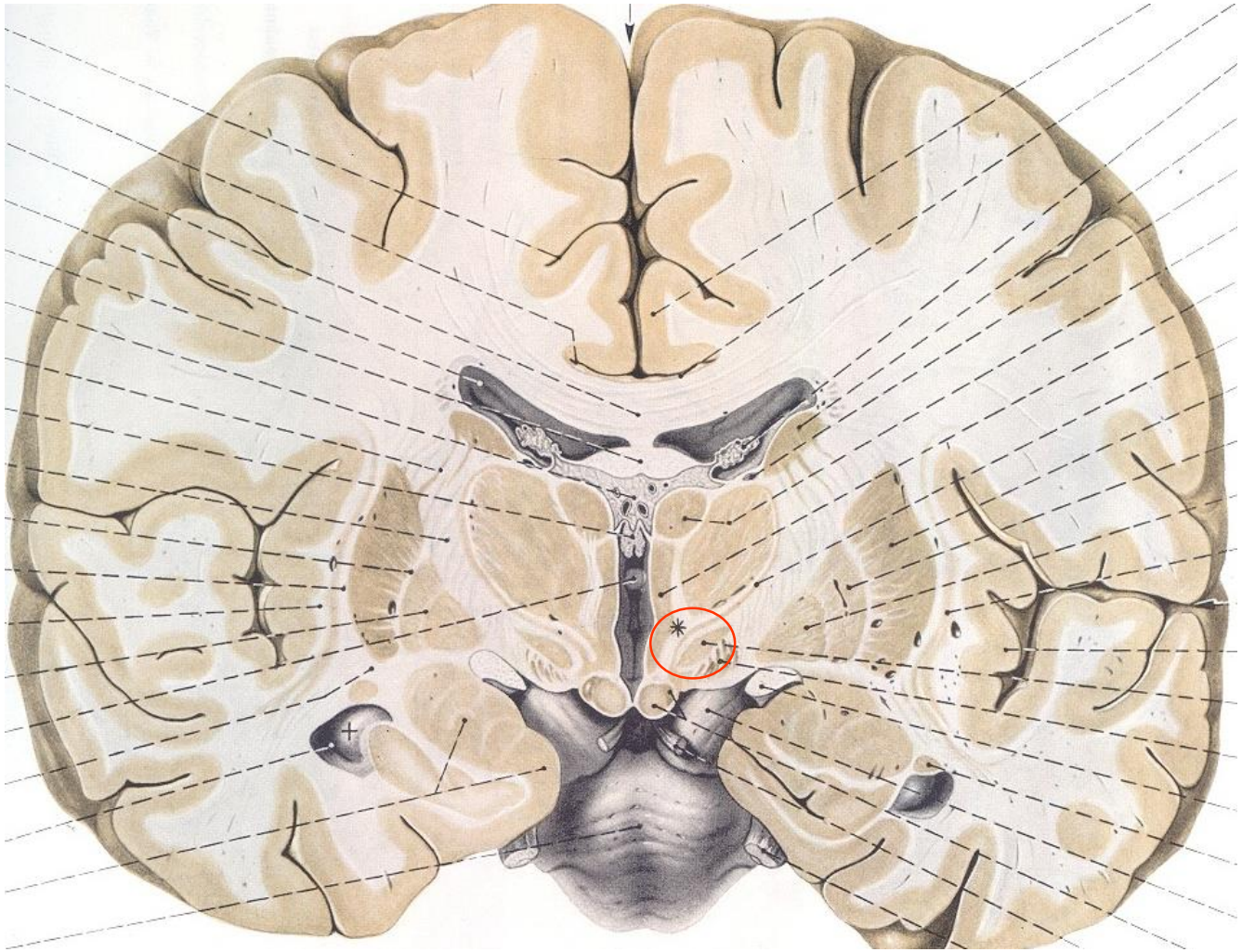
Localização: zona de transição entre diencéfalo e mesencéfalo
abaixo do tálamo, entre hipotálamo e cápsula interna

Não se relaciona com paredes do IIIº ventrículo (visto somente em *corte frontal, passando pelos corpos mamilares*)

Componente principal = Núcleo subtalâmico

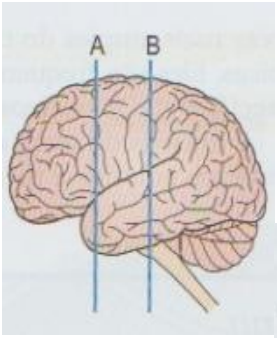


SUBTÁLAMO

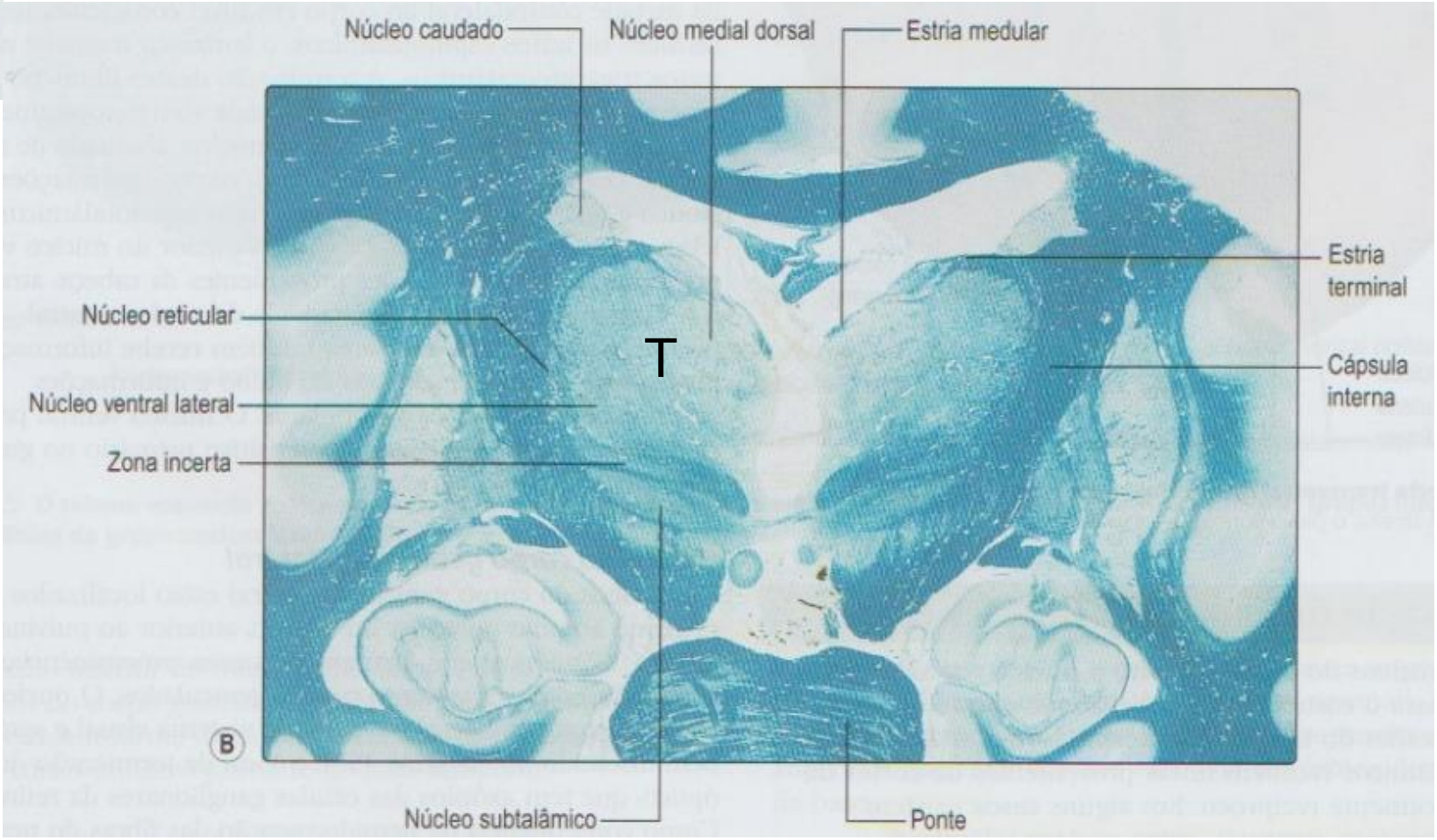


Corte frontal

(Corpos mamilares)



SUBTÁLAMO

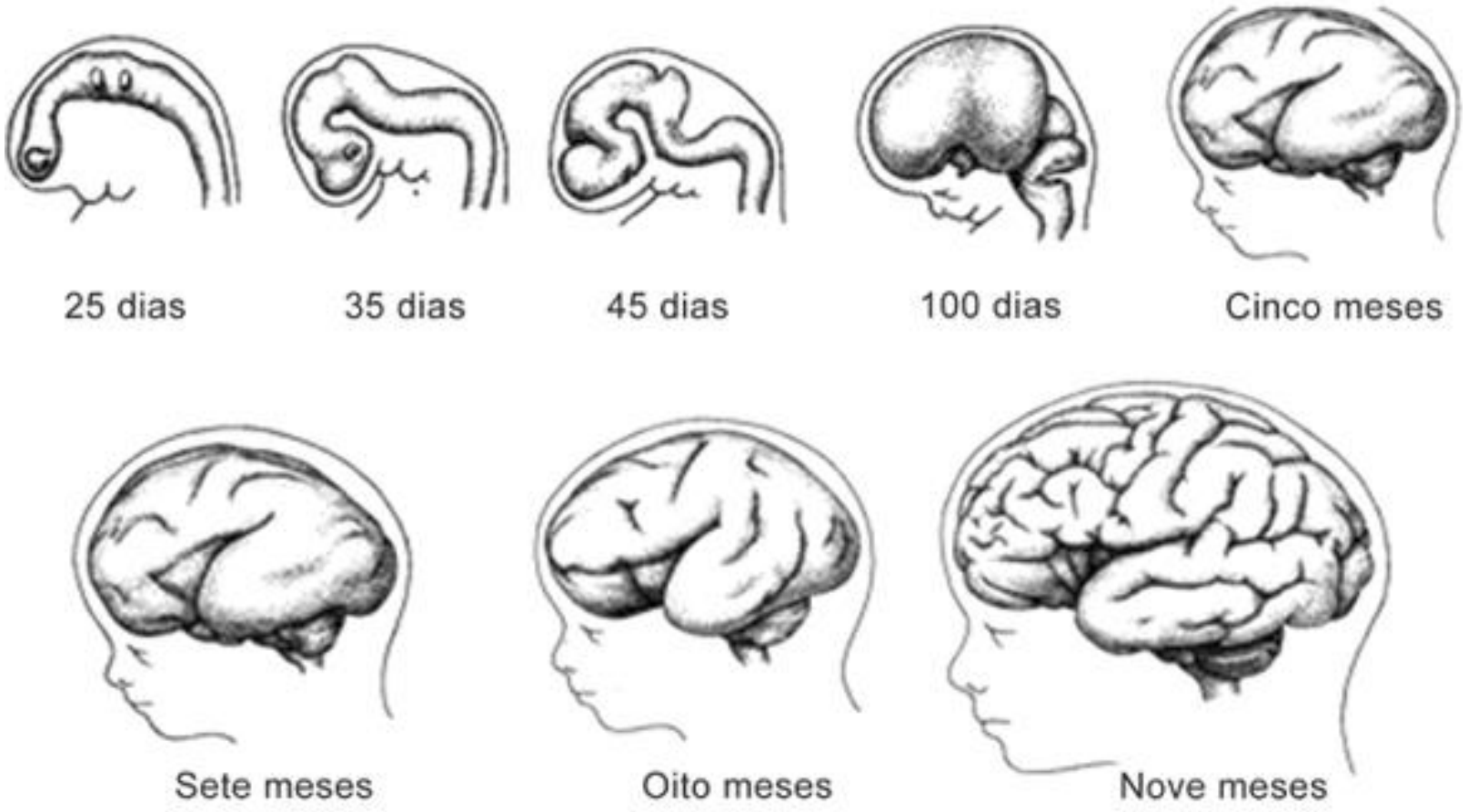


Corte frontal

(Corpos mamilares)

Lesão do subtálamo causa hemibalismo (alteração do controle dos movimentos)

ORGANIZAÇÃO ANATÔMICA DO TELENCÉFALO



Telencéfalo

Dois hemisférios cerebrais

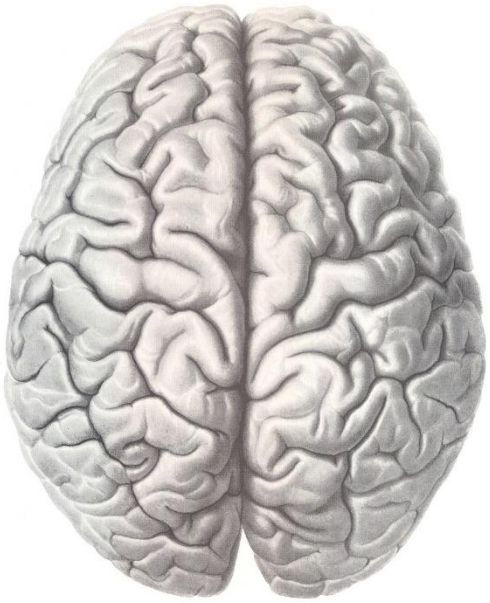
Fissura longitudinal do cérebro

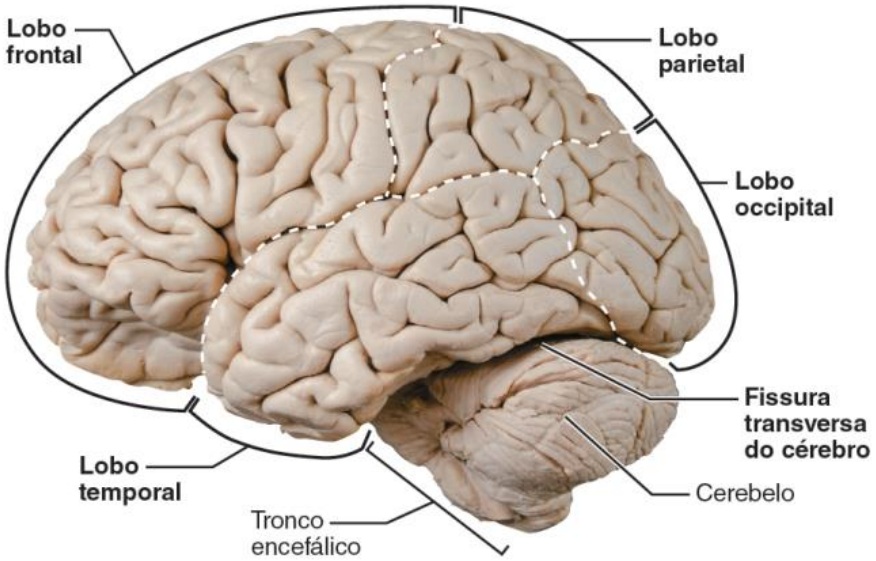
Unidos pelo corpo caloso

Ventrículos laterais

Giros ou circunvoluções cerebrais

Sulcos e fissuras



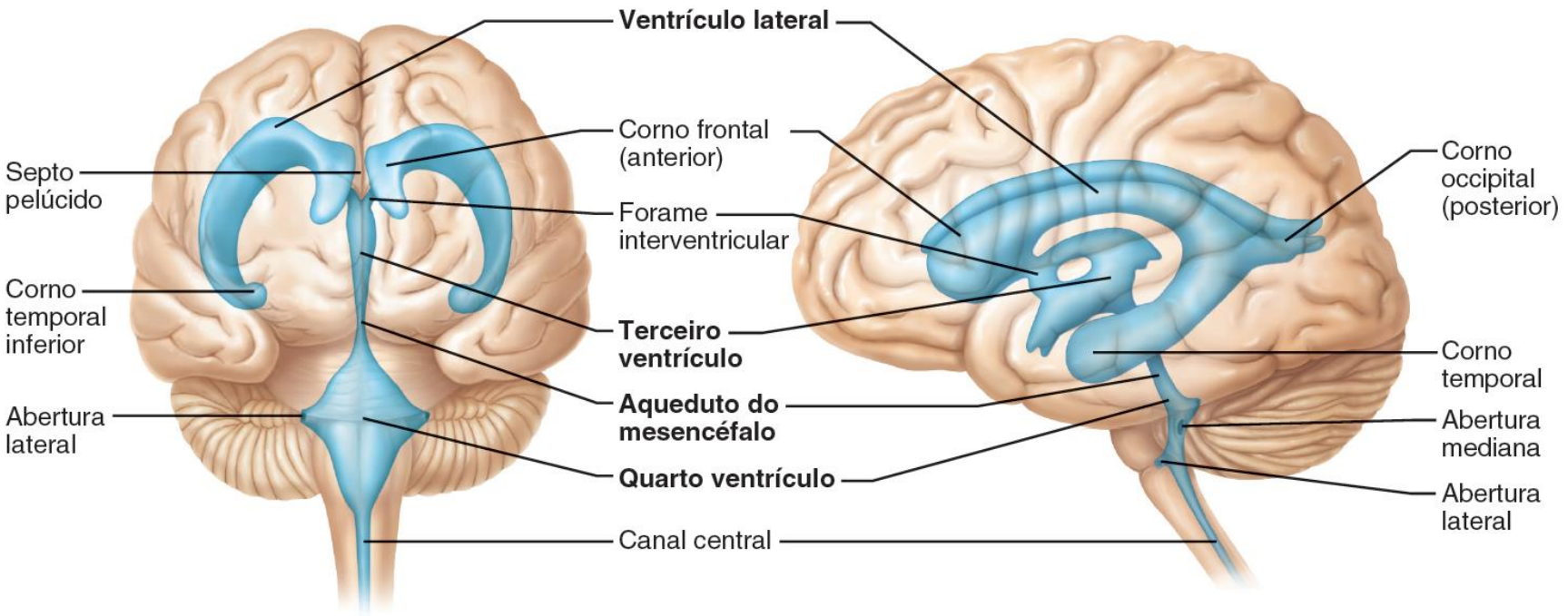


Telencéfalo

Fissura longitudinal

Vista superior

Telencéfalo



Ventrículos encefálicos. As regiões dos ventrículos laterais, os cornos frontal, occipital e temporal, estão legendadas nas partes (a) e (b).

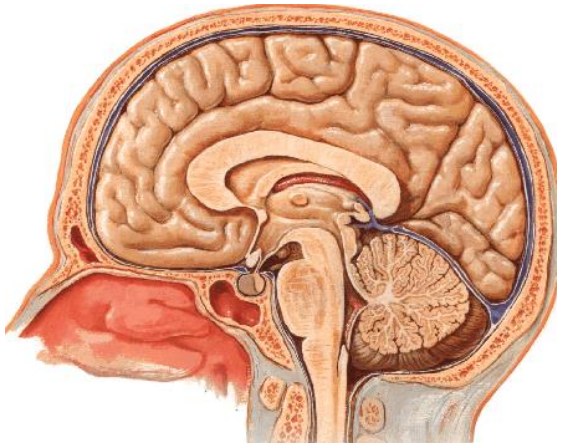
Telencéfalo

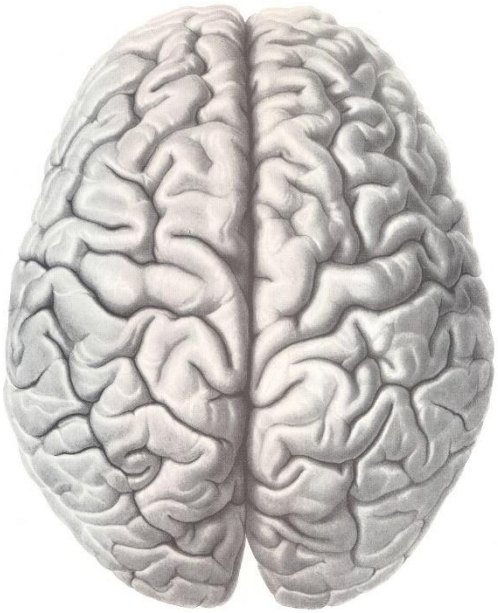
Polos

- frontal
- occipital
- temporal

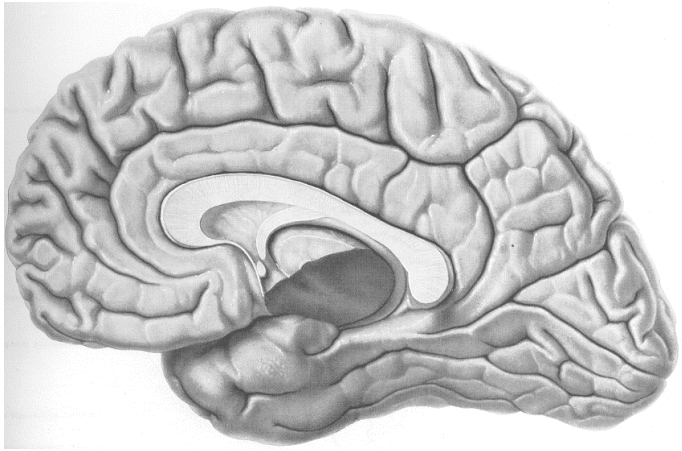
Faces

- súpero-lateral (convexa)
- medial (plana)
- inferior (base do cérebro)
  - fossas anterior e média
  - tenda do cerebelo

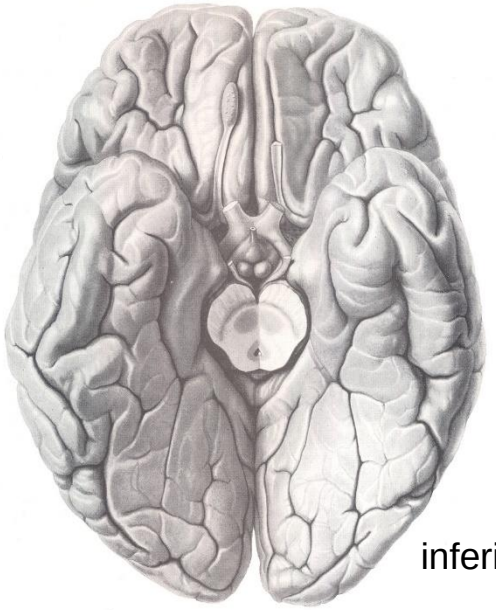




superior

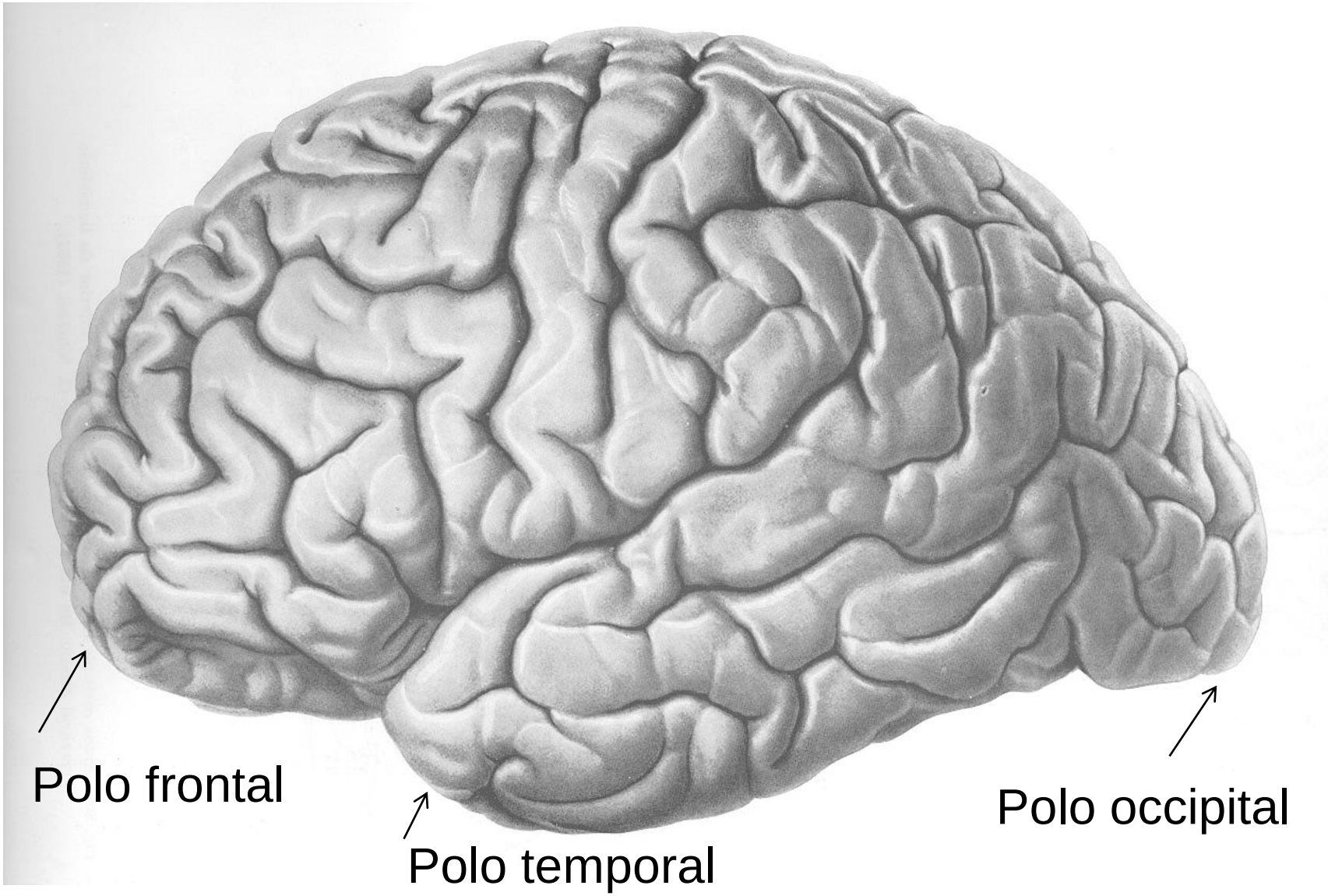


medial



inferior

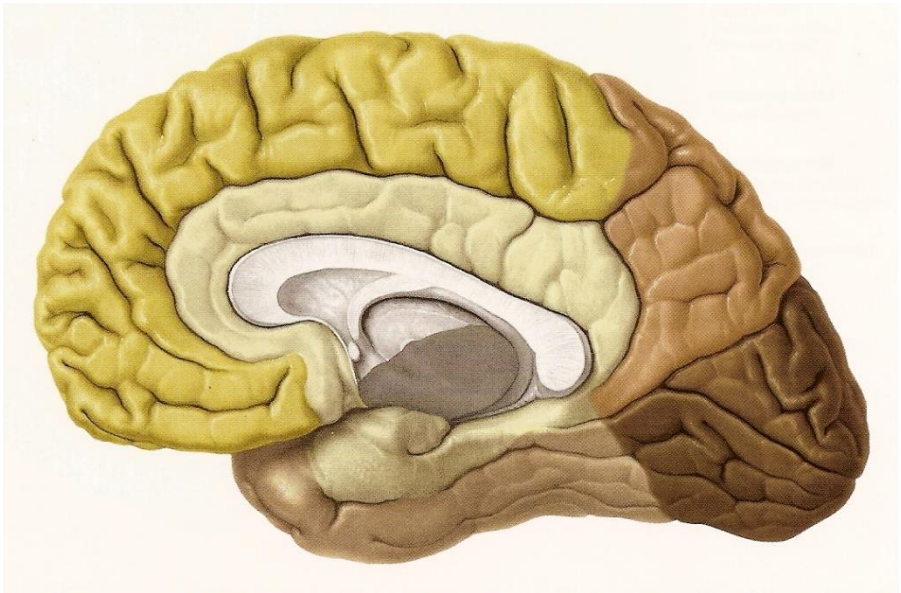
Telencéfalo



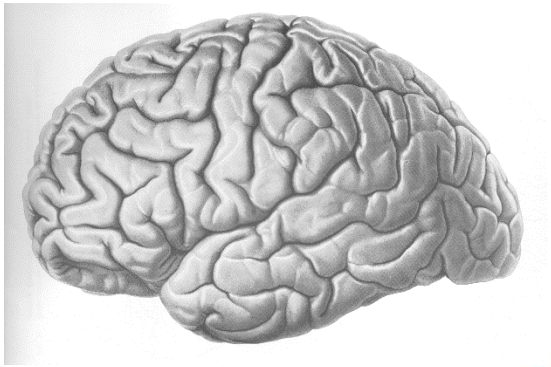
Telencéfalo

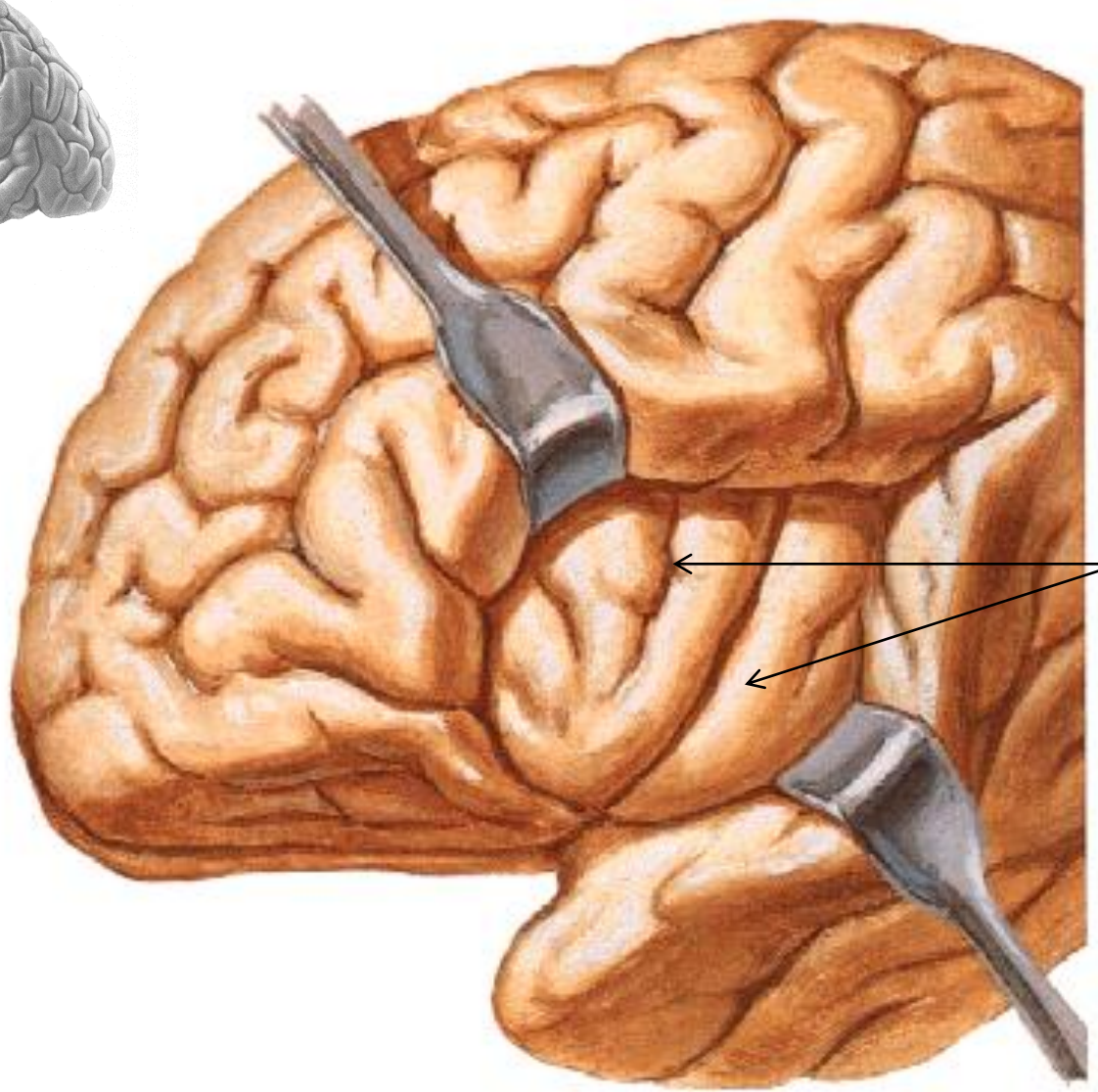
Lobos cerebrais (ossos do crânio)

- frontal
- temporal
- parietal
- occipital
- ínsula



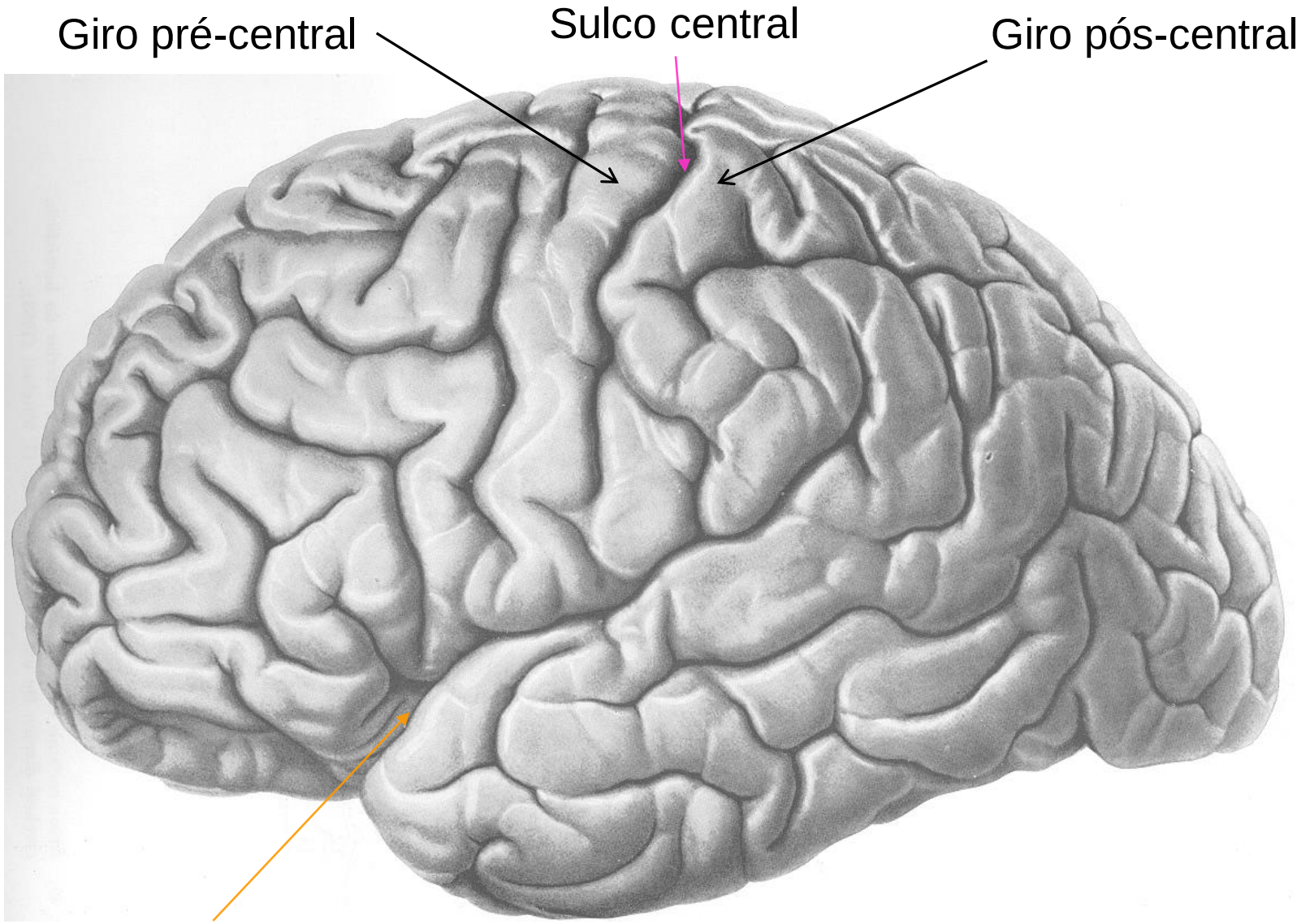
Telencéfalo





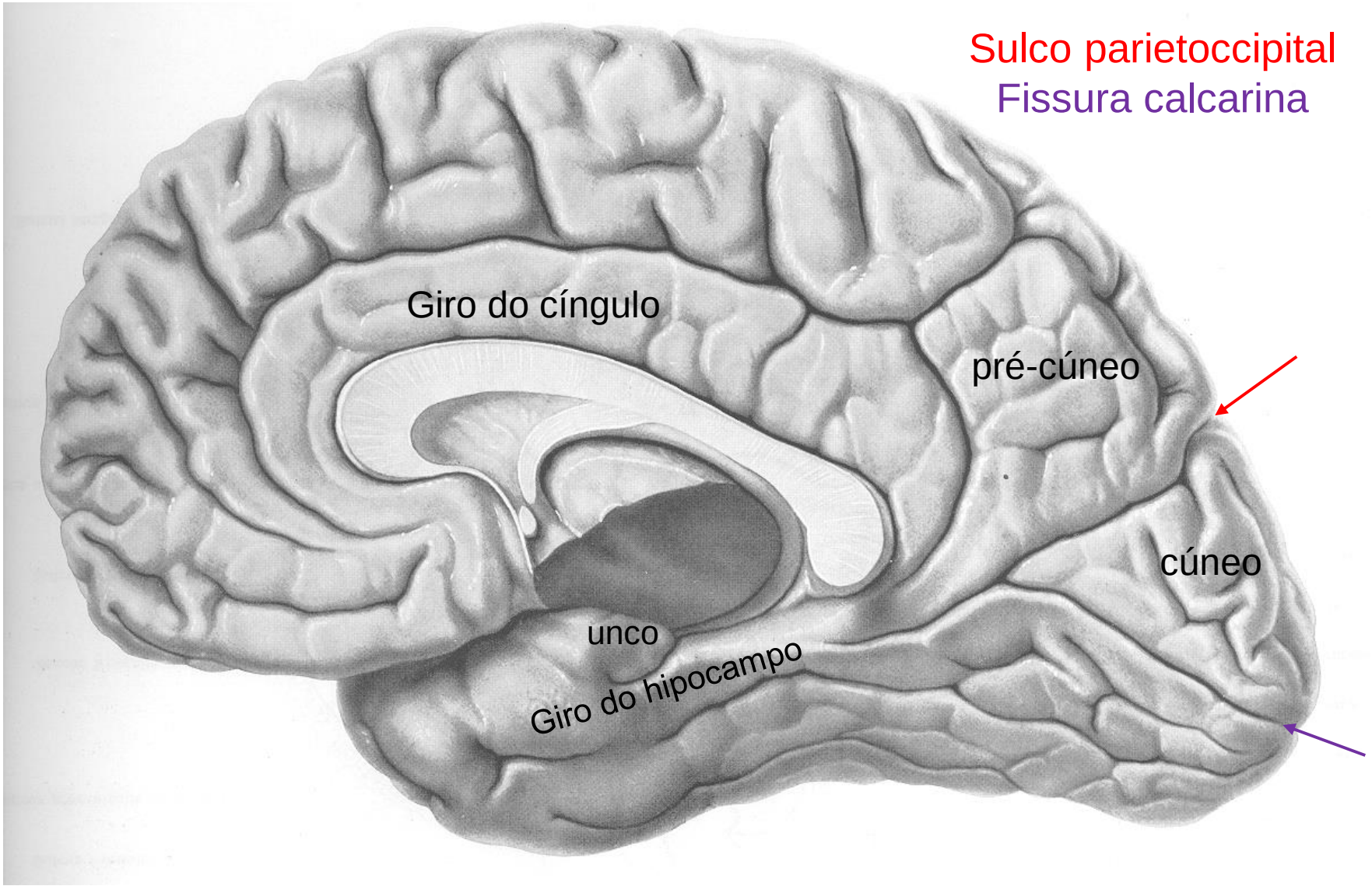
Vista lateral

Telencéfalo



Face lateral

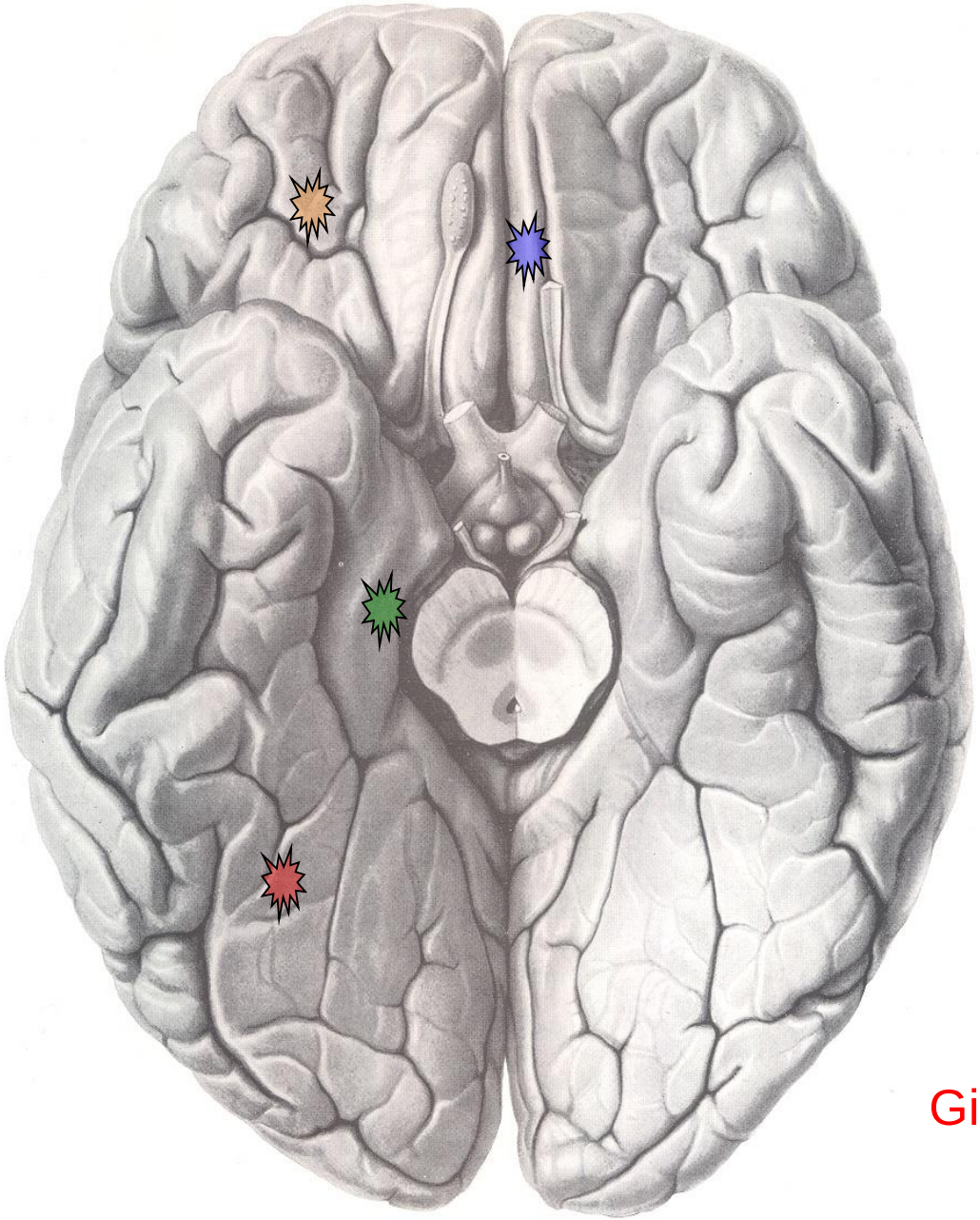
Giros e sulcos



Giro do hipocampo =
giro parahipocampal

Face medial
Giros e sulcos

Telencéfalo



Face inferior

Giros e sulcos

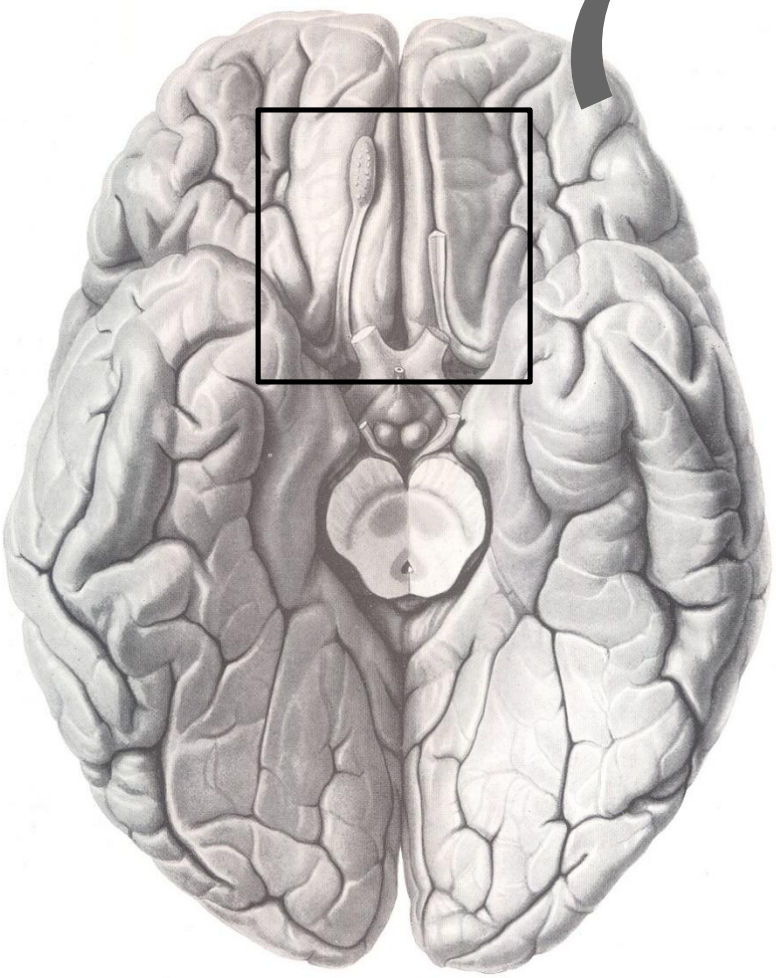
Giros orbitais

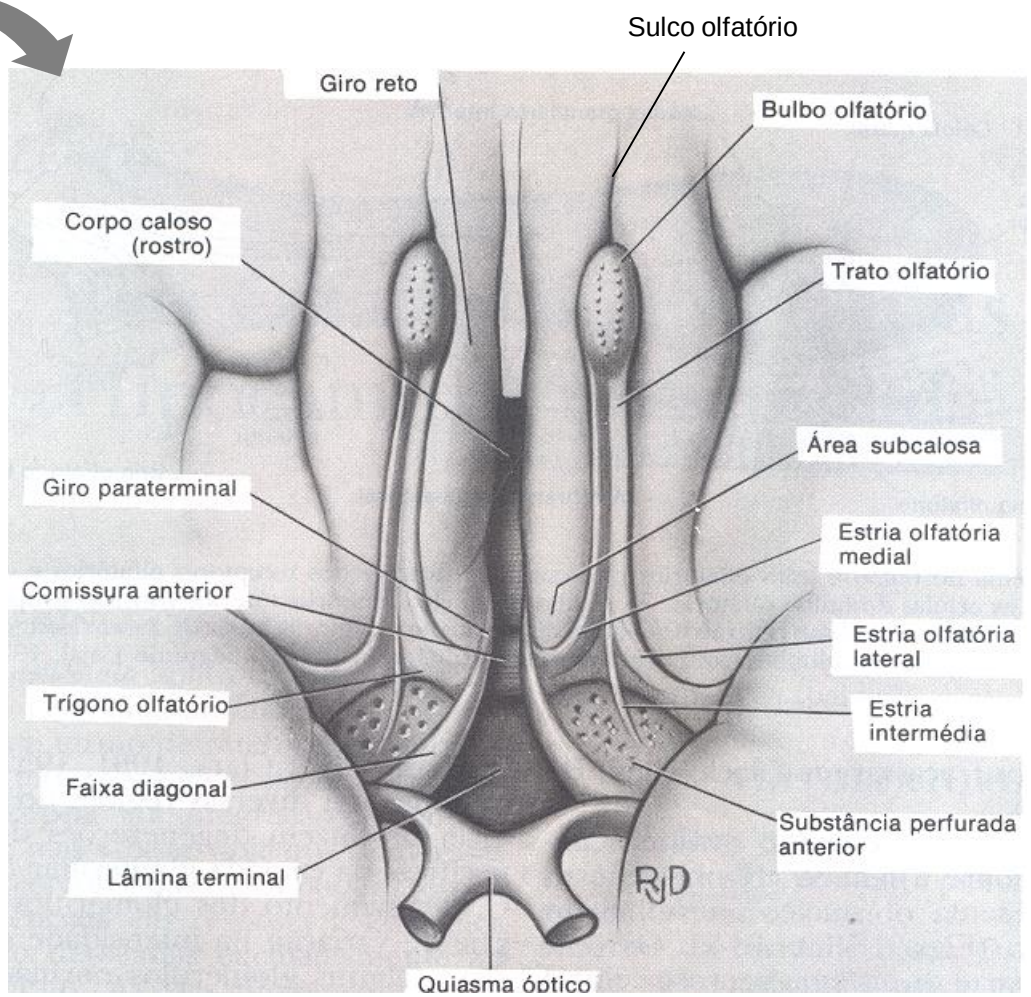
Giro reto

Giro do hipocampo

Giros occipitotemporais

telencéfalo

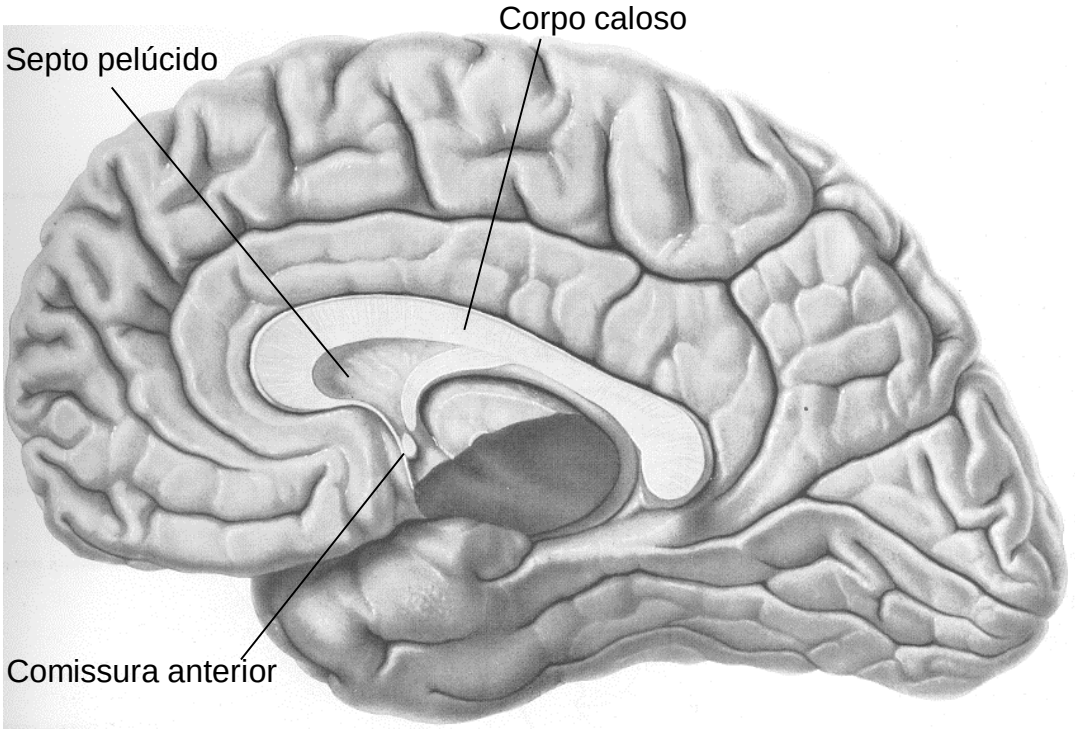




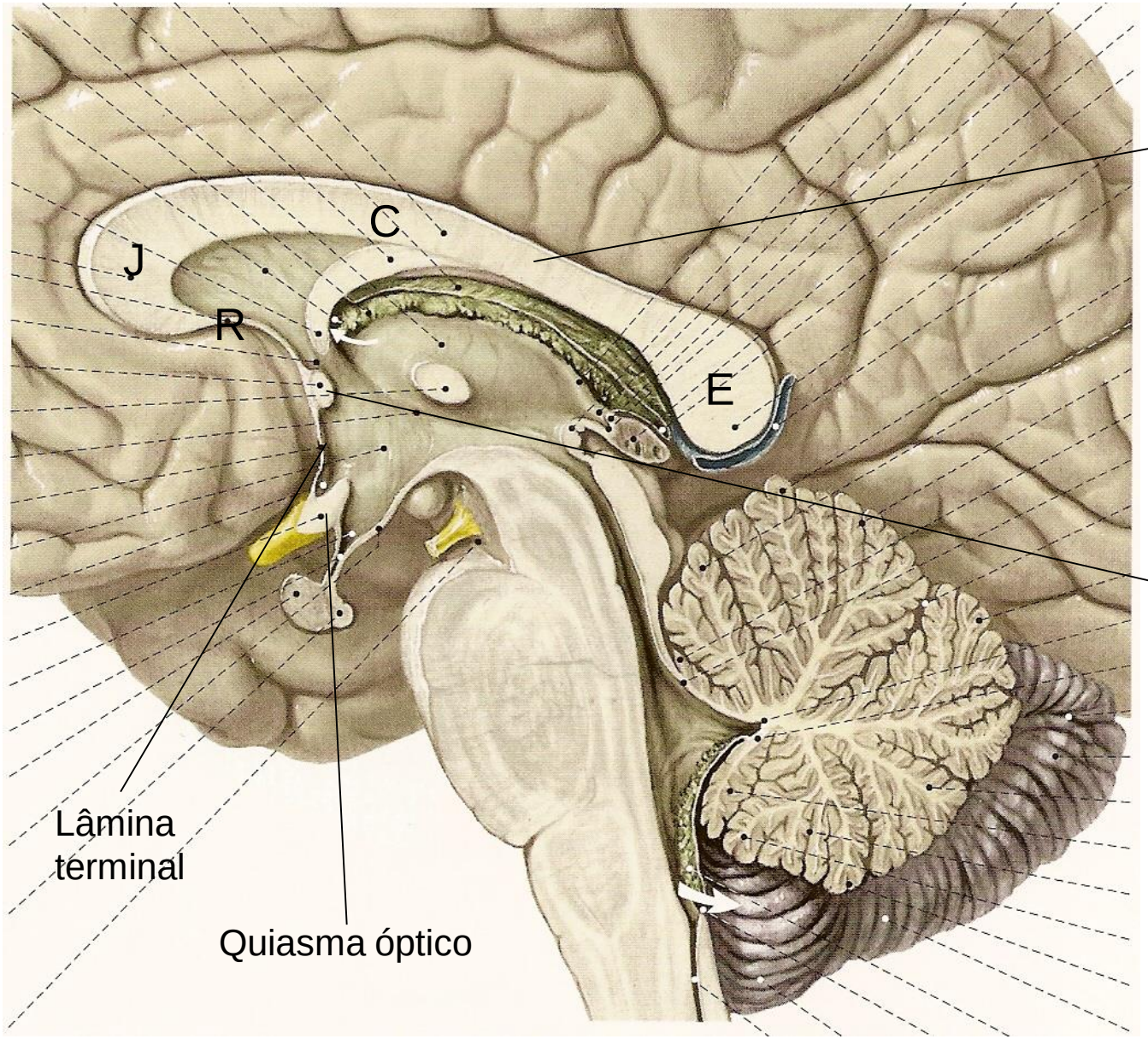
Comissuras cerebrais: conjunto de fibras nervosas dentro do SNC que interconectam estruturas semelhantes dentro dos dois hemisférios cerebrais

Corpo caloso
- rostro
- joelho
- corpo
- esplênio

Comissura anterior



Corte sagital
Vista medial



Corpo caloso

Rostro

Joelho

Corpo

Esplênio

Comissura anterior

Corte sagital
Vista medial

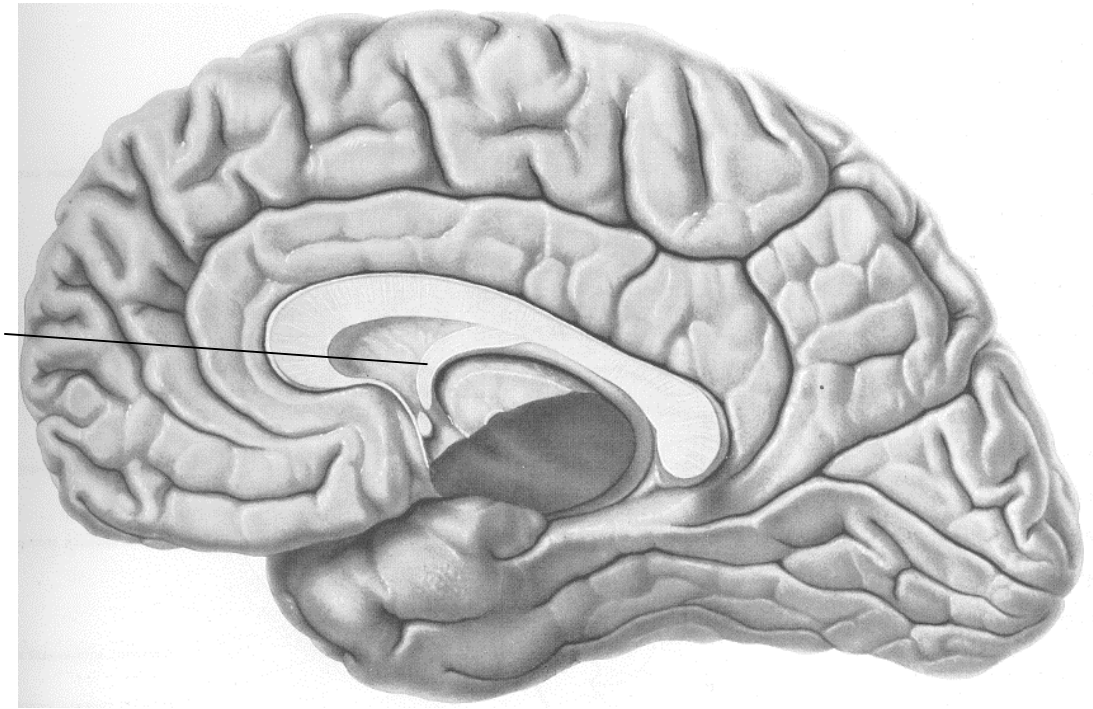
Fórnice = conjunto de fibras entre hipocampo e corpo mamilar

colunas

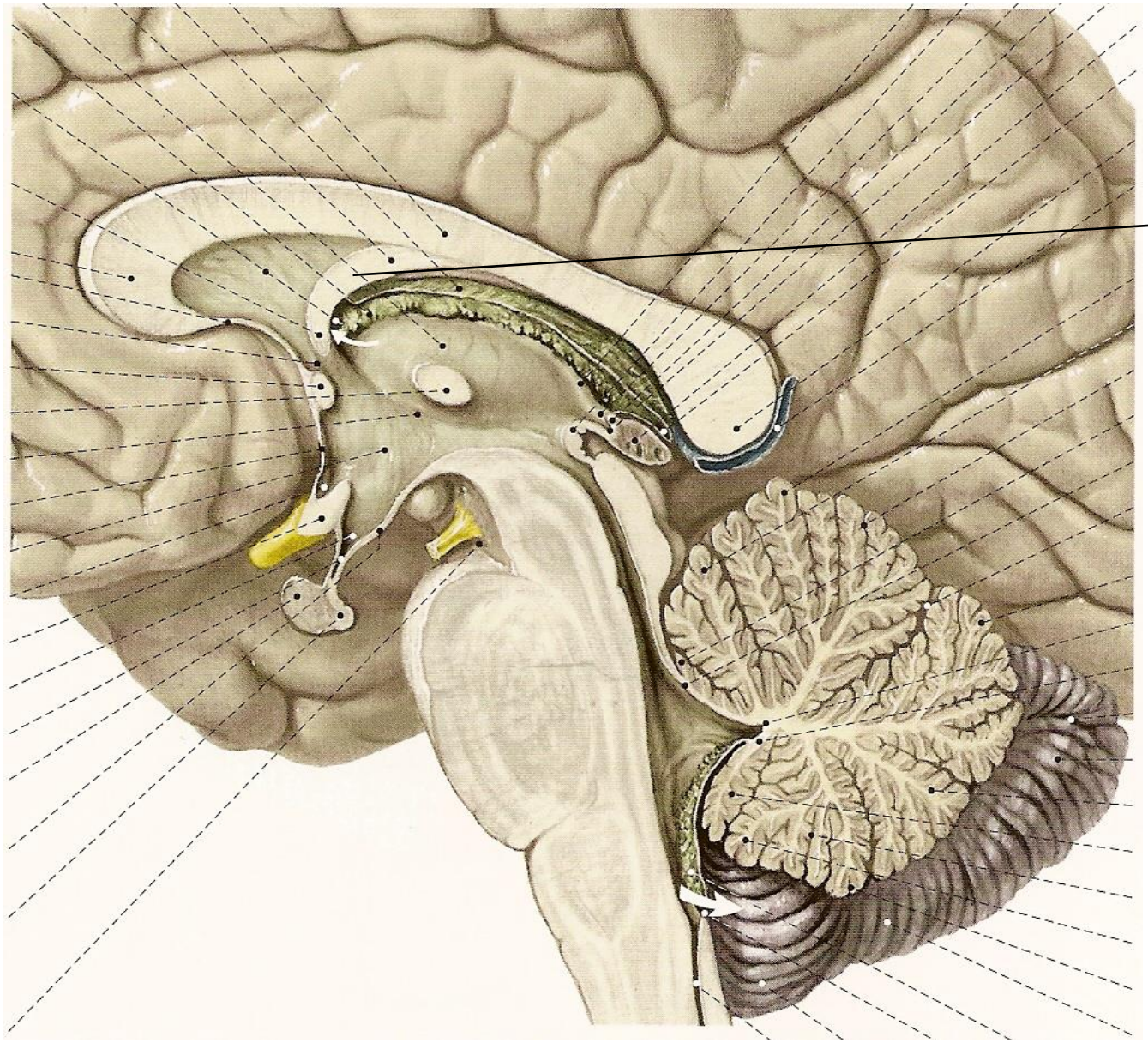
corpos

pernas (pilares)

comissura do fórnice (do hipocampo) = interconecta os dois hipocampos



Corte sagital
Vista medial

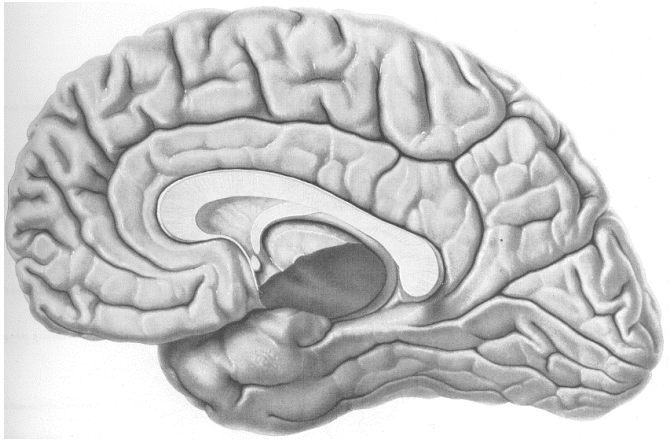


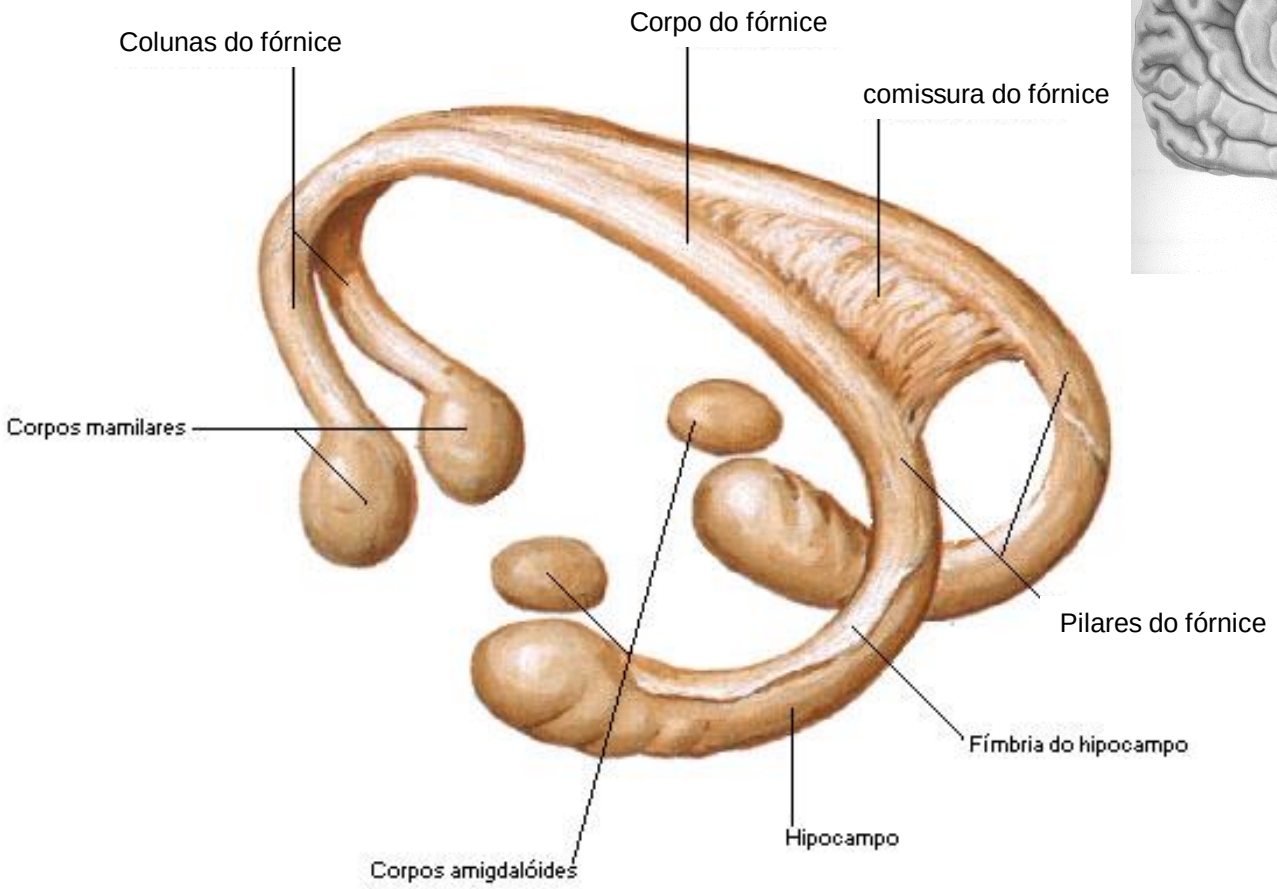
Fórnice

Coluna = limite anterior do forame interventricular

Face medial

Telencéfalo





fórnice

Telencéfalo

Córtex cerebral

Alocórtex = arquicórtex (memória)

paleocórtex (olfato, emoções)

<u>Neocórtex</u> (isocórtex)

6 camadas celulares

I camada molecular

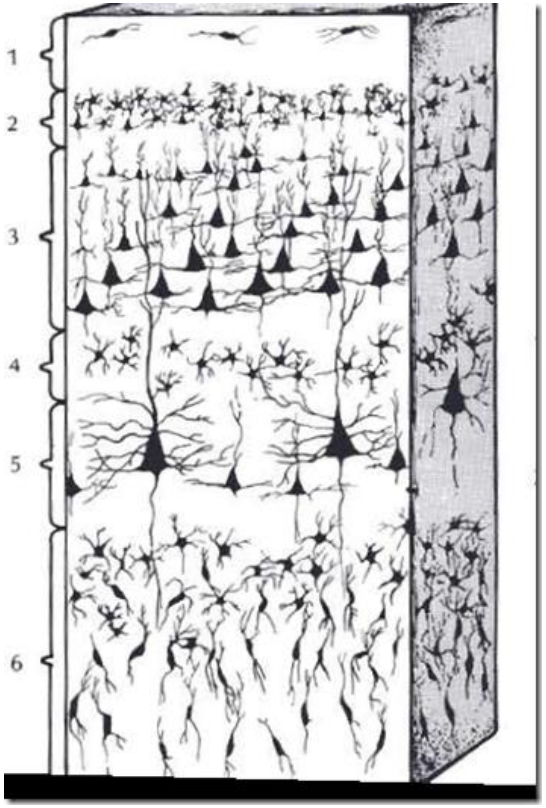
II camada granular externa

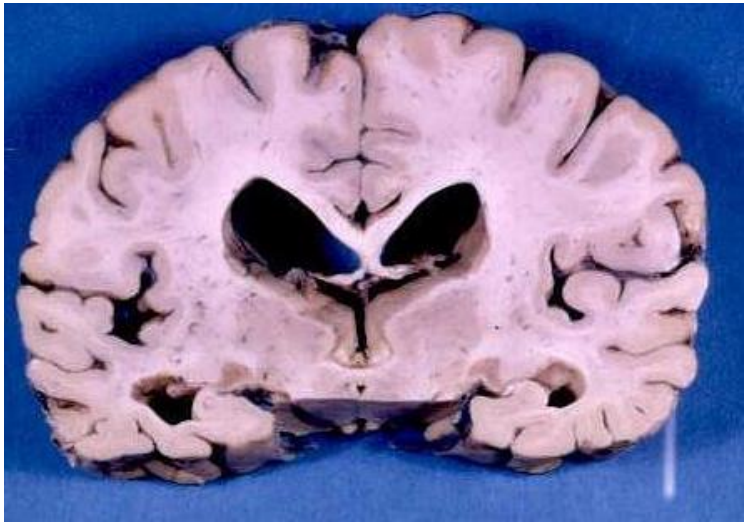
III camada piramidal externa

IV camada granular interna **R**

V camada piramidal interna **P**

VI camada polimórfica





R = receptora

P = de projeção

Telencéfalo

Substância branca subcortical (centro medular ou semi-oval) = composta por prolongamentos de neurônios (fibras nervosas) e células gliais

- fibras de projeção (entre córtex e estruturas fora do telencéfalo)

fórnice

cápsula interna (coroa radiada)

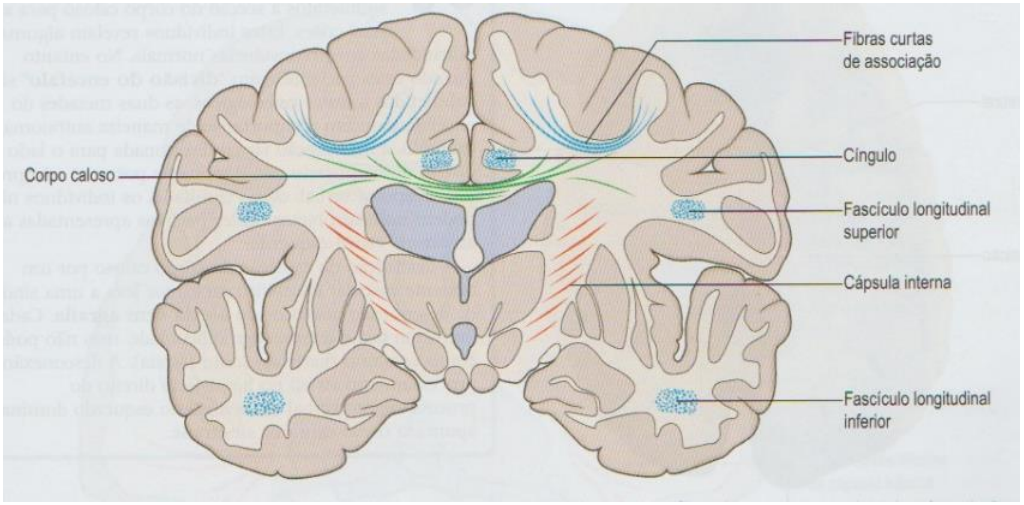
- fibras de associação (entre pontos diferentes do telencéfalo, em um mesmo hemisfério cerebral)

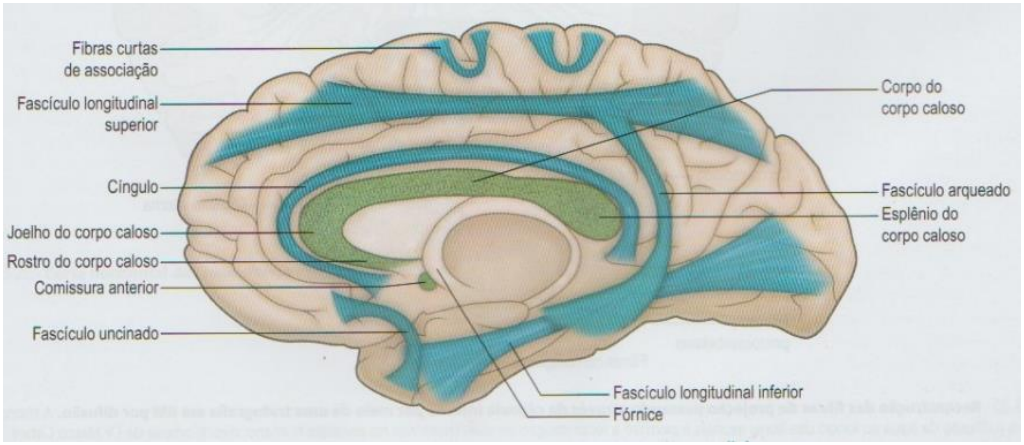
- comissuras

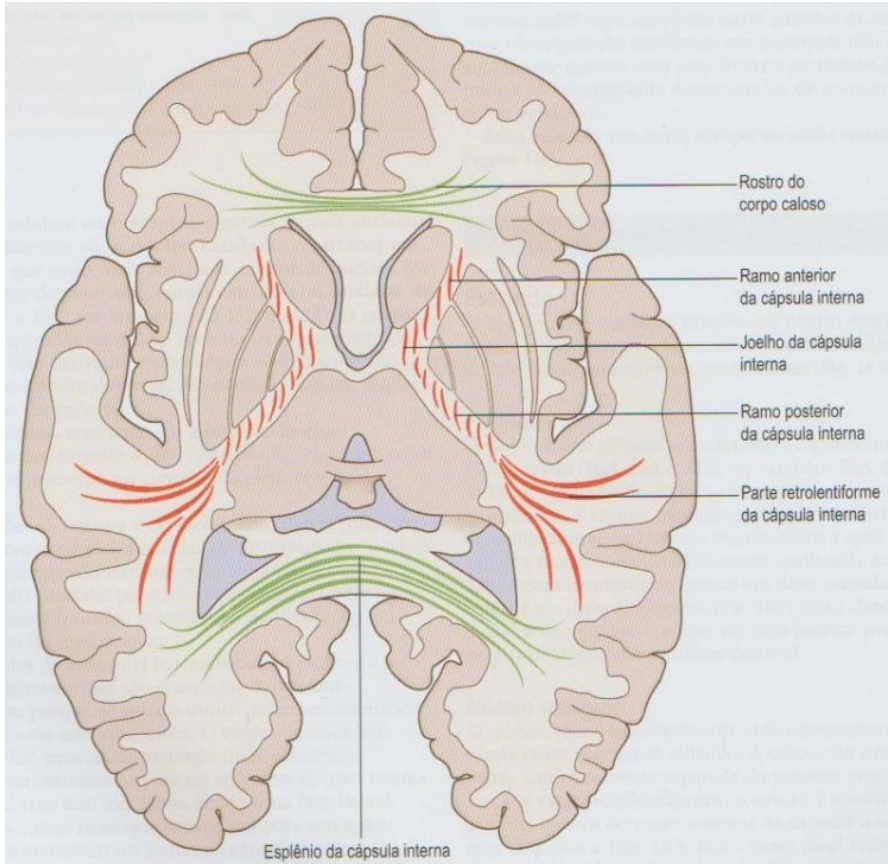
corpo caloso

comissura anterior

Telencéfalo





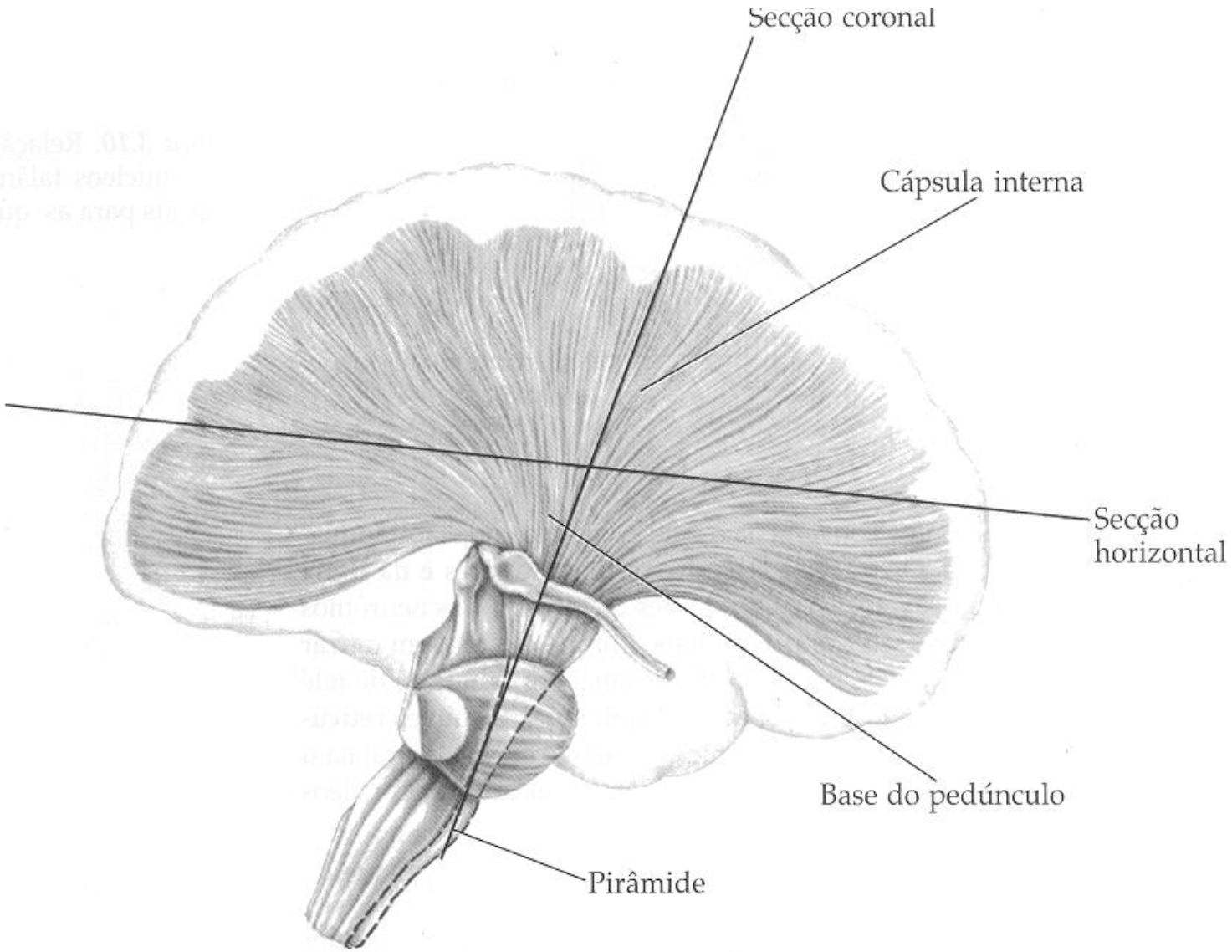


Substância branca subcortical

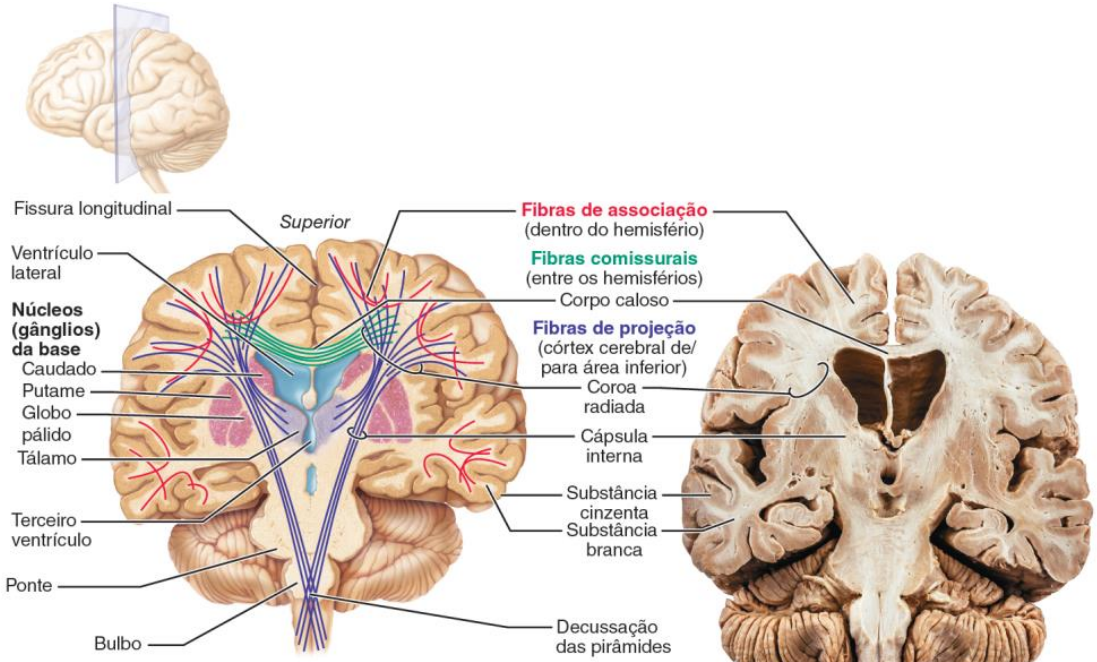
fibras de projeção

fibras de associação

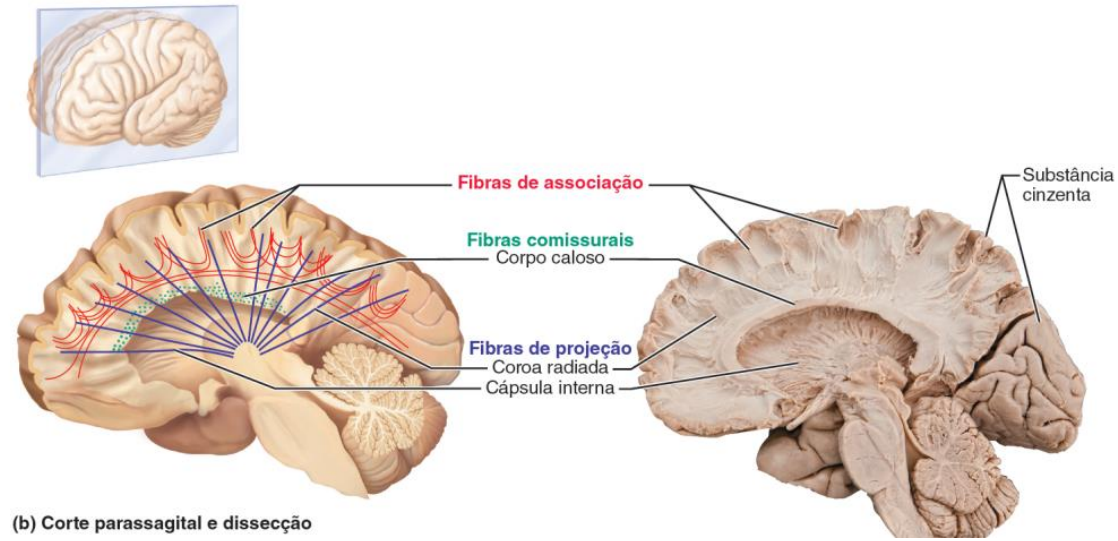
fibras comissurais



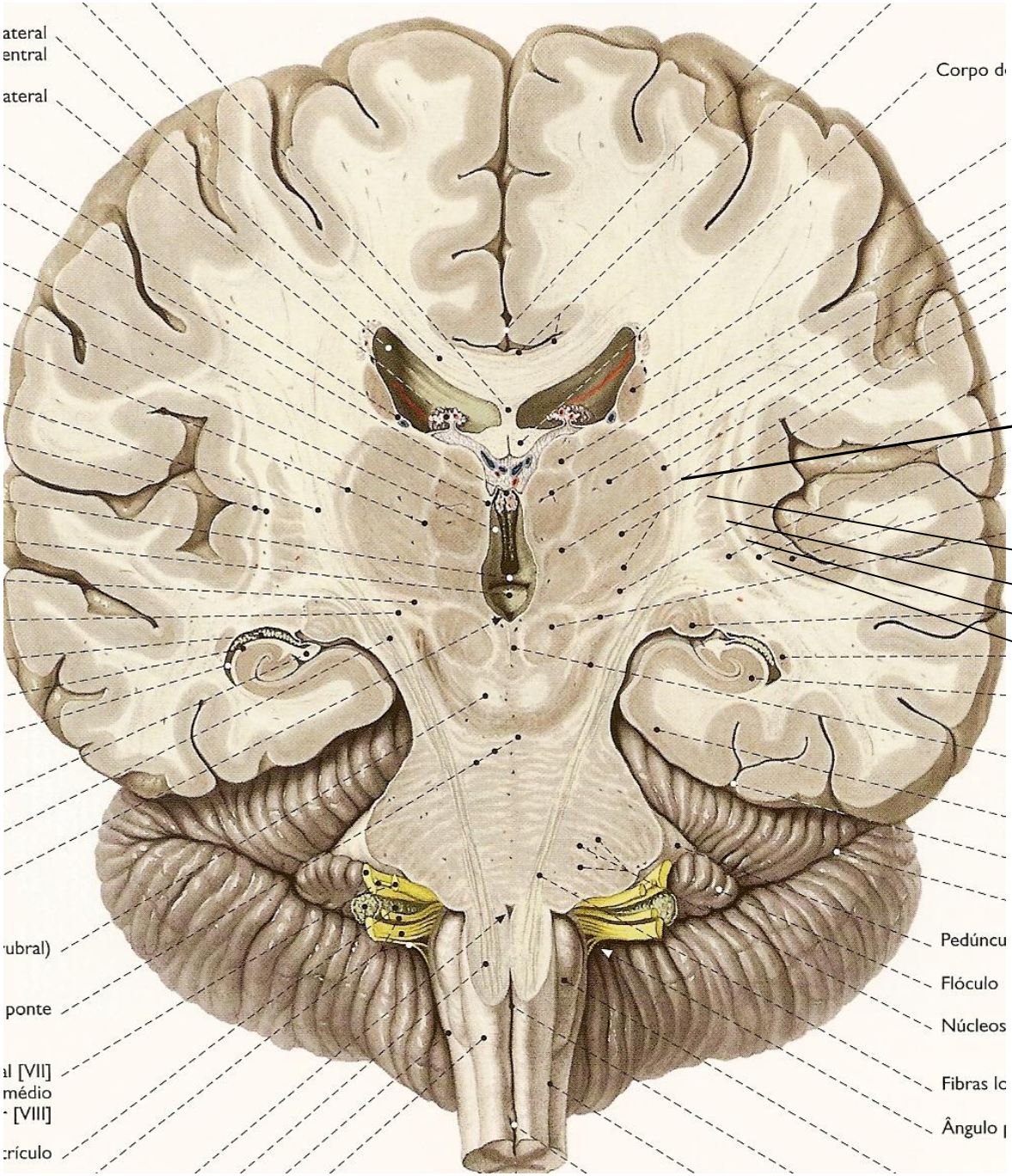
Cápsula interna



(a) Corte frontal



(b) Corte parassagital e dissecção



Cápsula interna

Putame
Cápsula externa
Claustro
Cápsula extrema

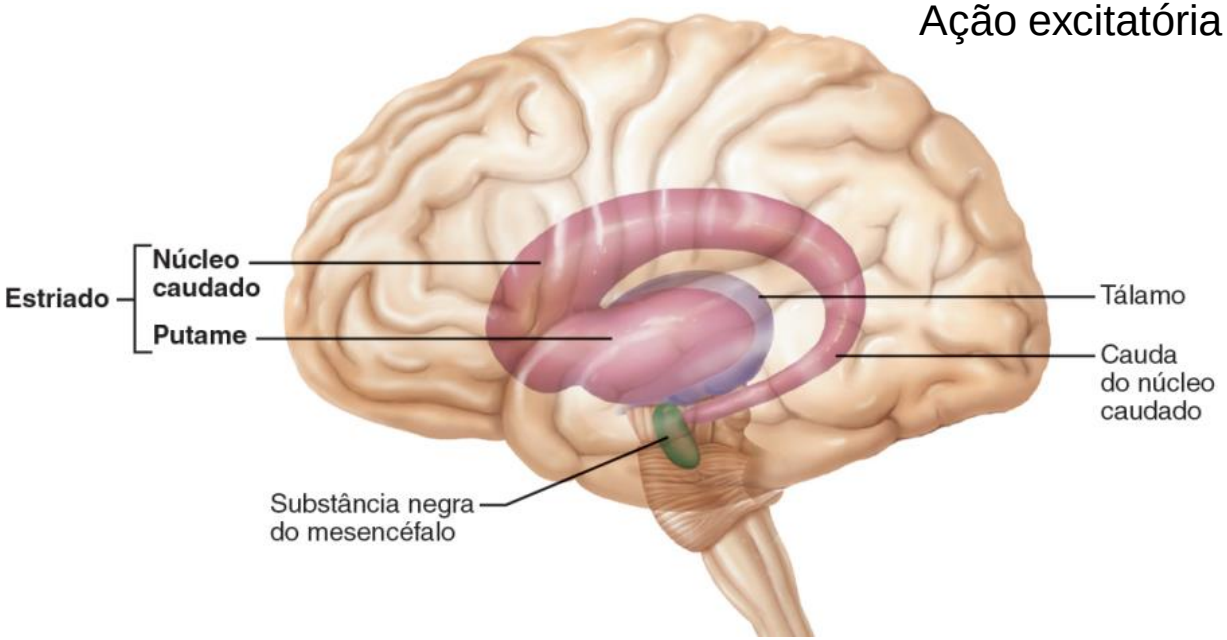
Corte frontal

Núcleos da Base

- Envolvidos com o planejamento e o ajuste motor
- São tradicionalmente: claustrum, corpo amigdalóide, núcleo caudado, putame e globo pálido
- Núcleo caudado, putâme e globo pálido formam o CORPO ESTRIADO

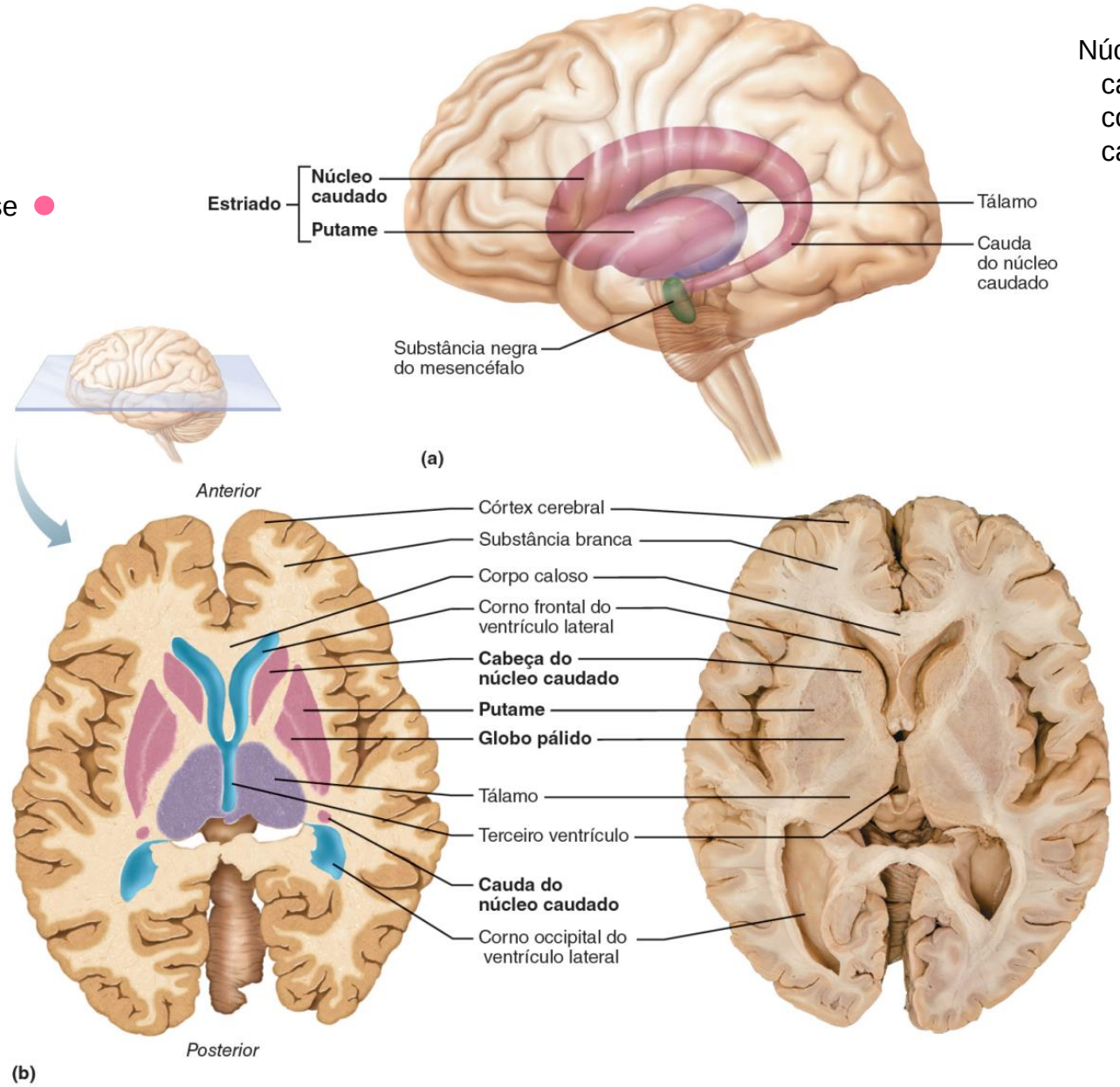
putame + globo pálido = núcleo lentiforme

Muitos neurotransmissores
Ação excitatória ou inibitória

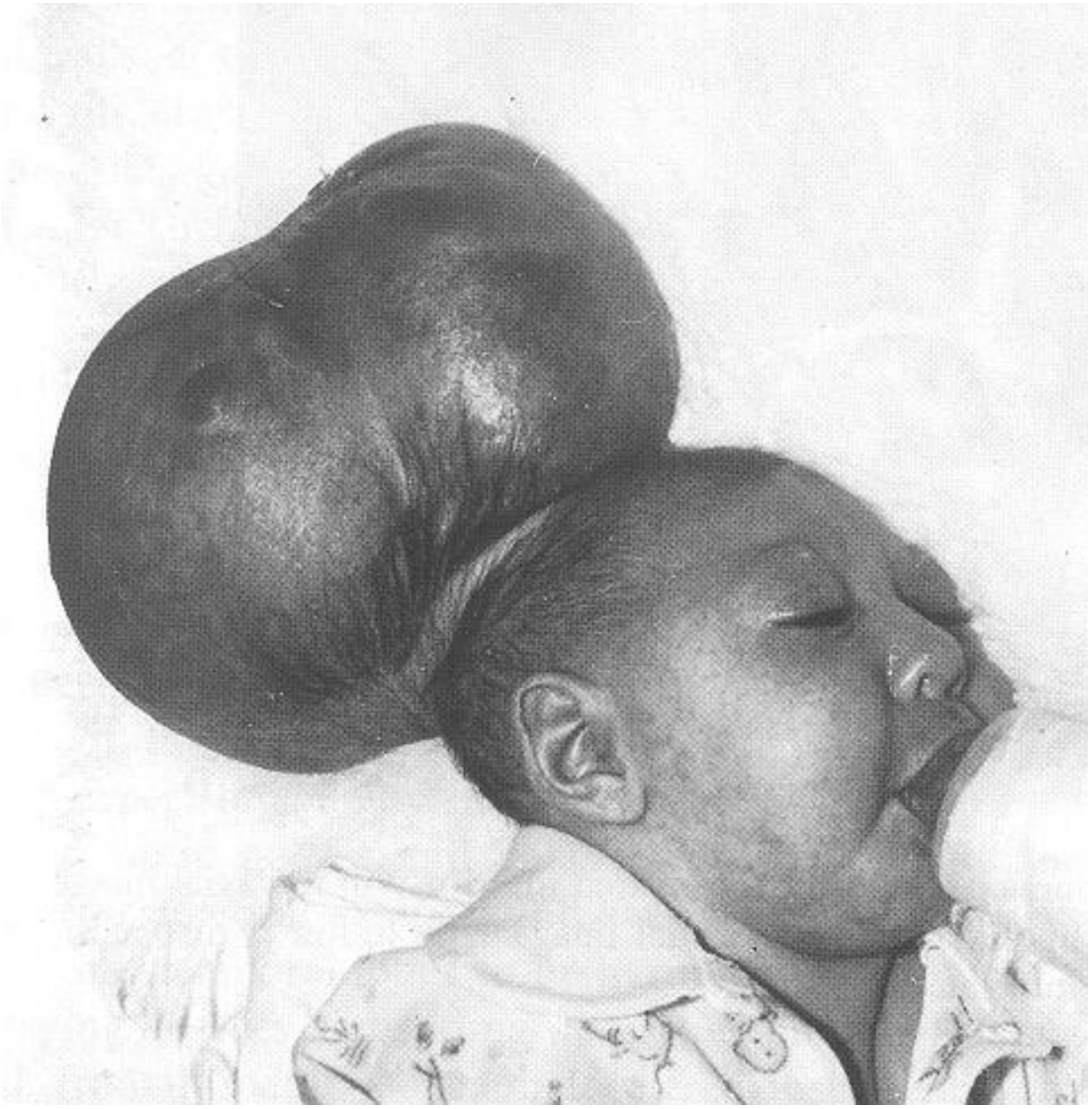


Núcleos da base

Núcleo caudado
- cabeça
- corpo
- cauda

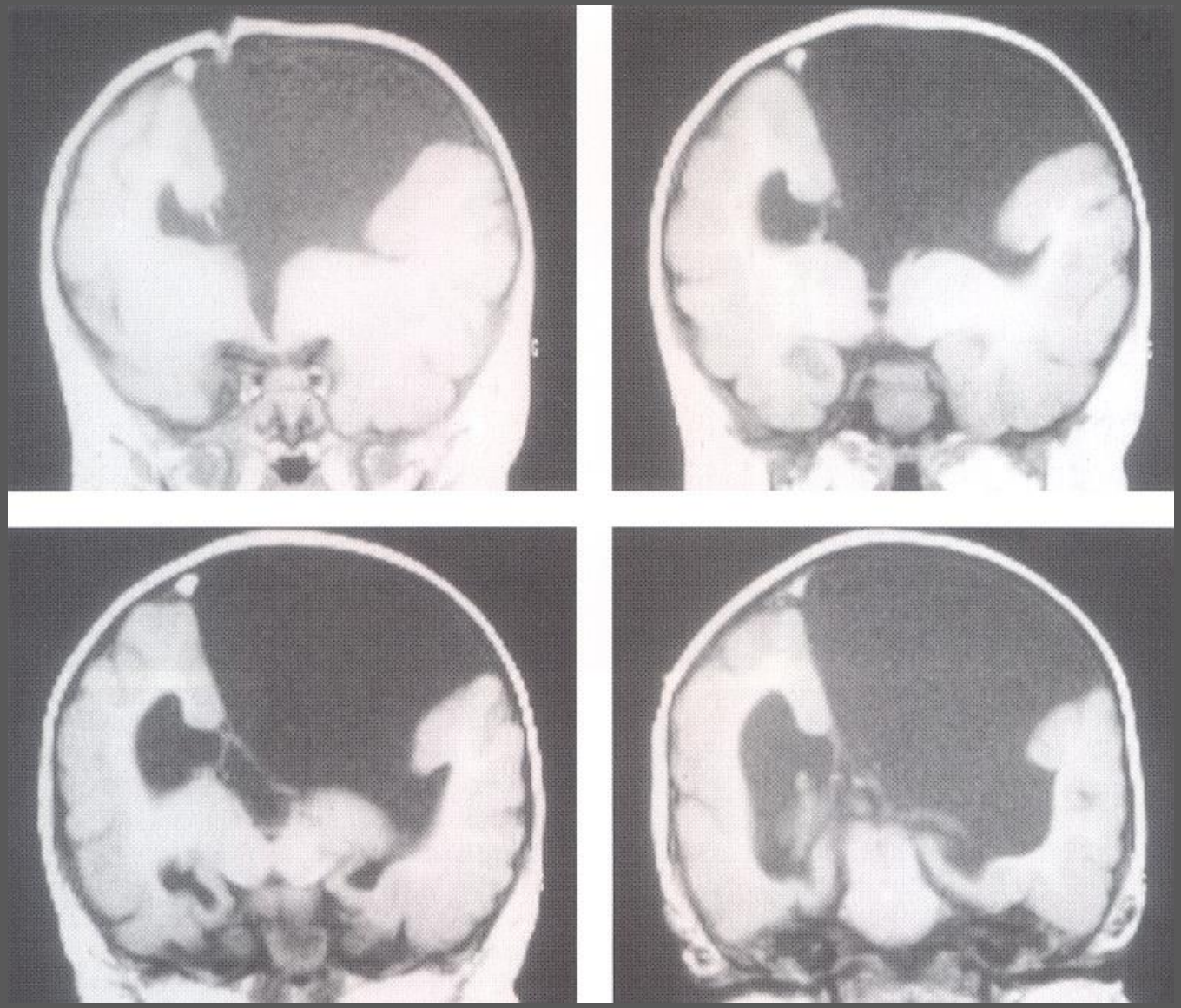


Aplicações clínicas



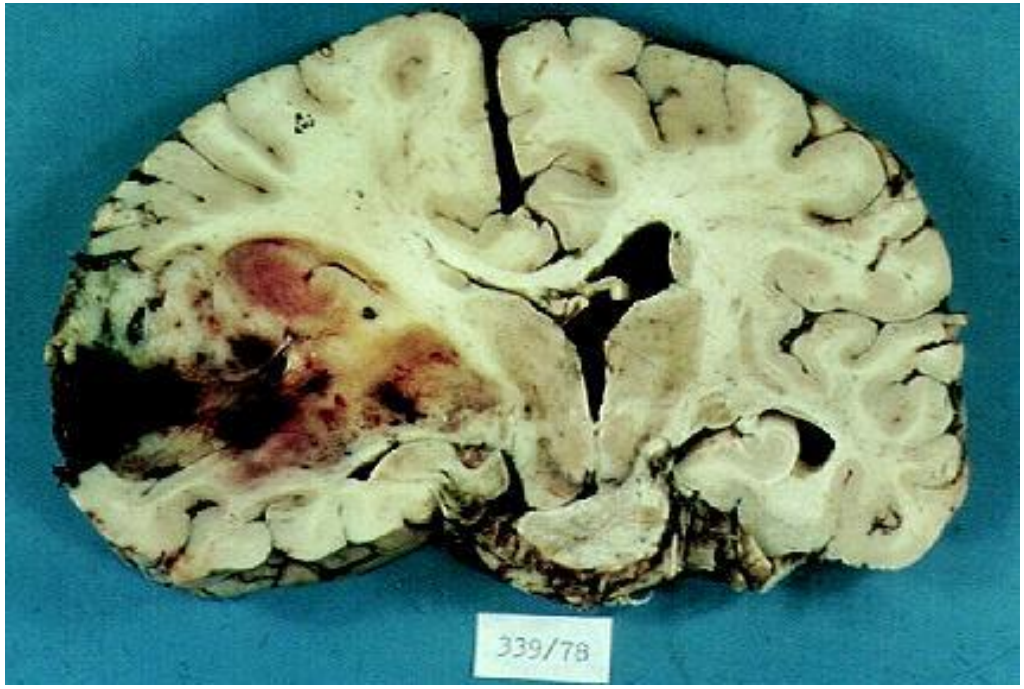
Defeitos do desenvolvimento

Encefalocele



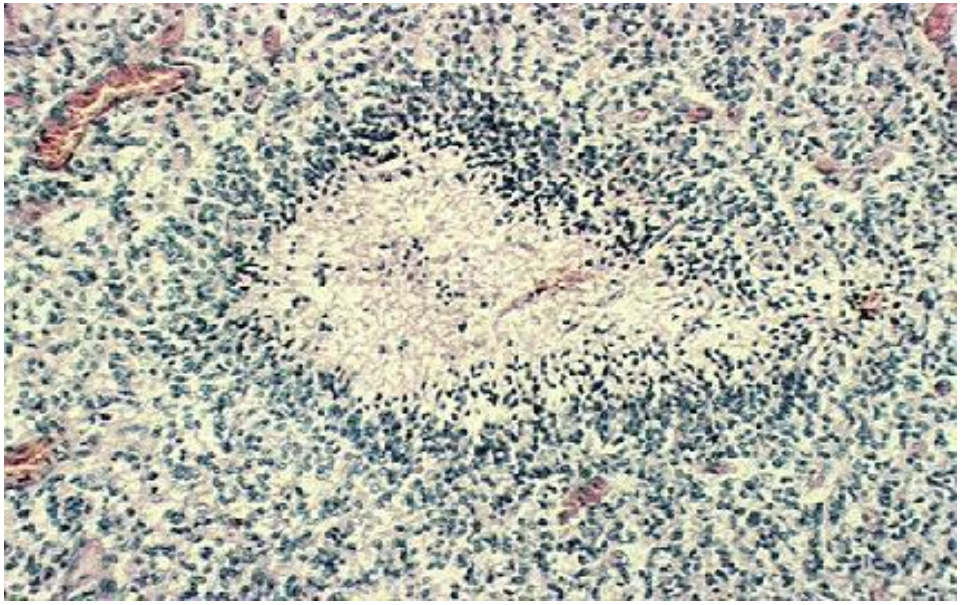
Agenesia

Corpo caloso



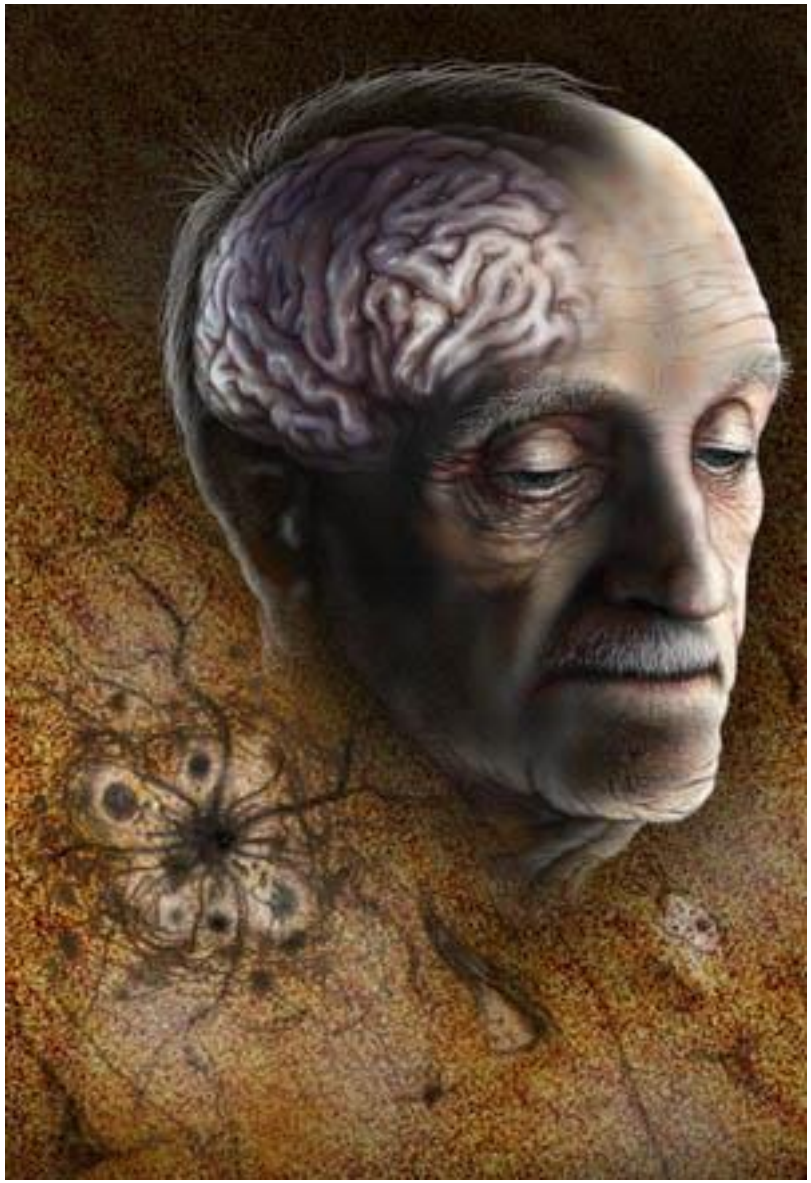
Neoplasias

Glioblastoma (multiforme)



Manifestações dos distúrbios nos núcleos da base e estruturas relacionadas

- Sinais Negativos:
  - Acinesia, bradicinesia, ajustes posturais anormais
- Sinais Positivos:
  - Alterações no tônus muscular (Hipertonia), discenesias
- Discinesia: tremor, coréia, atetose, balismo e tiques



Doenças degenerativas (demências)

Parkinson

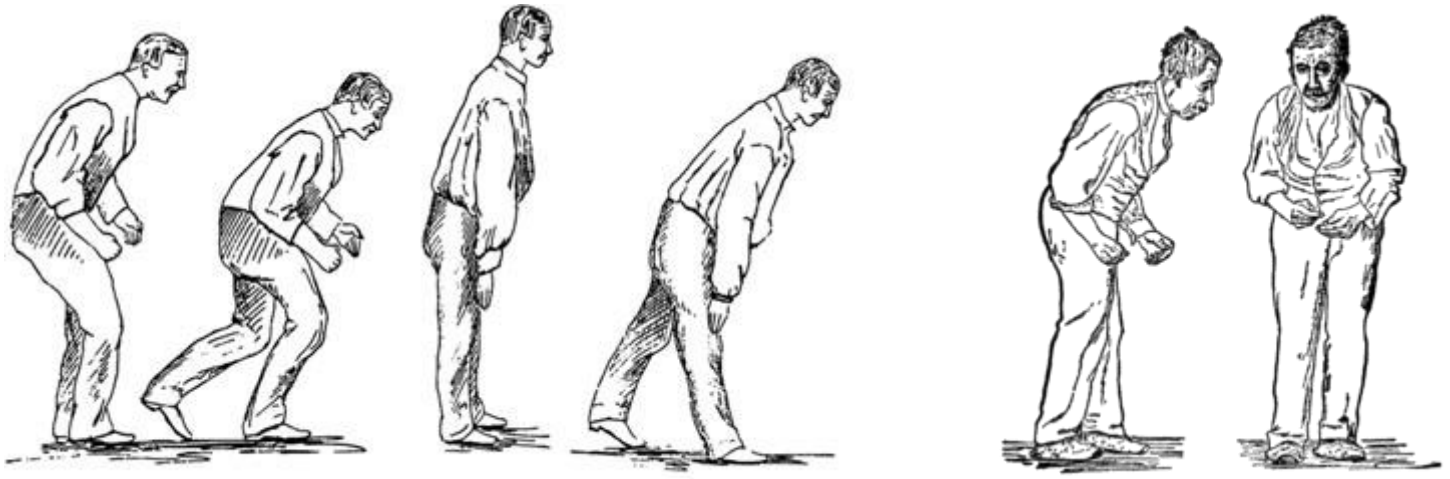
Vascular

Creutzfeldt-Jakob

Alzheimer

Doença de Parkinson

- Deficiência de Dopamina (neurotransmissor) – destruição de neurônios da substância negra (mesencéfalo)
- Dopamina excita neurônios estriatais (via direta) e inibe neurônios estriatais (via indireta)
- Parkinson: consequente diminuição da excitação da via direta e aumento da inibição da via indireta
- Manifestações: tremor, rigidez, acinesia, bradicinesia, ajustes posturais anormais

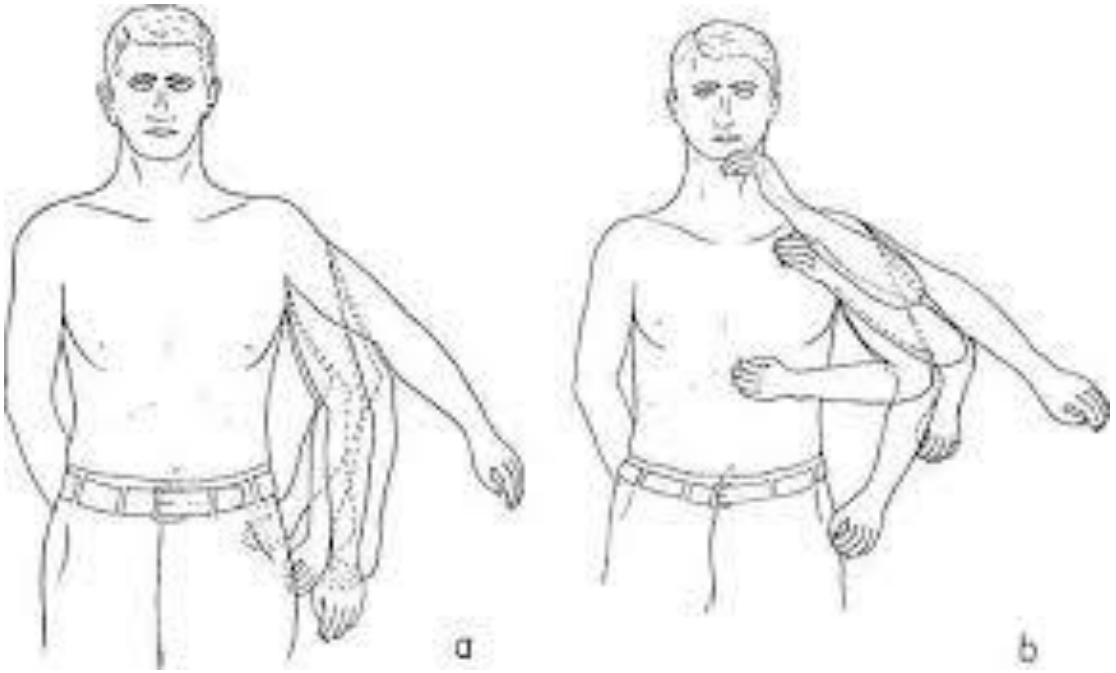


Doença de Huntington

- Perda de encefalina estriatal
- Herança de um gene dominante
- Redução da inibição estriatal
- Hipercinesia
- Manifestações: Atetose ou coréia, frequentemente córeo-atetose / demência

Hemibalismo

- Lesão do núcleo subtalâmico (STN) por isquemia
- Hemibalismo contralateral
- O STN exerce ação excitatória no segmento interno do globo pálido
- No Hemibalismo, o GPi inibe menos o tálamo, aumentando sua eferência para o córtex cerebral
- Hipercinesia



Doença de Alzheimer

- Núcleo Basal de Meynert origina quase todas as fibras colinérgicas para o córtex cerebral, inclusive para o sistema límbico
- Os grandes neurônios colinérgicos do núcleo degeneram
- Manifestações: demência, com perda progressiva da memória e raciocínio abstrato

Alzheimer

doença cerebral progressiva que gradualmente destrói a memória de um indivíduo e suas habilidades em aprender, além de sua razão, julgamento e capacidade de comunicação, interferindo com suas atividades diárias, até a dependência total de cuidados