Le toucher, de la peau au cerveau

JM Aimonetti, R Ackerley, M Dione, R Watkins

Centre de Recherche en Psychologie et Neurosciences Aix-Marseille Université – CNRS

Le plus grand organe du corps





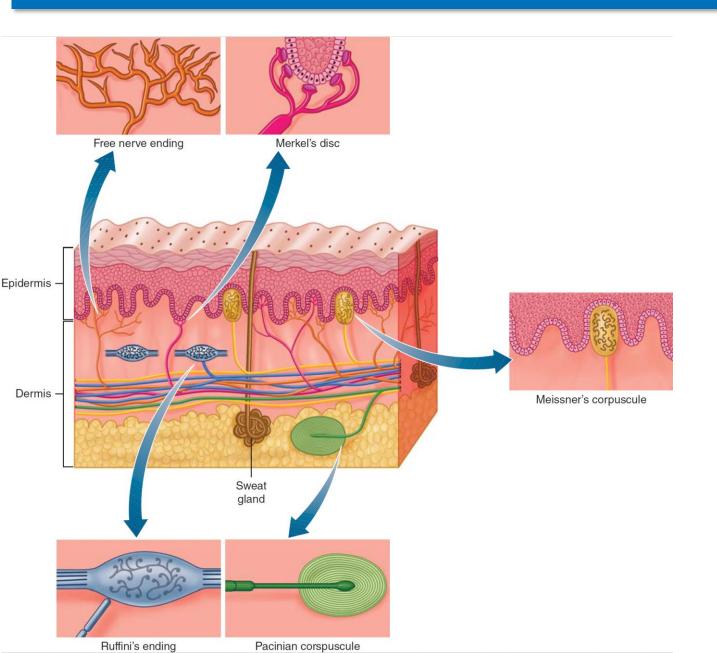
Barrière perméable vers le corps



Le plus grand organe sensoriel du corps et le premier fonctionnel



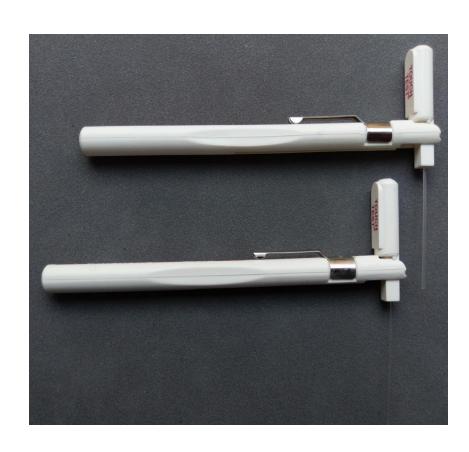
Différents sortes de toucher



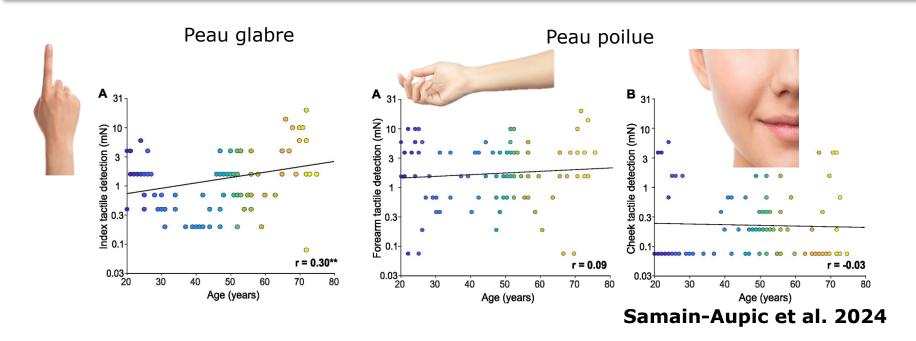
Les fibres C tactiles



Des test classiques et éprouvés



Un vieillissement spécifique de la peau glabre?

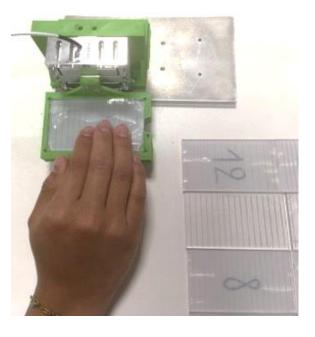


De nouveaux tests pour évaluer la sensibilité tactile



Test passif

Résolution proche de 1 mm

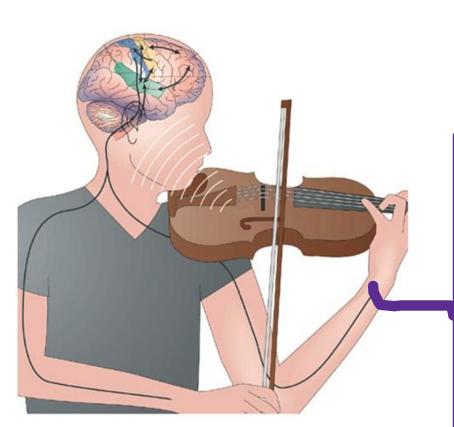


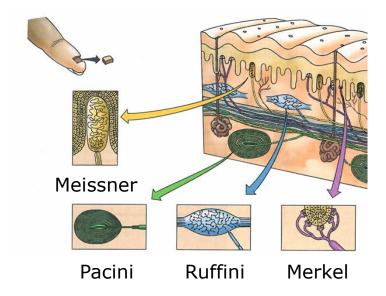
Test actif

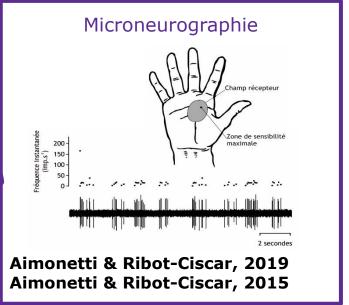
Résolution proche de 20 µm

Aimonetti et al. 2019; Samain-Aupic et al. 2023; Dione et al. 2023; Samain-Aupic et al. 2024

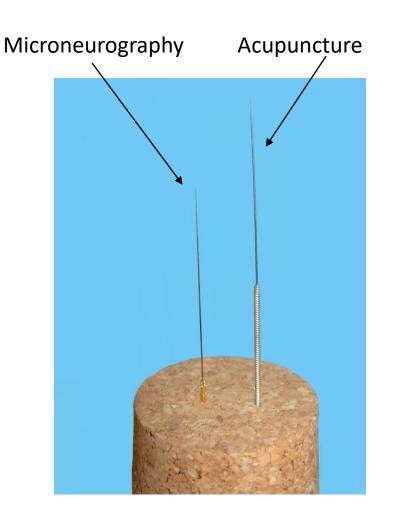
La microneurographie, fenêtre ouverte sur le toucher



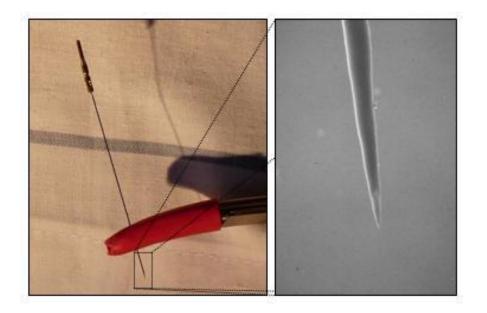


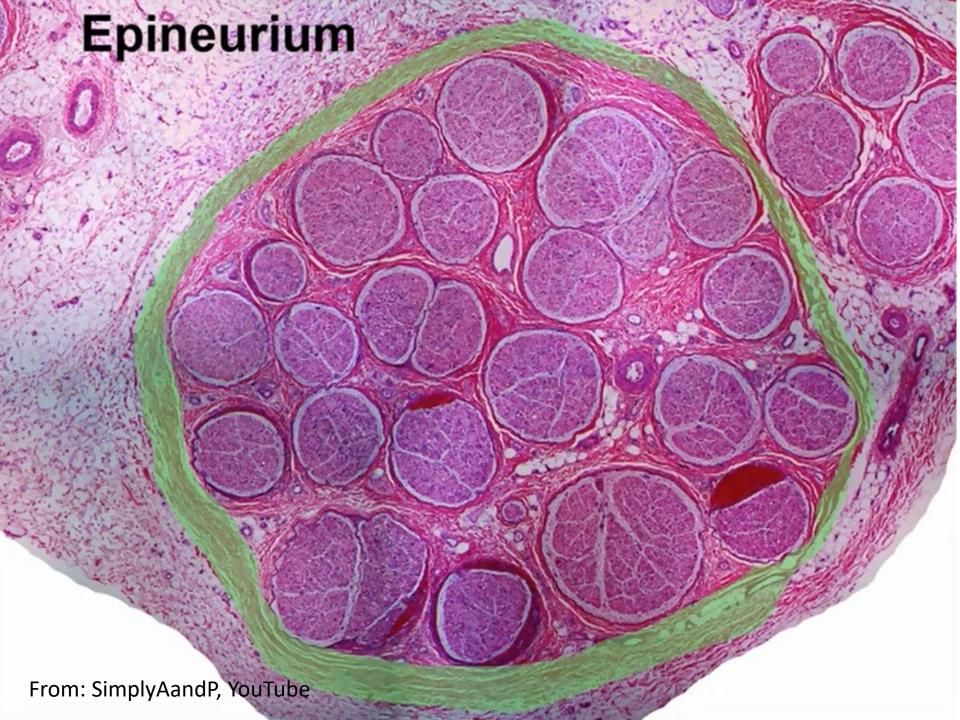


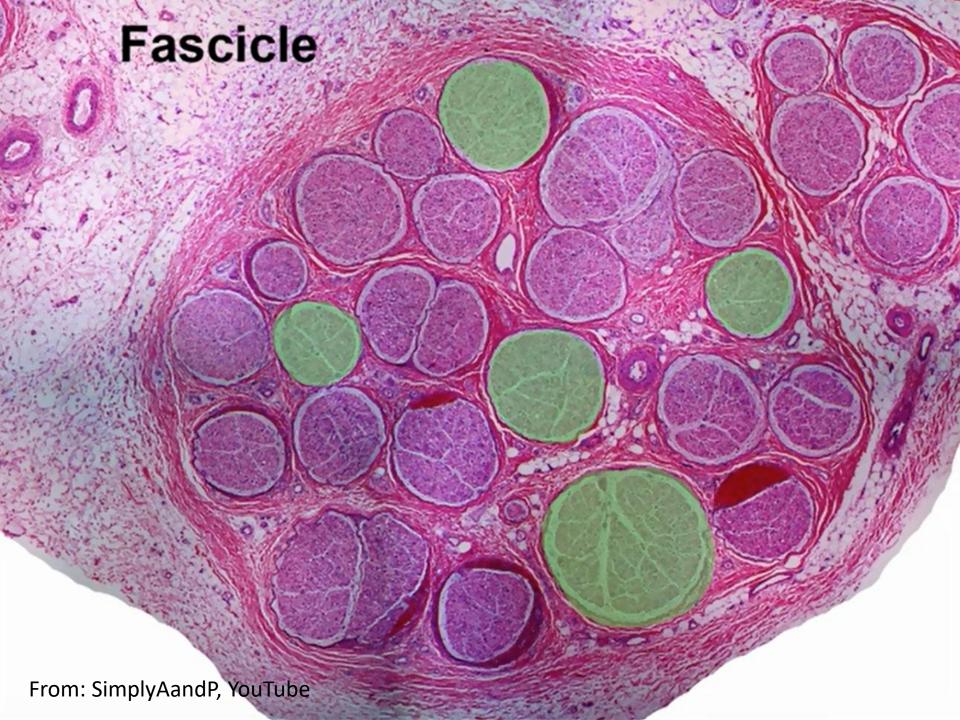
Une microélectrode en tungstène

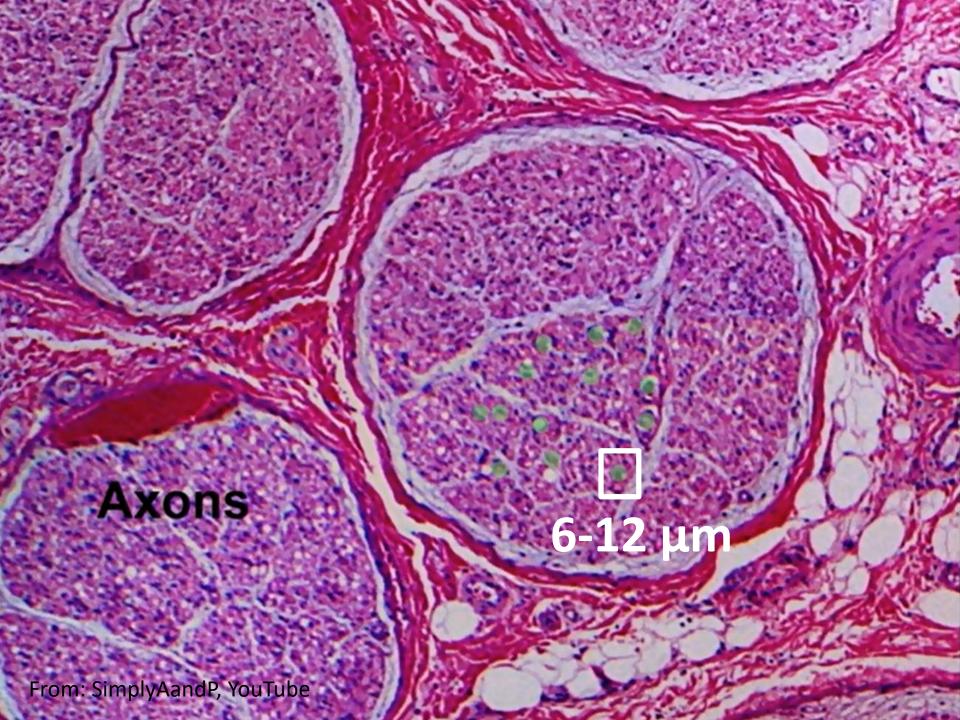


Coated/insulated tungsten 0.2 mm diameter Electrode tip $^{\sim}5~\mu m$ $^{\sim}$ 300-500 k Ω impedance

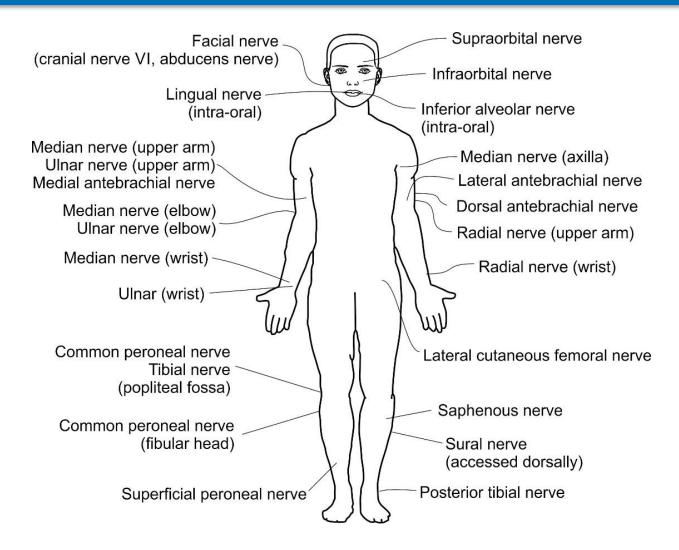








Une technique possible presque partout



Un environnement serein avant



Un environnement serein après



Un environnement serein après



Repérage du nerf en échographie

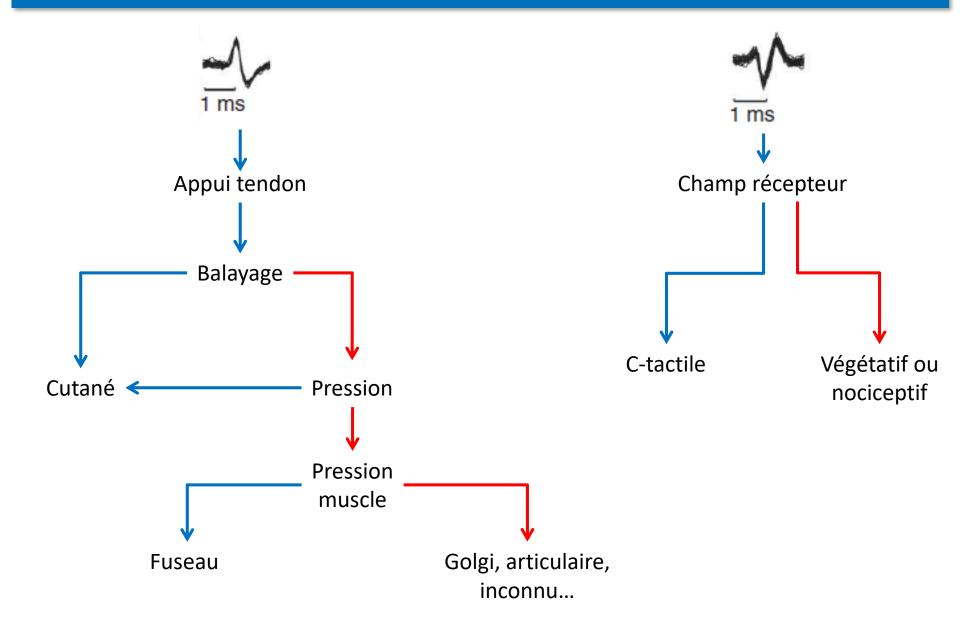


Fig. 1 Ultrasound of proximal carpal tunnel: arrowheads, flexor retinaculum; FCR, flexor carpi radialis tendon; FPL, flexor pollicis longus tendon; MN, median nerve; T, flexor digitorum superficialis and profundus tendons.

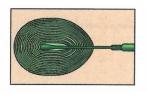
Une microélectrode en sous cutané



Identifier la fibre



Faute de choisir la fibre, disposer de nombreux protocoles

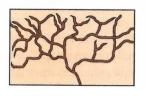


Pacini

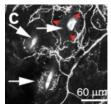


Merkel

Toucher discriminatif

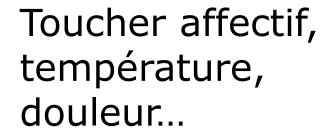


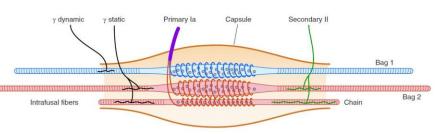
Fibres C



Fibres C

tactiles





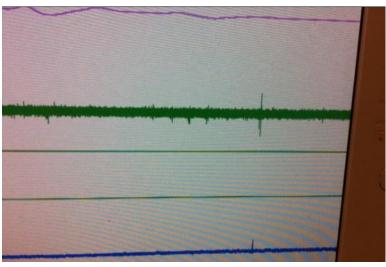
Proprioception

Fuseaux neuromusculaires

Démonstration vidéo



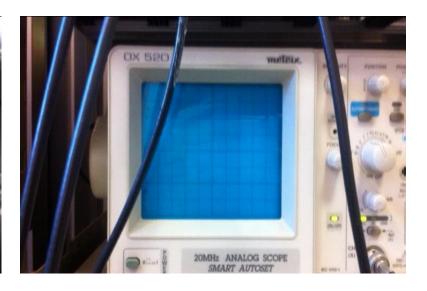




Démonstration vidéo







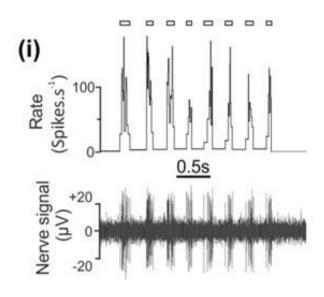
Une méthode riche avec des limites







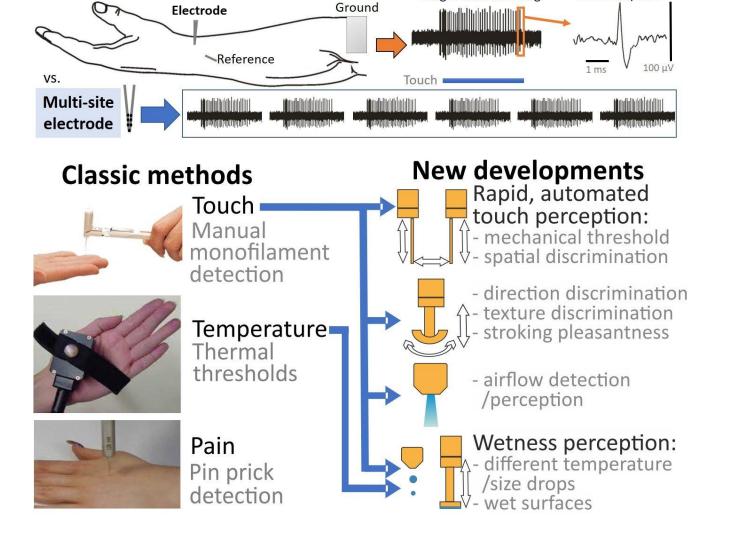




Plateforme Bodysense en cours de labélisation Aix-Marseille

Single unit recording

Nerve impulse









Etudier la somesthésie au sens large

