O sistema nervoso central

Anatomia funcional

Prof. A. Carlos

Áreas funcionais do córtex

- Áreas funcionais primárias
  - ✓ Área motora primária: giro pré-central – lobo frontal
  - ✓ Área pré-motora: coordenação primária
  - ✓ Área sensitiva primária: giro pós-central – lobo parietal (sensibilidade à estímulos gerais)
  - ✓ Área visual primária = lobo occipital
  - ✓ Área auditiva primária = giro temporal superior
  - ✓ Área olfatória primária = lobo temporal (medial)
  - ✓ Área gustativa primária = lobo parietal
- Áreas de associação
  - ✓ frontal = atividades intelectuais, planejamento, vida social
  - ✓ Parietal = associação somática, representação corporal, localização temporo-espacial
  - ✓ Fronto-temporal = linguagem, expressão e compreensão
  - ✓ Occipital = associação visual

Lobo frontal: função associativa

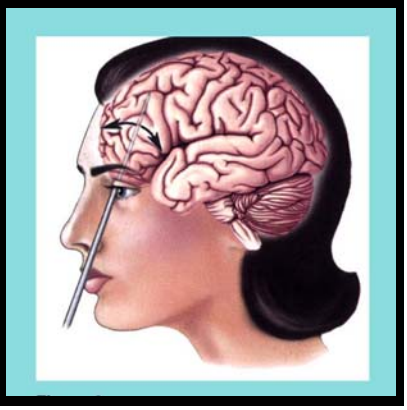
O caso Phineas Gage
(1823-1860)
13 de setembro 1848,
Cavendish, Vermont-(USA)
seguido pelo Dr. Harlow

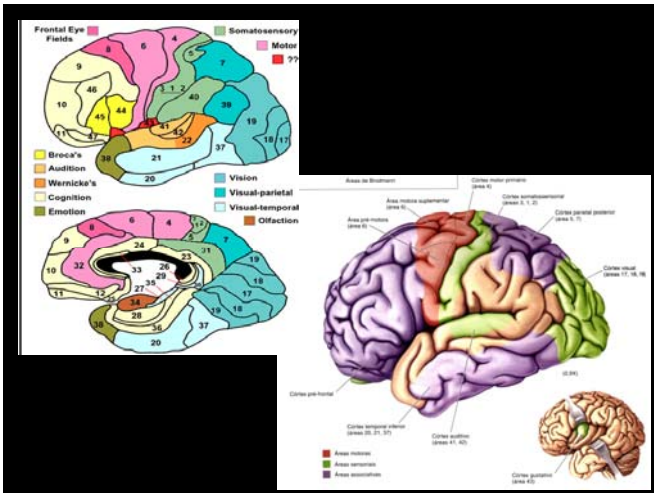


Lobo frontal: função associativa

Lobotomia pré-frontal

Antonio Egas Moniz
Prêmio Nobel de Medicina
de 1949





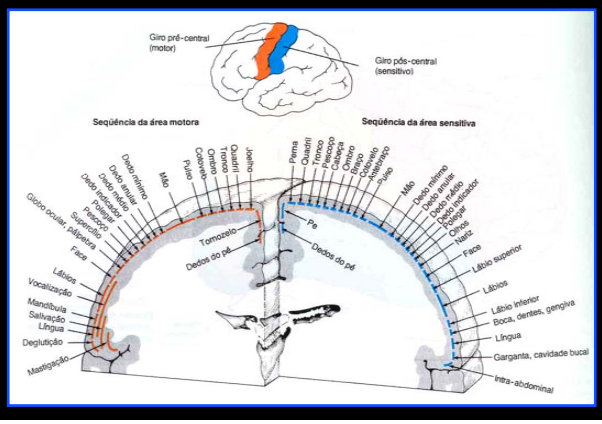
Somatotopia

- É a organização topográfica de funções ao longo do córtex
- É um mapa dos sítios corticais correlacionados com funções corporais específicas, cujo tamanho da representação cortical guarda relação com a complexidade da função e não com o tamanho anatômico da região corporal

Sistema Motor

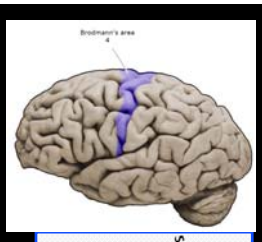
- Neurônio Motor Superior
  - Giro pré-central
- Tracto córtico espinhal
  - Coroa radiada, cápsula interna, mesencéfalo, ponte, pirâmide bulbar, funículo anterior e lateral da medula espinhal
- Neurônio Motor Inferior
  - Corno anterior da medula espinhal
- Fibra motora
  - Nervo periférico
- Músculo esquelético

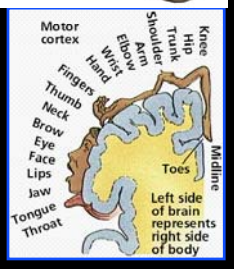
Sistema Motor: córtex motor

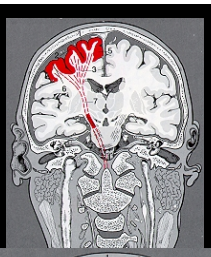


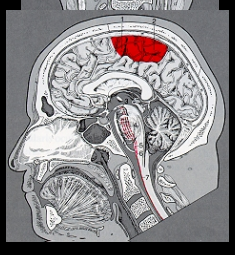
Homúnculo de Penfield

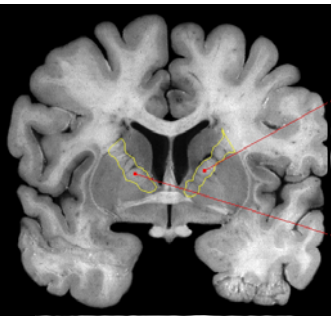


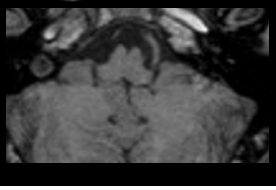


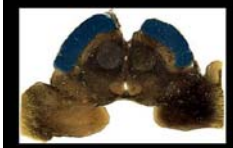














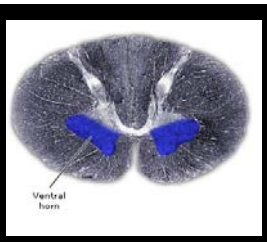


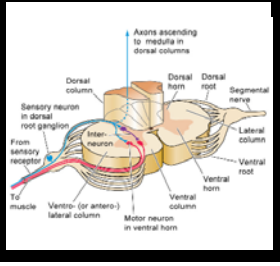


Decussação das pirâmides

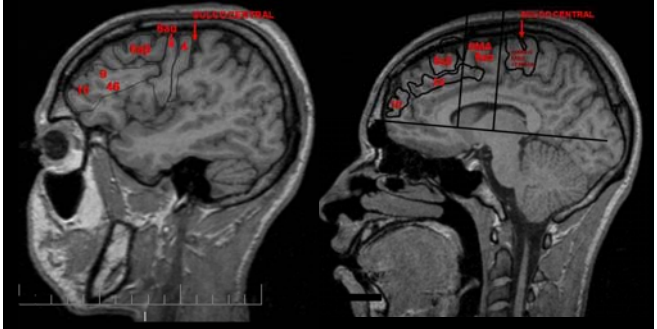




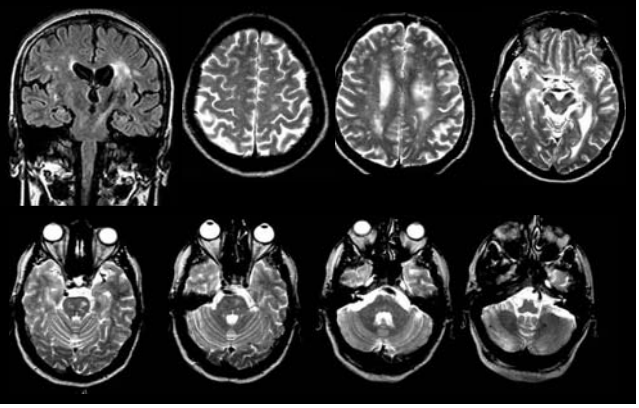




Outras áreas corticais envolvidas no sistema motor

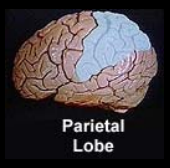


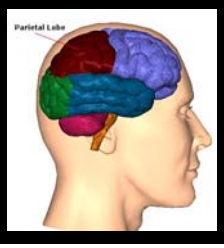
Degeneração Walleriana: degeneração do tracto após lesão neuronal ou axonal

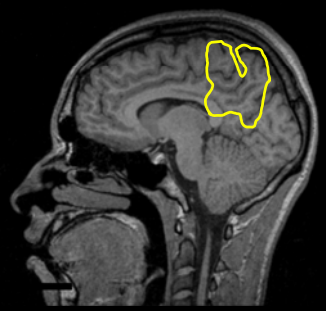


Lobo Parietal

- área sensitiva primária
- área de associação sensitiva
  - reconhecimento corporal
  - localização espacial
  - cálculo

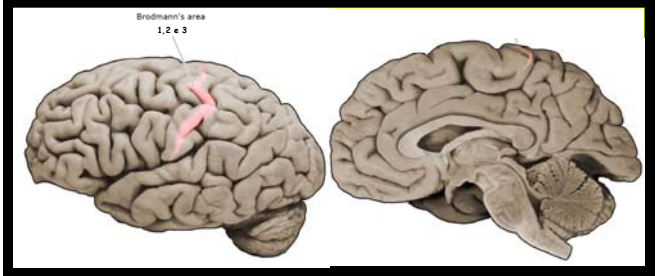


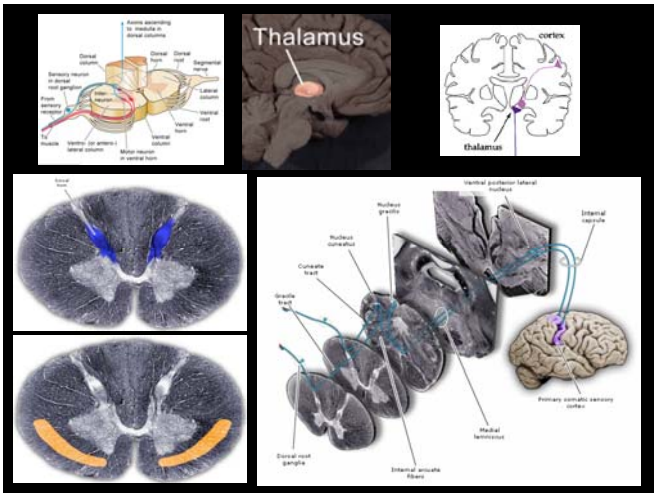




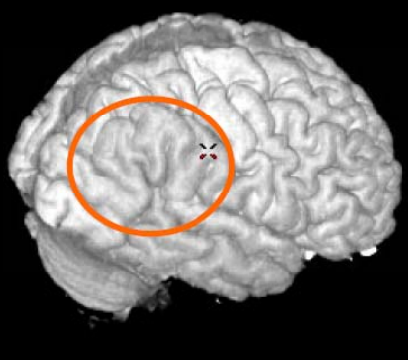
Sistema sensitivo

Receptor de sensibilidade
Fibra sensitiva: nervo periférico
Neurônio sensitivo no corno posterior da medula
Tracto espino-talâmico
Tálamo
Área cortical: giro pós-central no lobo parietal



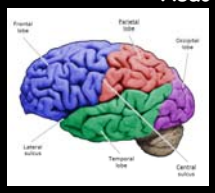


lesão no lobo parietal causa apraxias, assomatoagnosia

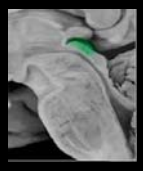


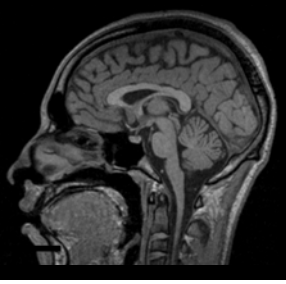
Lobo occipital

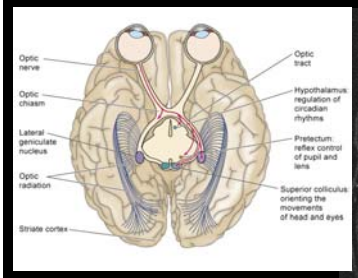
Visão: percepção primária e associação

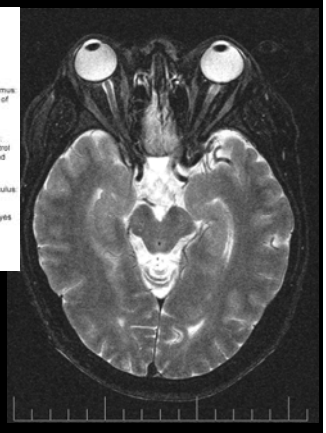












Lesão causa:

perda de campo visual

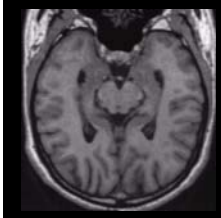
agnosia visual

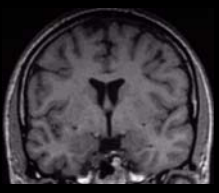
Lobo temporal

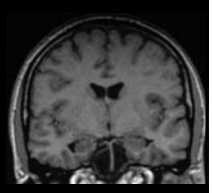
- Audição
- Memória
- Linguagem (dominante)



Hipocampo e a memória



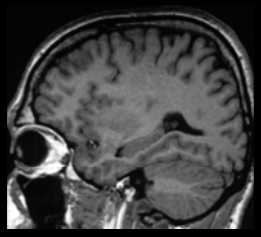


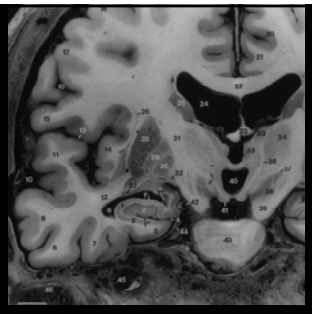


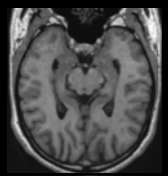


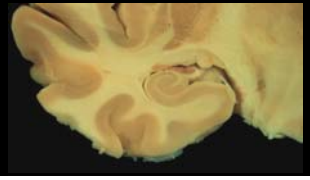


hipocampo





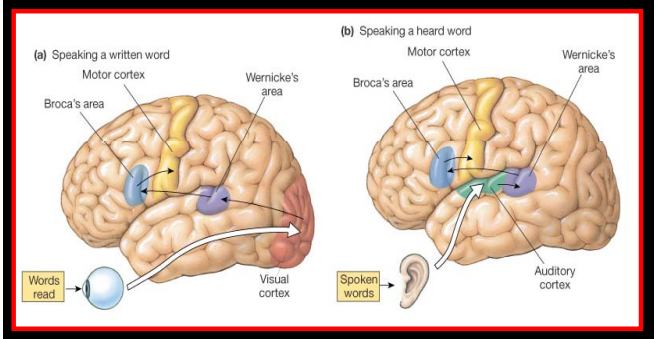




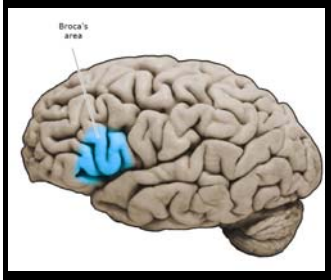
Córtex entorrinal

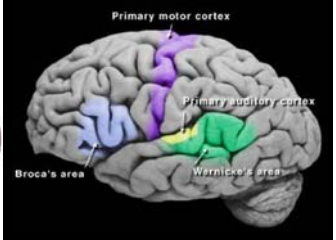


Linguagem

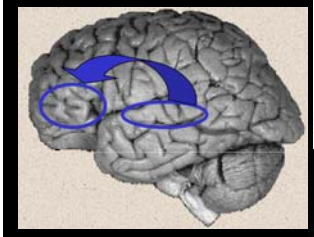


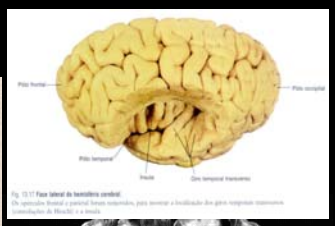
Linguagem





Linguagem







Fascículo arqueado ou longitudinal superior

Afasia de Broca



Brodmann 44, 45

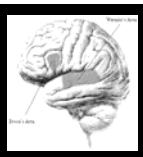
Pars opercularis e parte da pars triangularis do giro temporal inferior

- Lesões na região frontal inferior esquerda (área de Broca)

- Sem fluência
- Perda de capacidade de nomeação (Objetos e pessoas)
- Compreensão relativamente intacta;
- Se extensa, não há muita chance de recuperação.

- Afasia motora, anterior, não fluente, de expressão...

Afasia de Wernicke



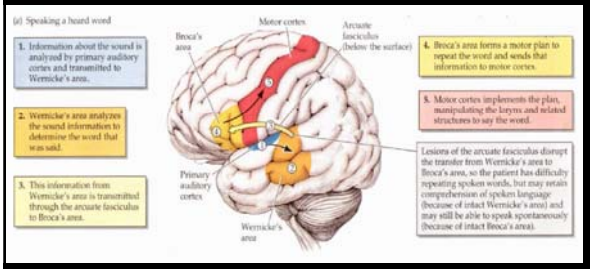
Brodmann 22, 30

- Lesões na região posterior do giro temporal superior e córtex parietal adjacente

- Fluência Verbal
- Contêm muitas paráfrases
  - "menina"-"cacho", "pão"-"bolo"
- Sentenças sintaticamente corretas, mas sem sentido;
- Não consegue repetir palavras ou sentenças;
- Incapaz de compreender o que é lido ou ouvido

O Modelo de Wernicke-Geschwind

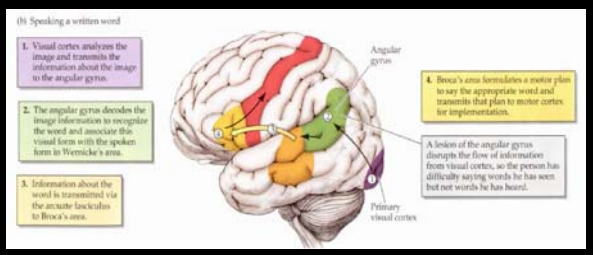
1. Repetindo uma palavra ouvida



- O fascículo arqueado é a ponte entre as áreas de Wernicke e Broca's

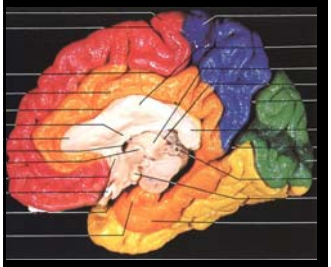
O Modelo de Wernicke-Geschwind

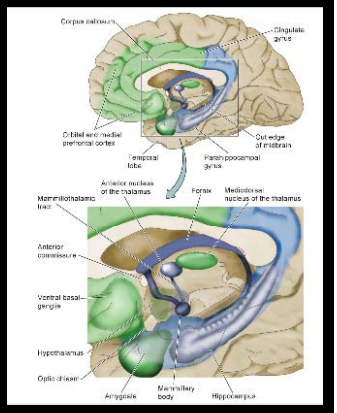
1. Repetindo uma palavra lida



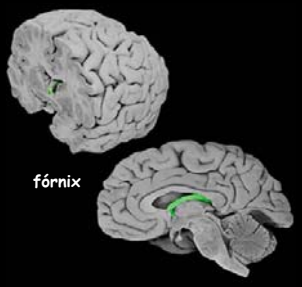
- O giro angular é a passagem entre o córtex visual e a área de Wernicke
- OBS.: essa é uma simplificação extrema do processo
  - Nem todos os pacientes demonstram comportamentos previsíveis por esse modelo de linguagem (Howard, 1997)

Sistema límbico





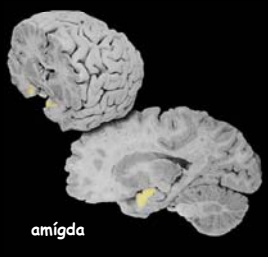
Sistema límbico





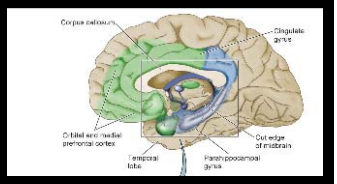
Giro do cíngulo

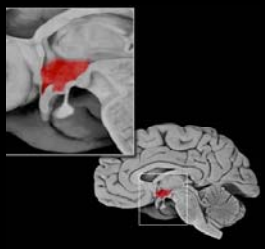
fórnix



amígda

Sistema límbico





hipotálamo

