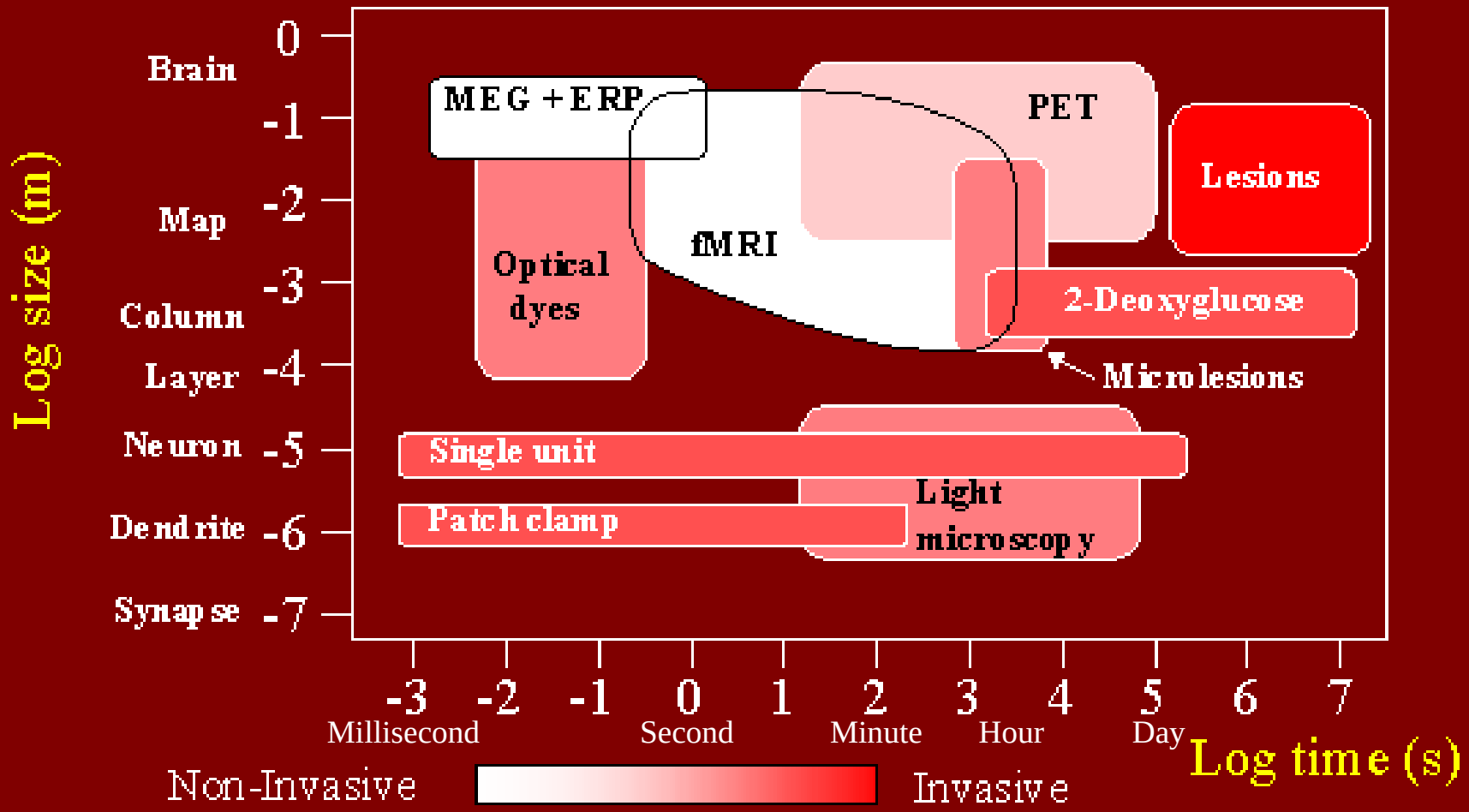
The computational brain:

Anatomical and physiological techniques

Authors: Churchland & Sejnowski

Abstracted by Choi, Yu Yong

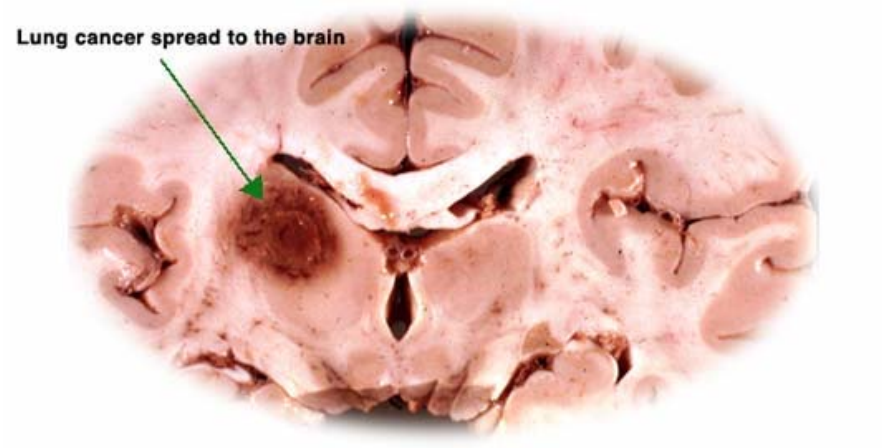
Functional Mapping Methods



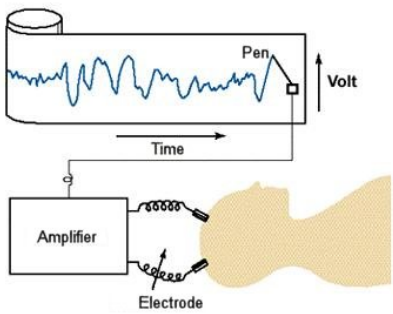
Lesions

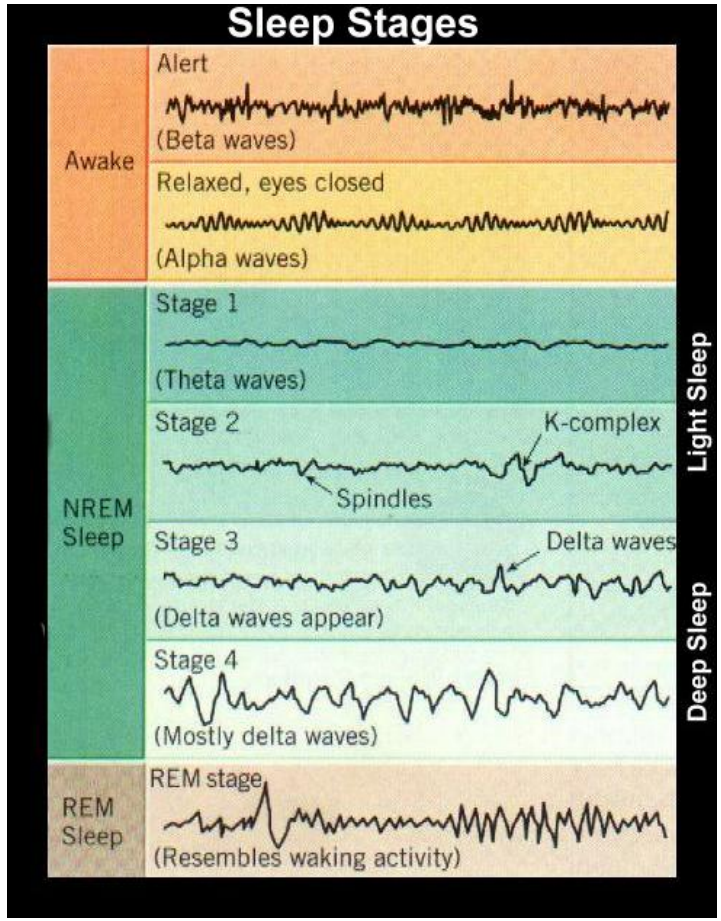

JOHN TRAVOLTA
PHENOMENON


adam.com

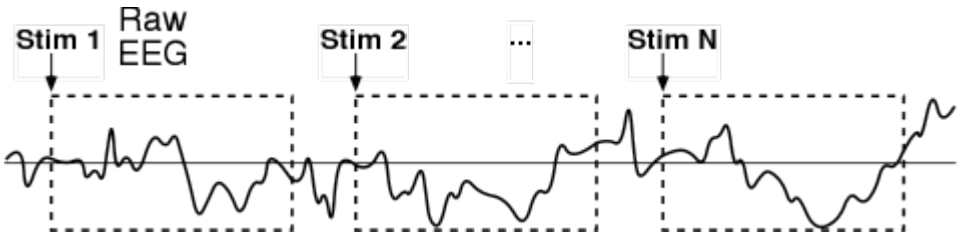

Lung cancer spread to the brain

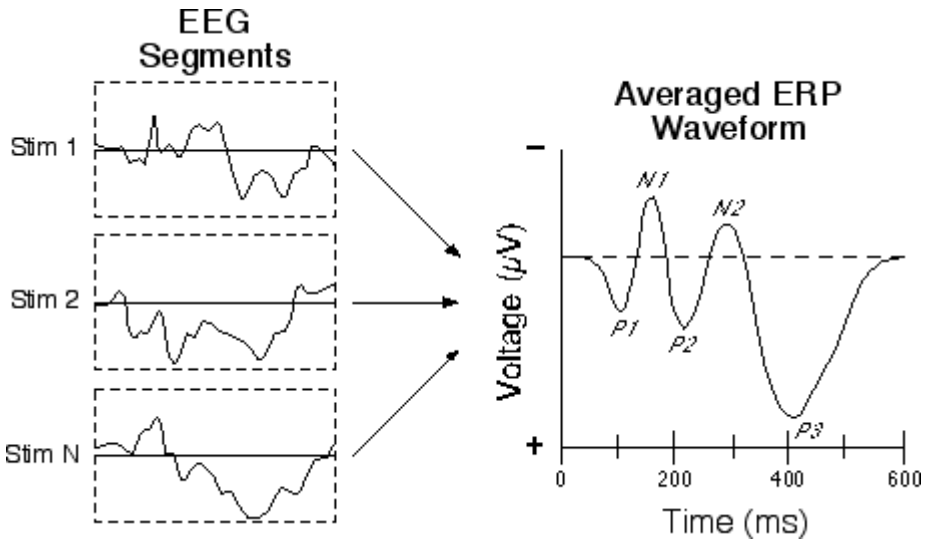
Electroencephalogram (EEG)

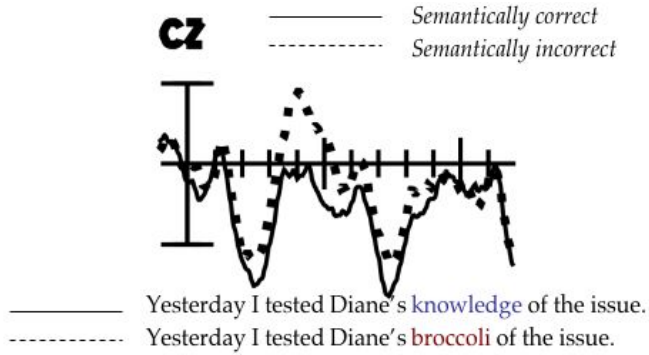




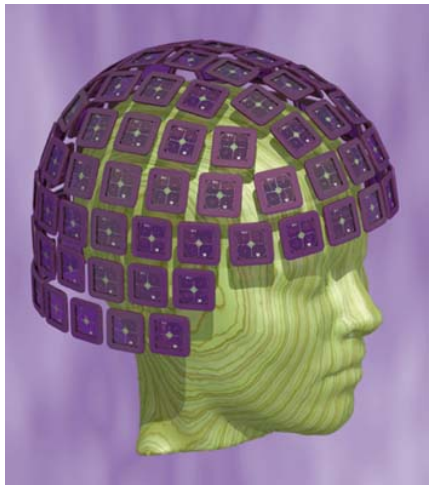
Event-related potential (ERP)

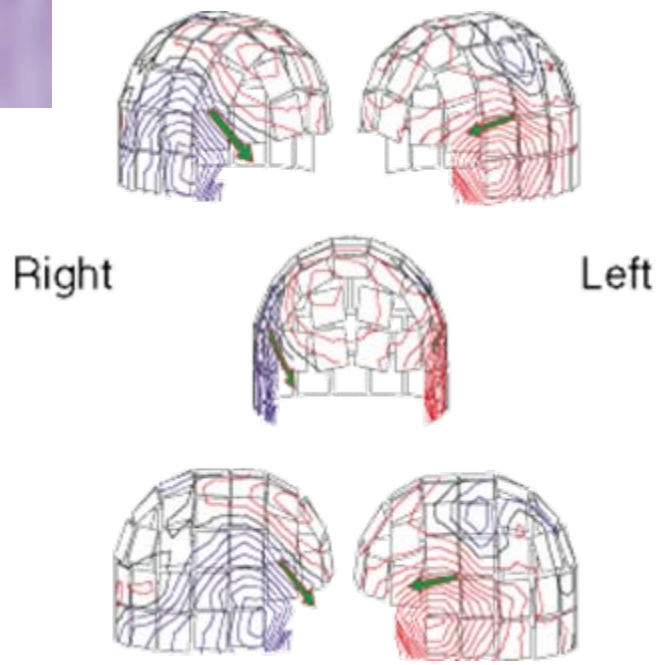




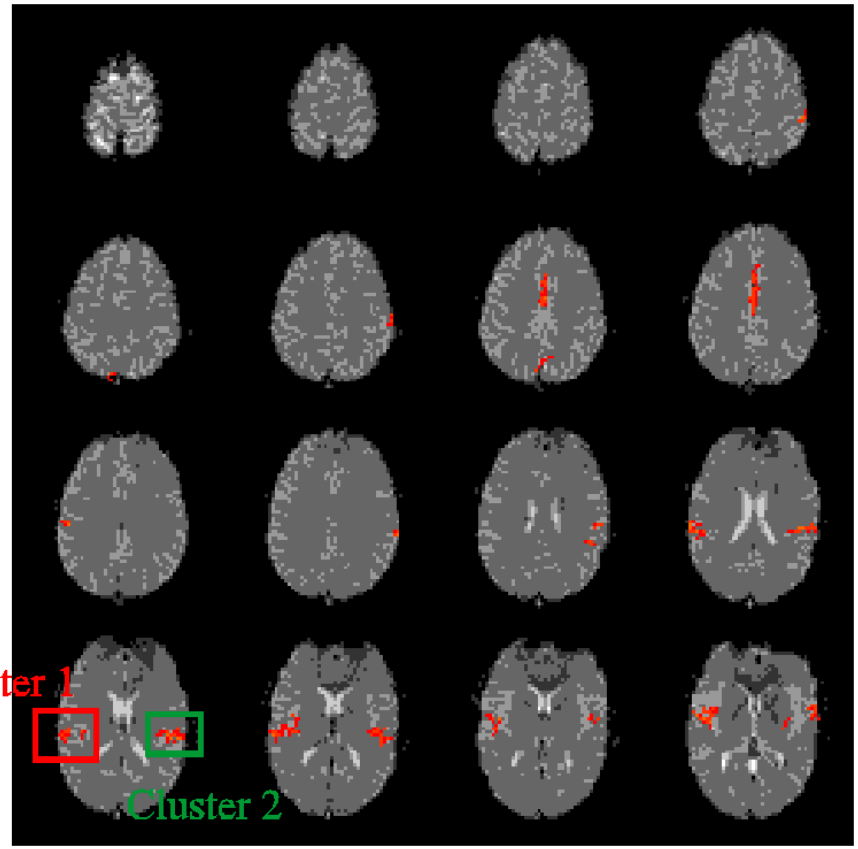


Magnetoencephalogram (MEG)

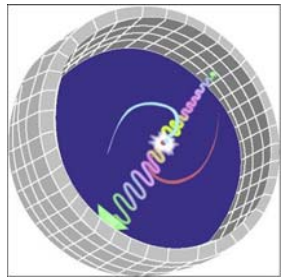


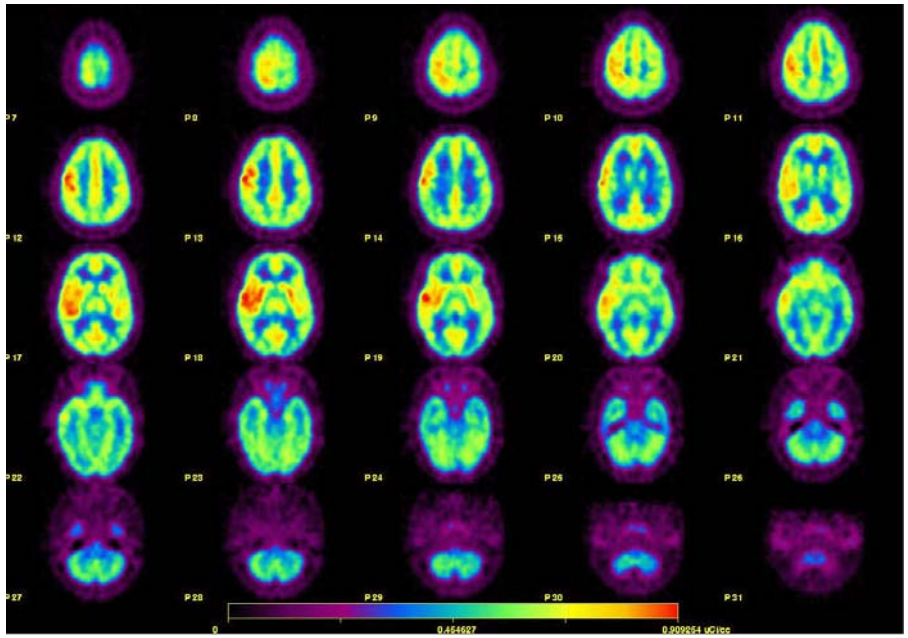


Functional magnetic resonance imaging (fMRI)

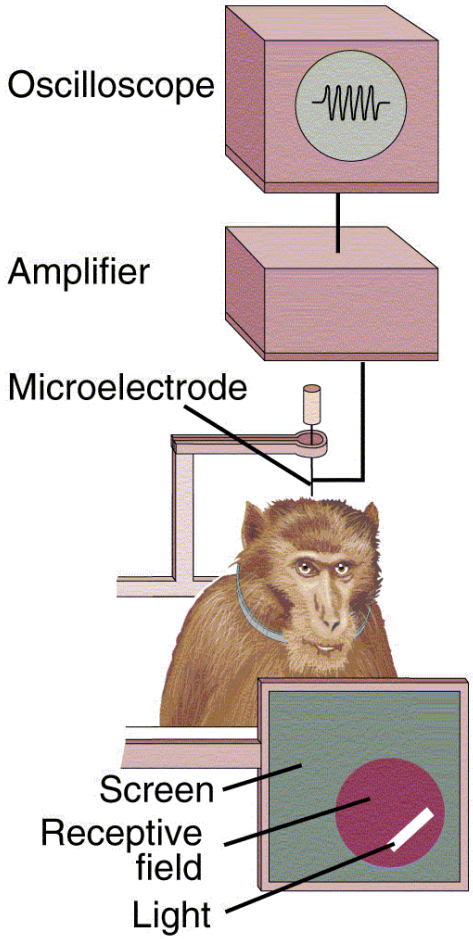


Positron Emission Tomography (PET)





Single unit recording



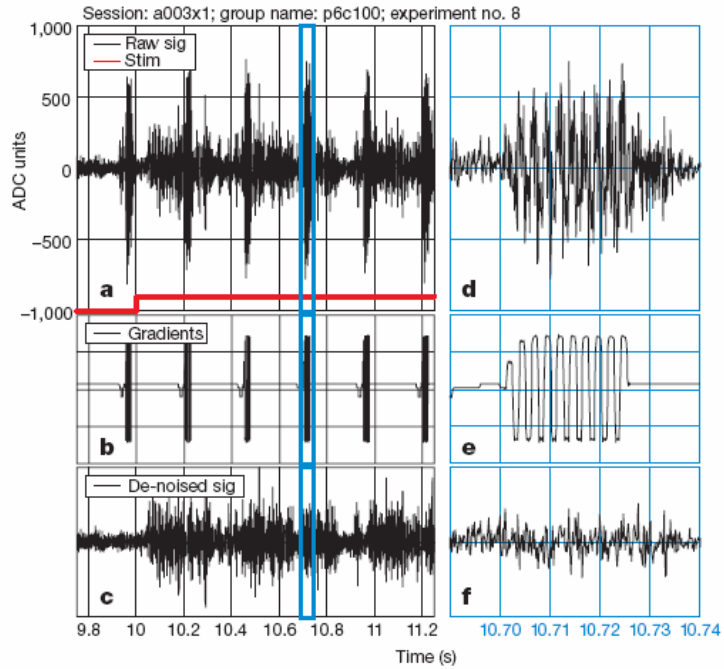
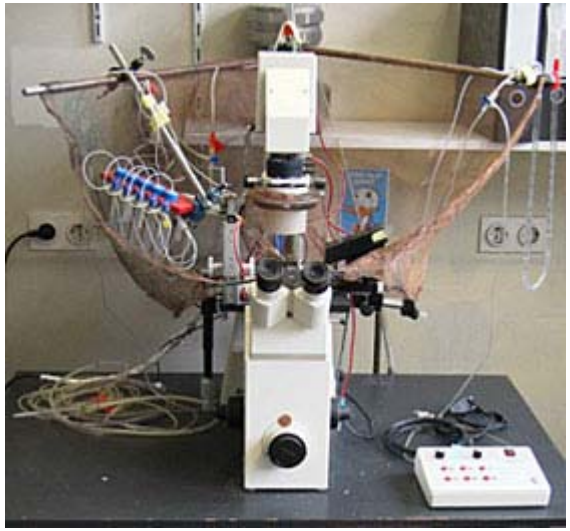
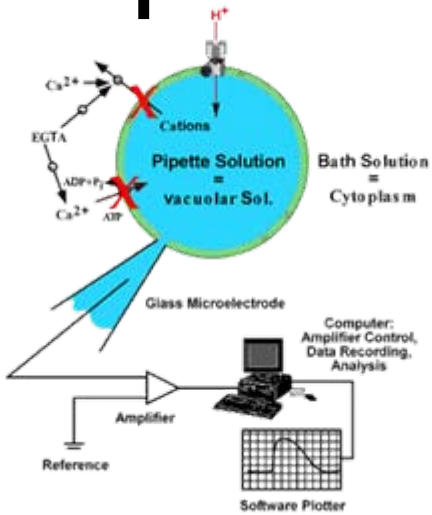
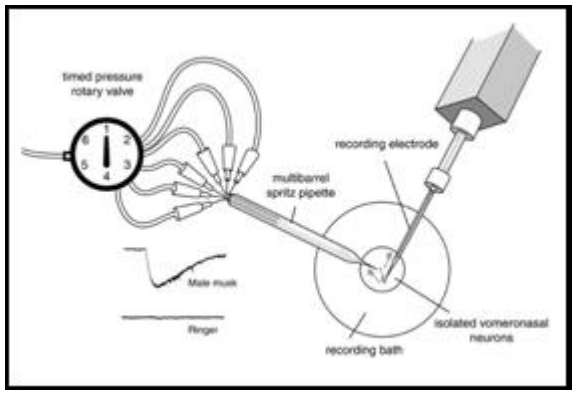


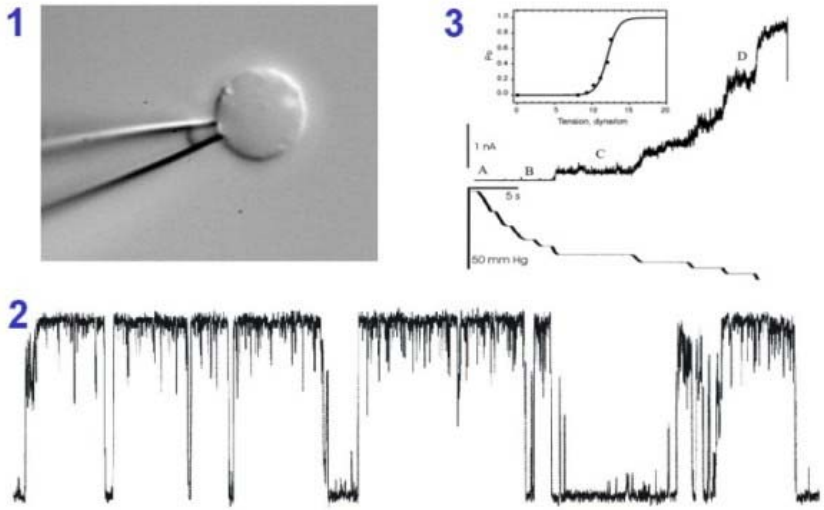
Figure 7 Elimination of residual interference by applying PCA (see Methods). **a**–**c**, A 1.4-s-long segment of the neural signal; **d**–**f**, magnification of the signal part included within the blue lines. The upper panels show the raw data, middle panels the recorded gradient currents, and lower ones the de-noised signal. In **a** and **d**, cell activity is shown superimposed on the strong interference induced by the gradient coils. The periodic alternations in **b** and **e** are due to the switching of the readout gradient.

Patch clamp

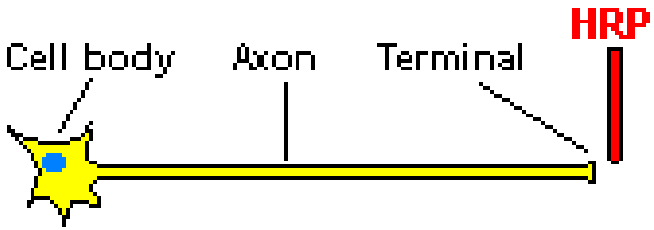



H+
Ca2+
EGTA
Cations
Pipette Solution
=
vacuolar Sol.
Bath Solution
=
Cytoplasm
ADP+Pi
Ca2+
ATP
Glass Microelectrode
Computer:
Amplifier Control,
Data Recording,
Analysis
Amplifier
Reference
Software Plotter

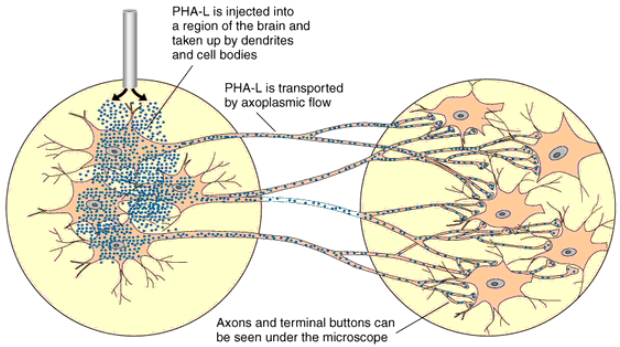

timed pressure
rotary valve
recording electrode
multibarrel
spritz pipette
Male musk
Ringer
isolated vomeronasal
neurons
recording bath

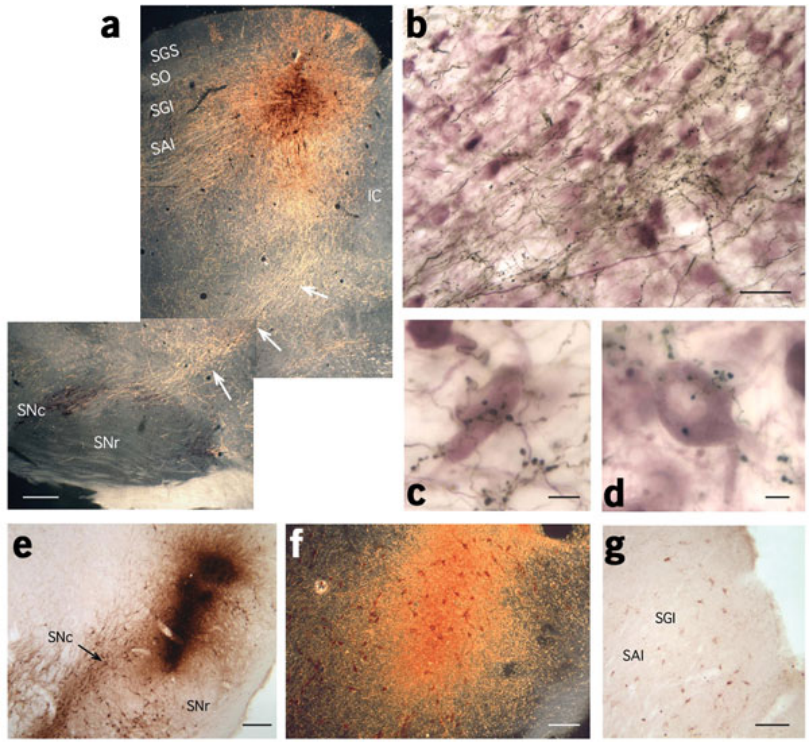

1
3
2
Tension, dynes/cm
1 nA
A
B
C
D
5 s
50 mm Hg

Anatomical tract tracing



► Rationale for the Use of PHA-L to Trace Efferent Axons





Eliane Comoli et al. (2003). A direct projection from superior colliculus to substantia nigra for detecting salient visual events. Nat. Neurosci. 6, 974 - 980
Figure 1. The tectonigral projection revealed by anterograde and retrograde tract tracing.
(**a**) A darkfield photomontage of a parasagittal section of the rat midbrain illustrating an injection site of the anterograde tracer BDA in the caudal intermediate layers of the SC, with ventrally projecting tectonigral fibers (white arrows) directed to TH-positive regions (purple) of the SNc.

Functional Mapping Methods