Pijn zit tussen je oren

Breinwijzer 6-5-2014

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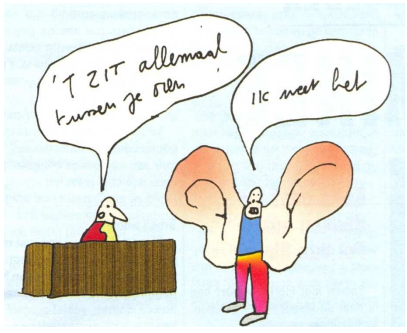
&
Dienst Neurologie UZGent

ποινή (Gr.)
poena (Lat.)

Fast moving particles of fire ..the disturbance passes along the nerve filament until it reaches the brain..." *Descartes (1664)*



Organisch — Psychogeen

Echt — Niet echt

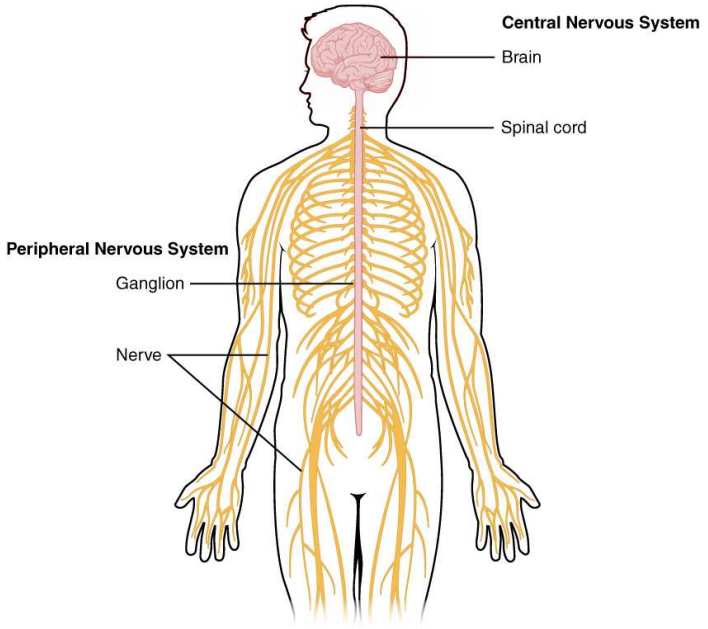
IASP

Pain = “An unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage”

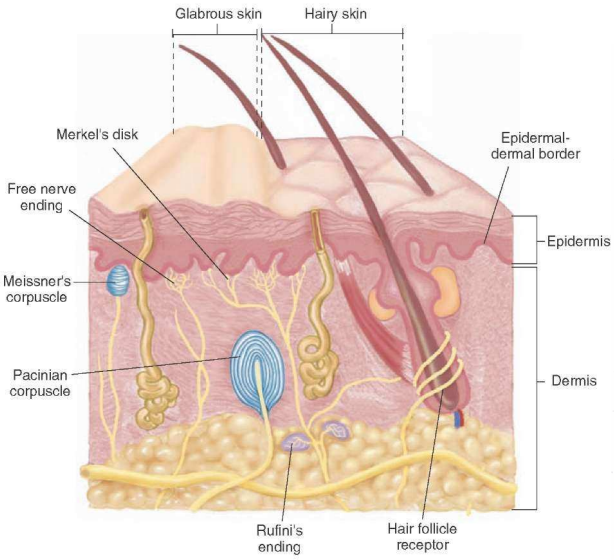
Pijn: multidimensioneel

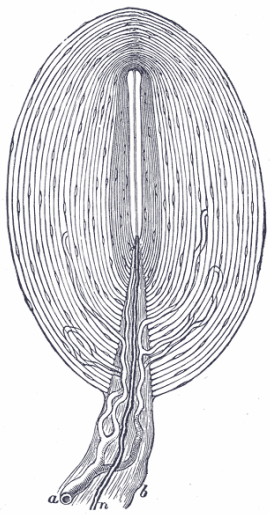
Cognitive-evaluative
Sensory-discriminative
Affective-motivational
Autonoom
Motorisch: bv terugtrekreflex

Opm: coma

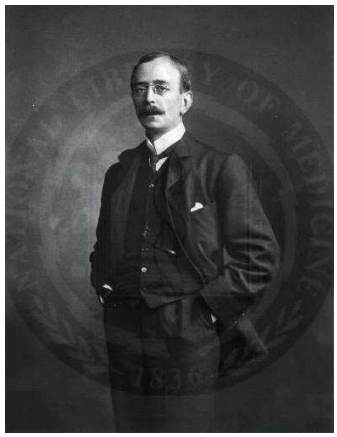


Mechanoreceptoren





“Nociceptor”



Sir Charles Scott Sherrington

J Physiol 1903;30:39-46

Nociceptor

“Free” nerve endings

Pijn anno 2014

submodaliteit somatosensorieel ZS

congenital insensitivity to pain

~ $Na_v1.7$ loss of function mutation

protectieve functie

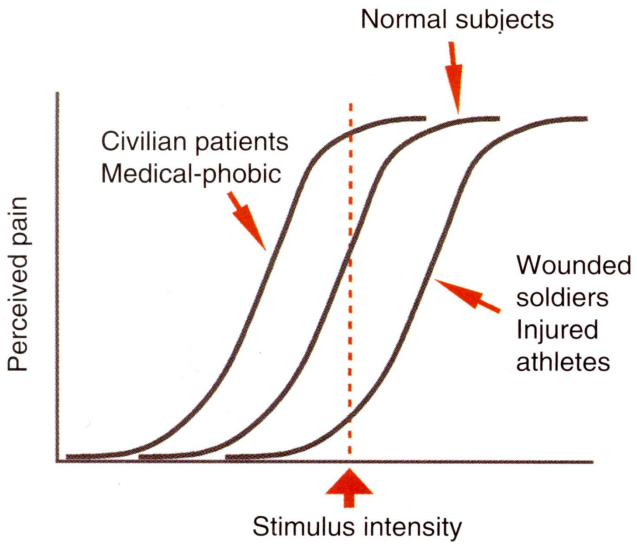
actuele/potentiële weefselschade

≠ nociceptie

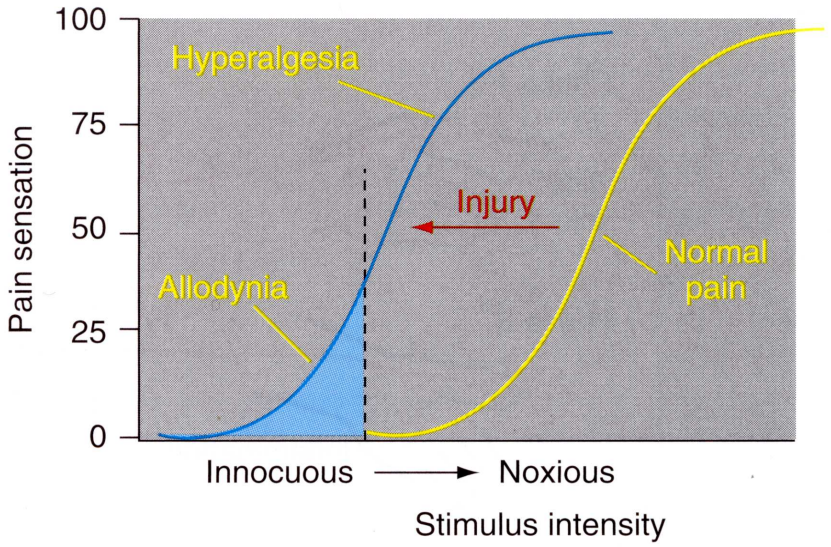
prevalentie

intensiteit ~ toestand

Intensiteit ~ toestand



Sensitisatie



Soorten pijn

Nociceptieve pijn: stimulatie nociceptor

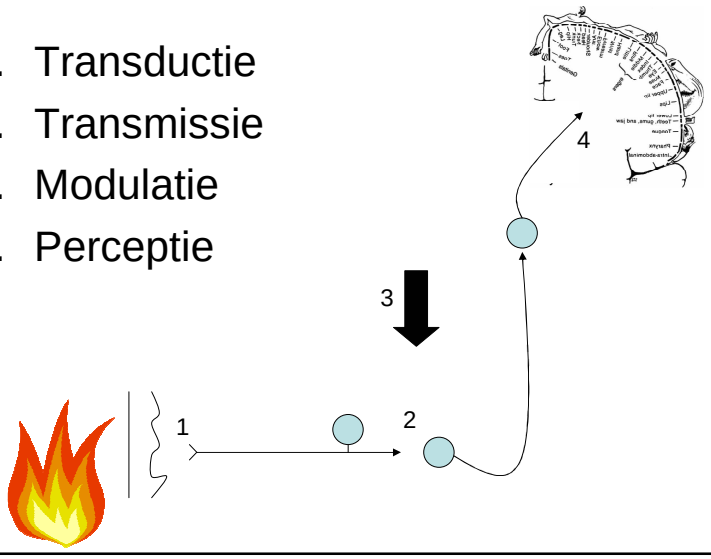
Neuropathische pijn

- perifeer neuropathische pijn
- centraal neuropathische pijn

Psychogene pijn ???

Overzicht pijnsystemen

1. Transductie
2. Transmissie
3. Modulatie
4. Perceptie



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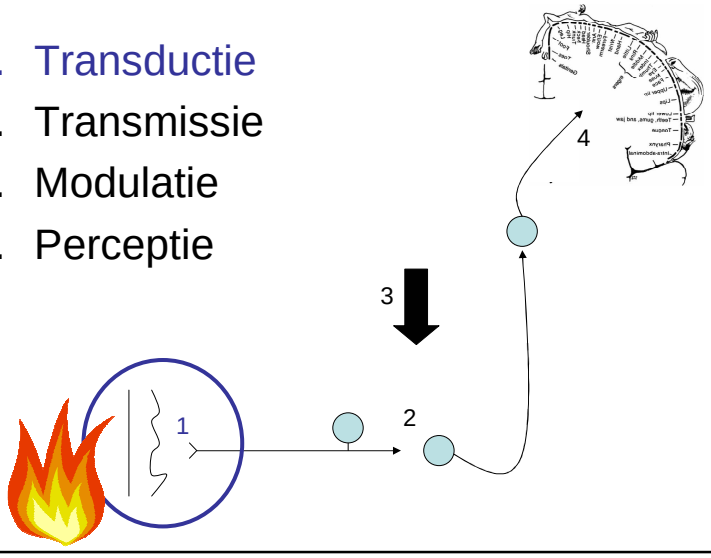


Adequate stimulus

Nociceptie

actueel of potentieel schadelijke stimulus

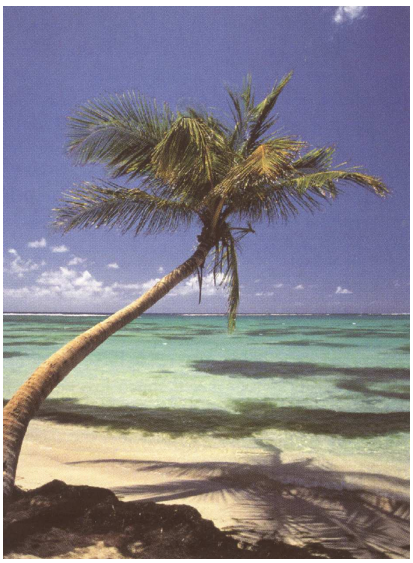
↓

warning

gaps in sensitivity vb hersenen

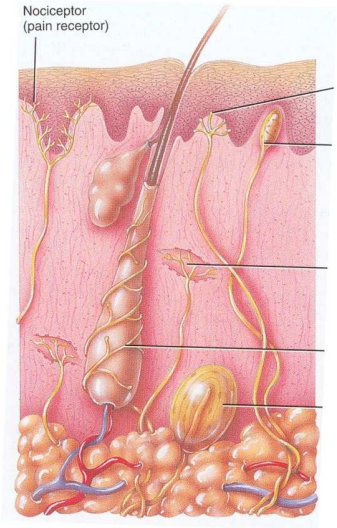
vb UV

Adequate stimulus



Adequate stimulus

Pijntransductie: nociceptoren

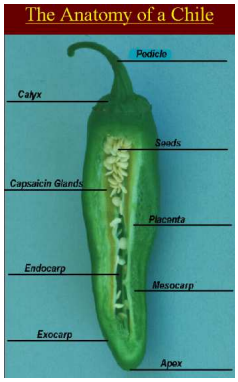


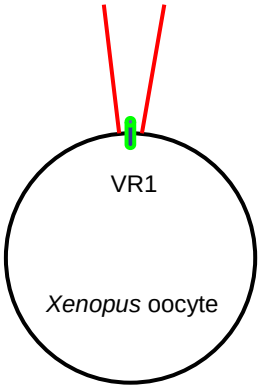
nocere (*Lat.*) = schaden

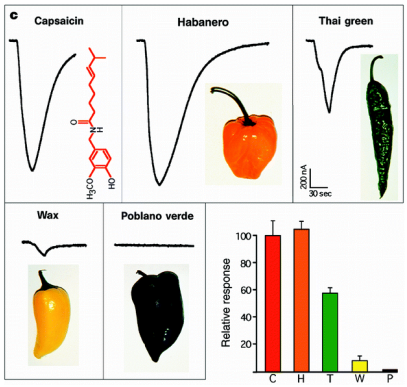
- mechanisch
- chemisch (endogeen/exogeen)
- thermisch

J Physiol 1903;30:39-46

TRPV1 receptor





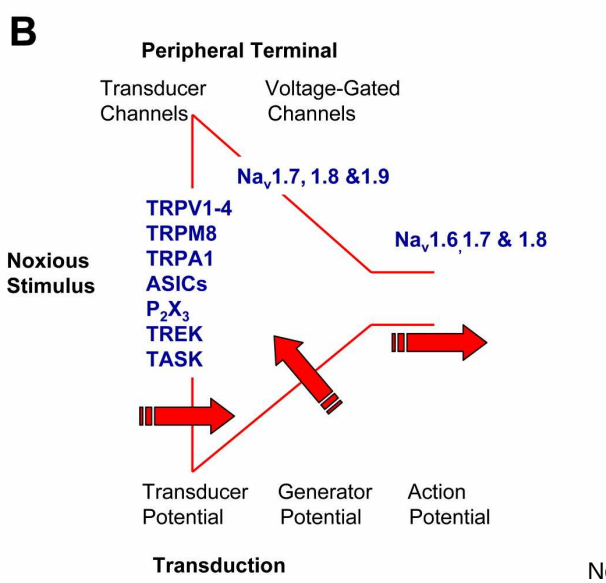


"Capsaicin receptor"

TRPV1= transient receptor potential vanilloid 1

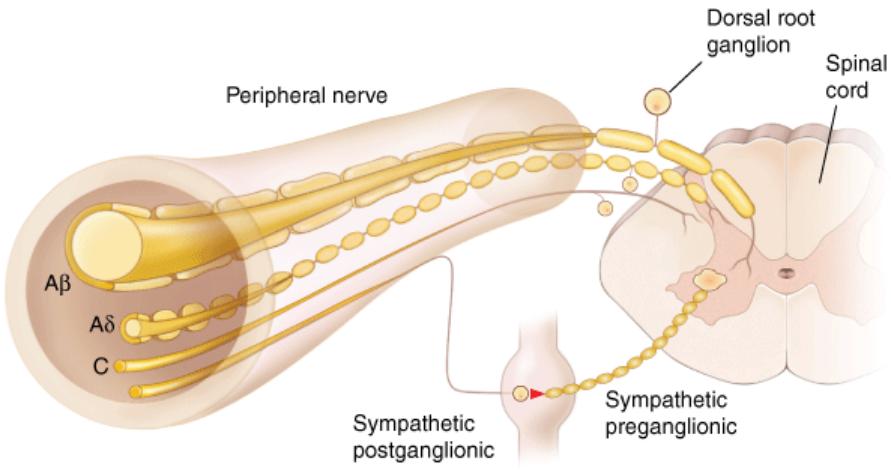
Nature 1997;389:816-824

Nociceptoren: molecular biology



Neuron 2007;55(3):353-364

Nociceptoren: Aδ en C vezels



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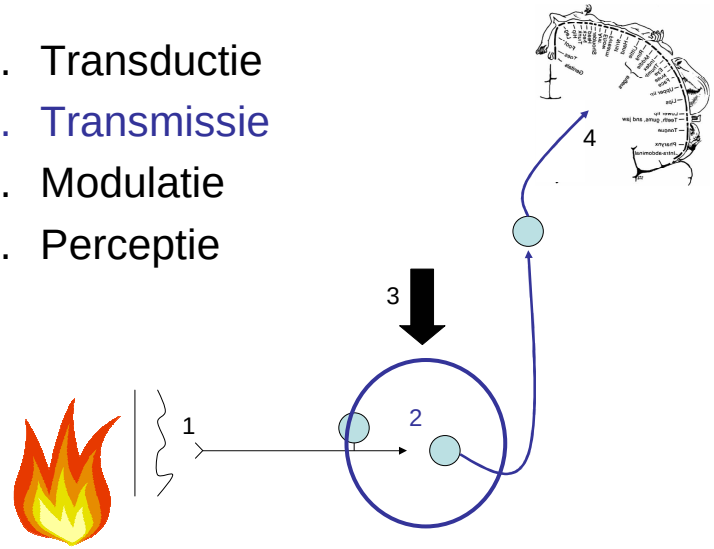
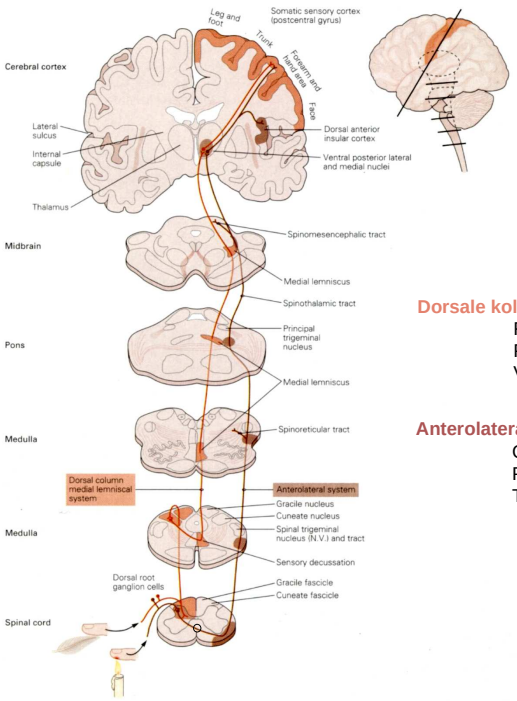


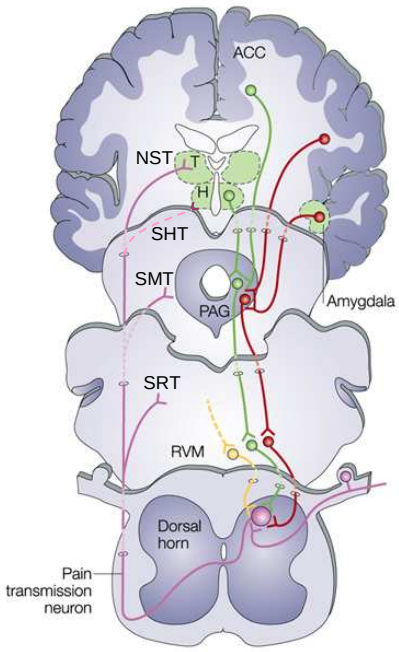


Dorsale kolom-lemniscus medialis systeem

Fijne tast
Positie (proprioceptie)
Vibratie

Anterolateraal systeem

Grove tast
Pijn
Temperatuur



ANTEROLATERAAL SYSTEEM

1. Paleospinale tractus

SRT = spinoreticular tractus

SMT = spinomesencephale tractus

SHT = spinohypothalame tractus

2. NST = neospinale tractus

Nat Rev Neurosci 2004;5(7):565-575

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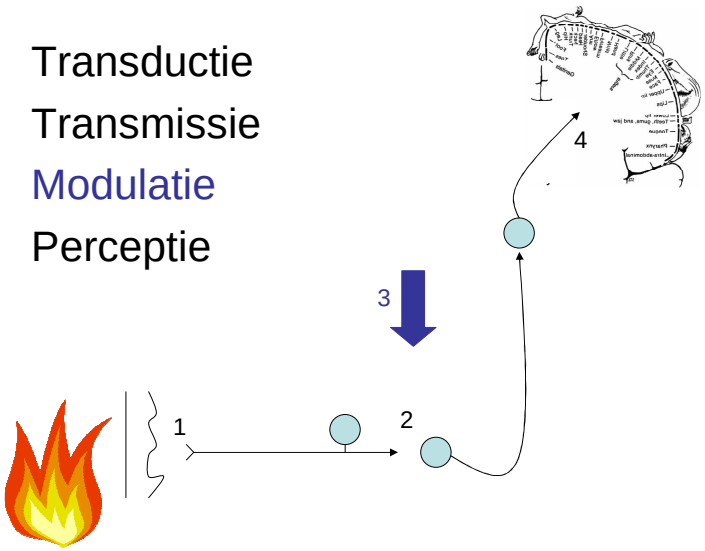


Modulatie
Pain control mechanisms

1. Gate control mechanisms
2. Descending modulation

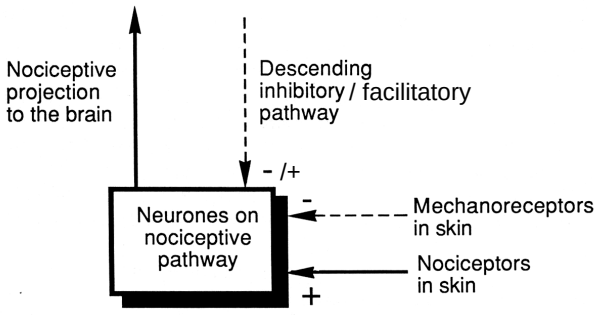
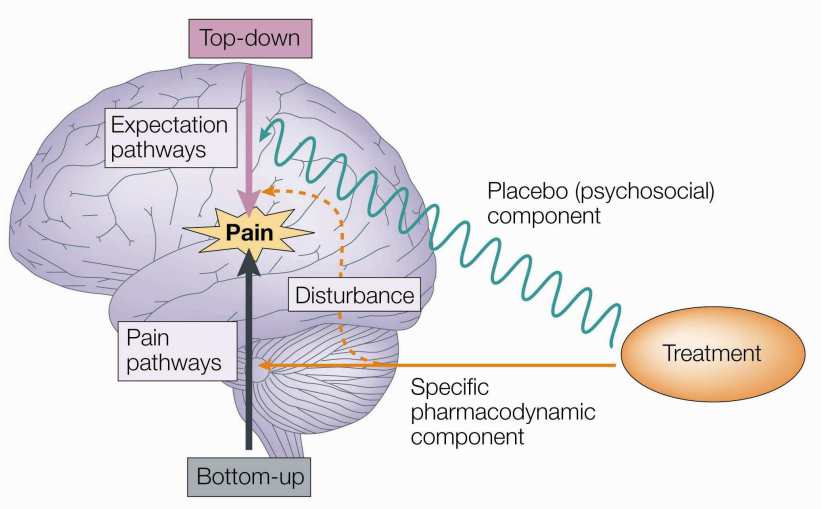


Figure 18.1 The control of transmission along the nociceptive pathway.

Placebo analgesie



Placebo analgesie

… naloxone diminished the analgesic effectiveness of the placebo, suggesting that endogenous opioids are involved in producing placebo-induced analgesia.

Pain. 1983 Jun;16(2):129-43

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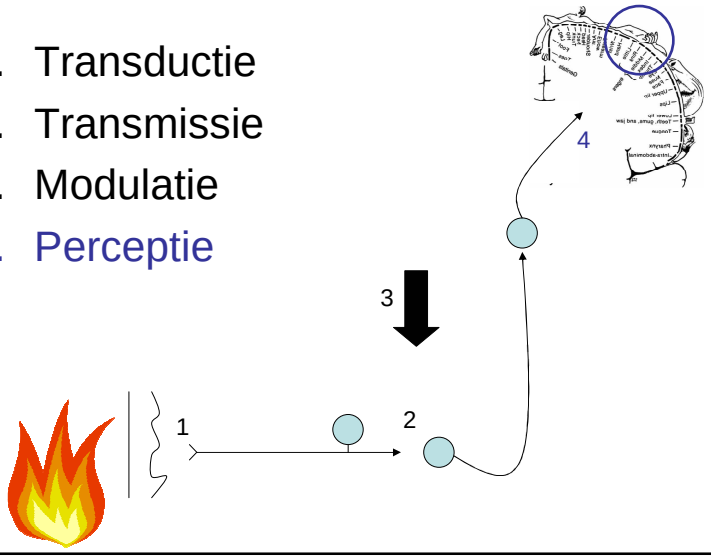


Figure AB-17: Limbic System
(Cross-Coronal Section)

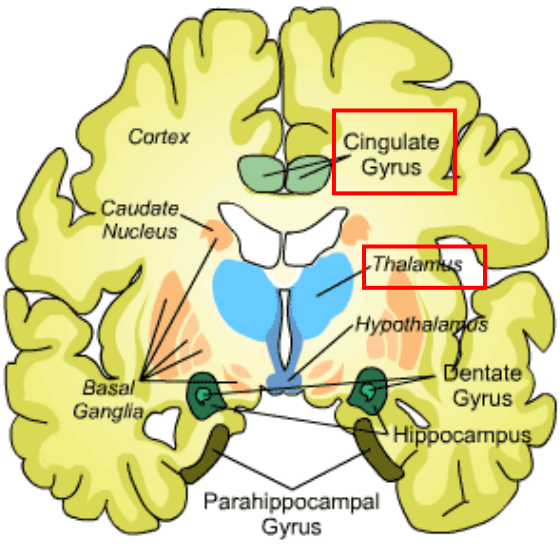
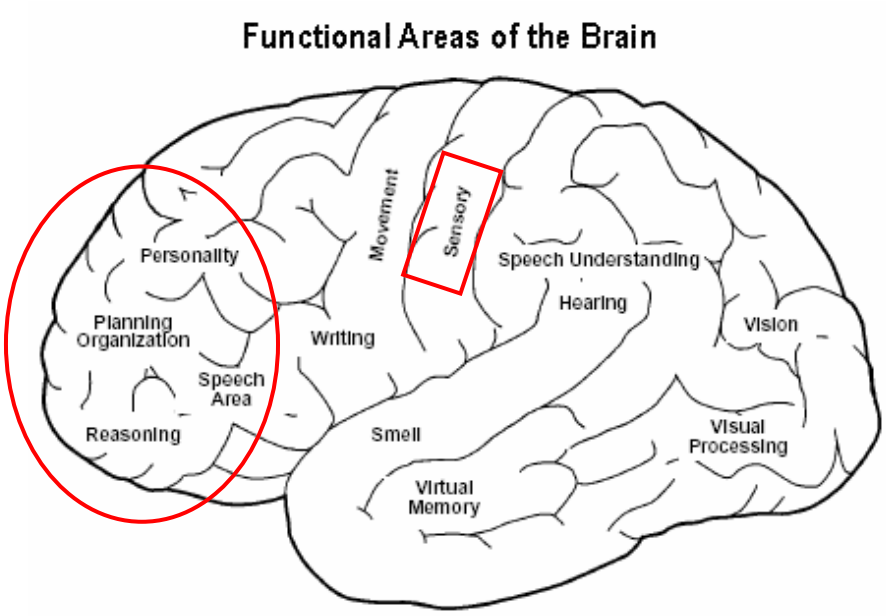
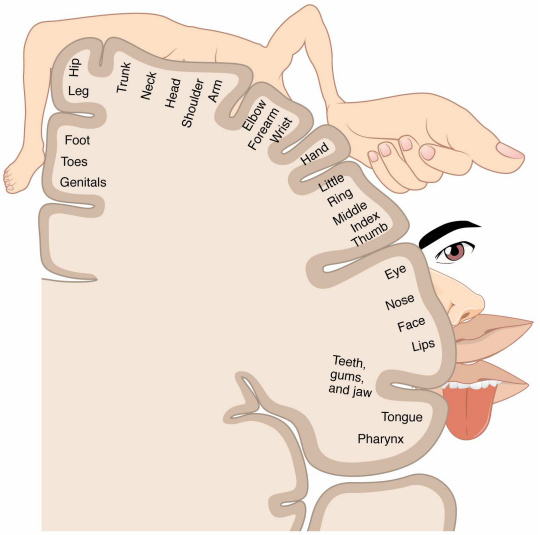


Diagram colors are consistent with Figure AB-16.



Sensory cortex: somatotopie

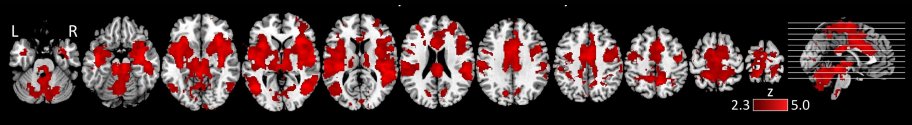


Penfield

1891-1976

Homunculus

Nociceptive somatosensory



NeuroImage 54 (2011) 2237–2249

Pain matrix

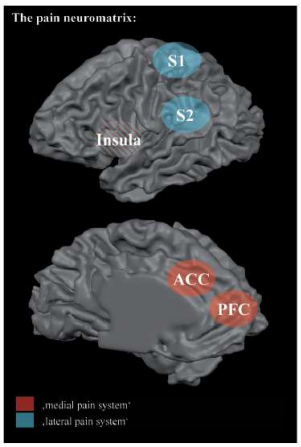
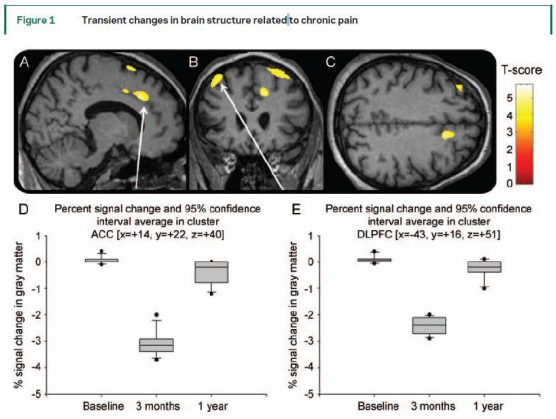


Figure 1. This schematic illustration shows the pain neuromatrix on a reconstructed left hemisphere from lateral (top) and from mesial (bottom). Areas of the lateral pain system that process the sensory-discriminative component of pain are coded in blue, areas of the medial pain system that process the affective-motivational component of pain are coded in red. The insula is anatomically and functionally positioned between these two systems.

Cell Mol Life Sci. 2008 Sep 15. [Epub ahead of print]

Gray matter changes related to chronic posttraumatic headache



Neurology 2009;73(12):978-83

Fibromyalgia

"moderate evidence for

- region-specific changes in gray matter volume
- a decreased functional connectivity in the descending pain-modulating system
- an increased activity in the pain matrix"

Semin Arthritis Rheum 2014 PMID: 24508406

Vragen ?