

# EEG e cervello

## **Materiale grafico di supporto alla lezione**

Estratto da:

“Bioelectromagnetism” cap. 5 e cap. 13

Dispensa Potenziali elettroencefalografici e potenziali evocati (<http://www.centropiaggio.unipi.it/course/material/10potenziali-evocati-e-eeeg.html>)

# Il cervello

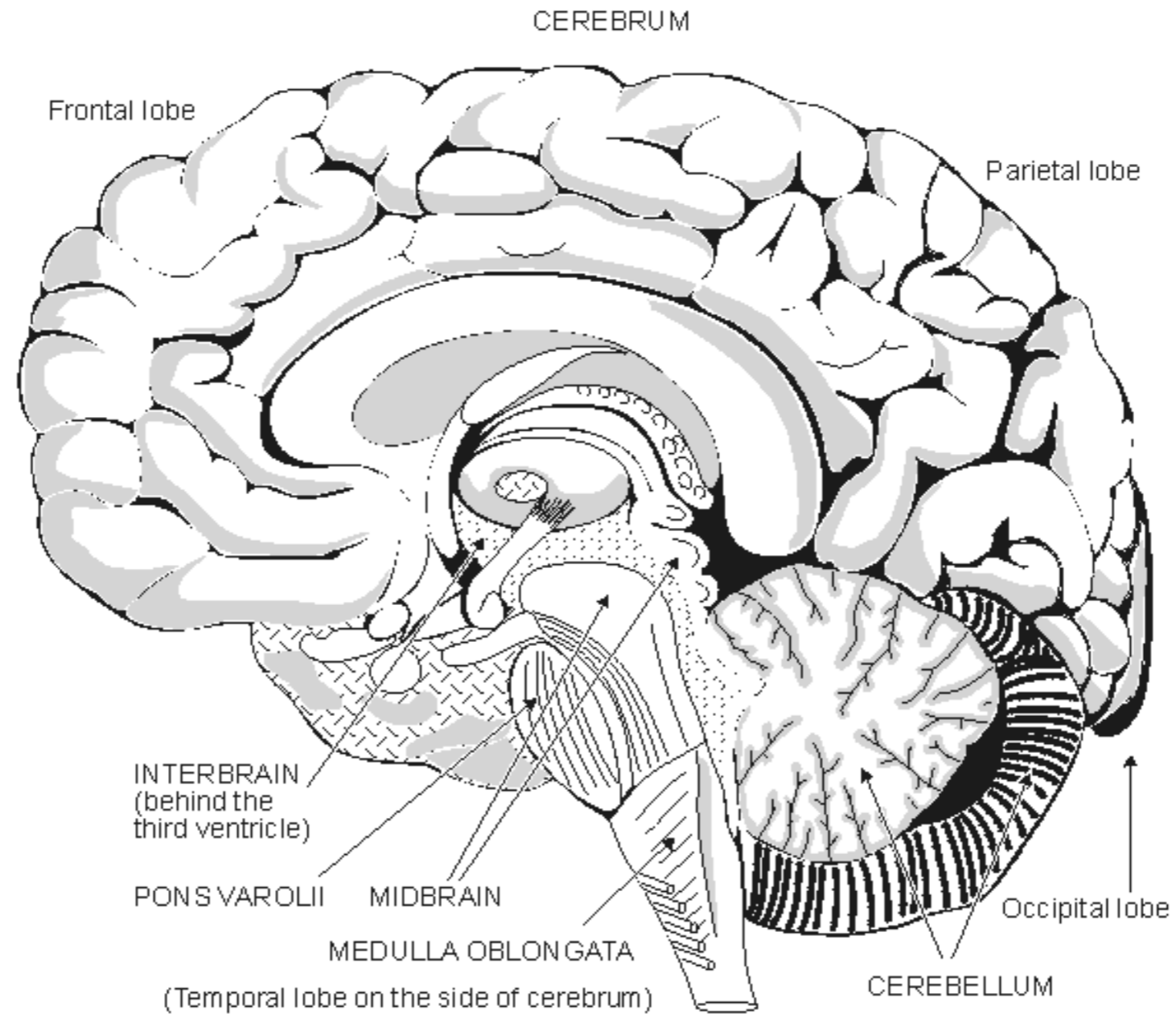
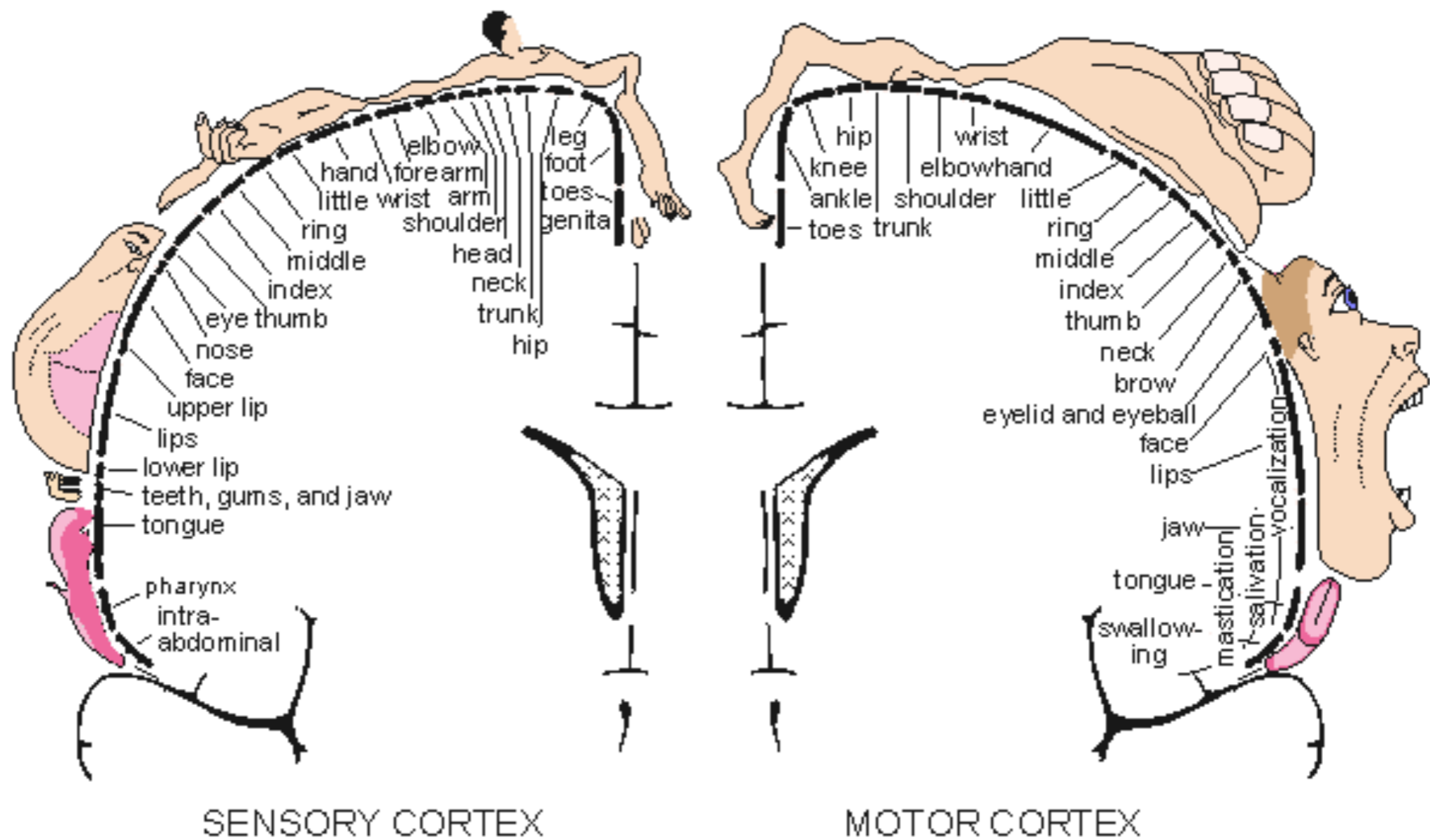


Fig. 5.5. The anatomy of the brain.

# Corteccia sensoriale e corteccia motoria



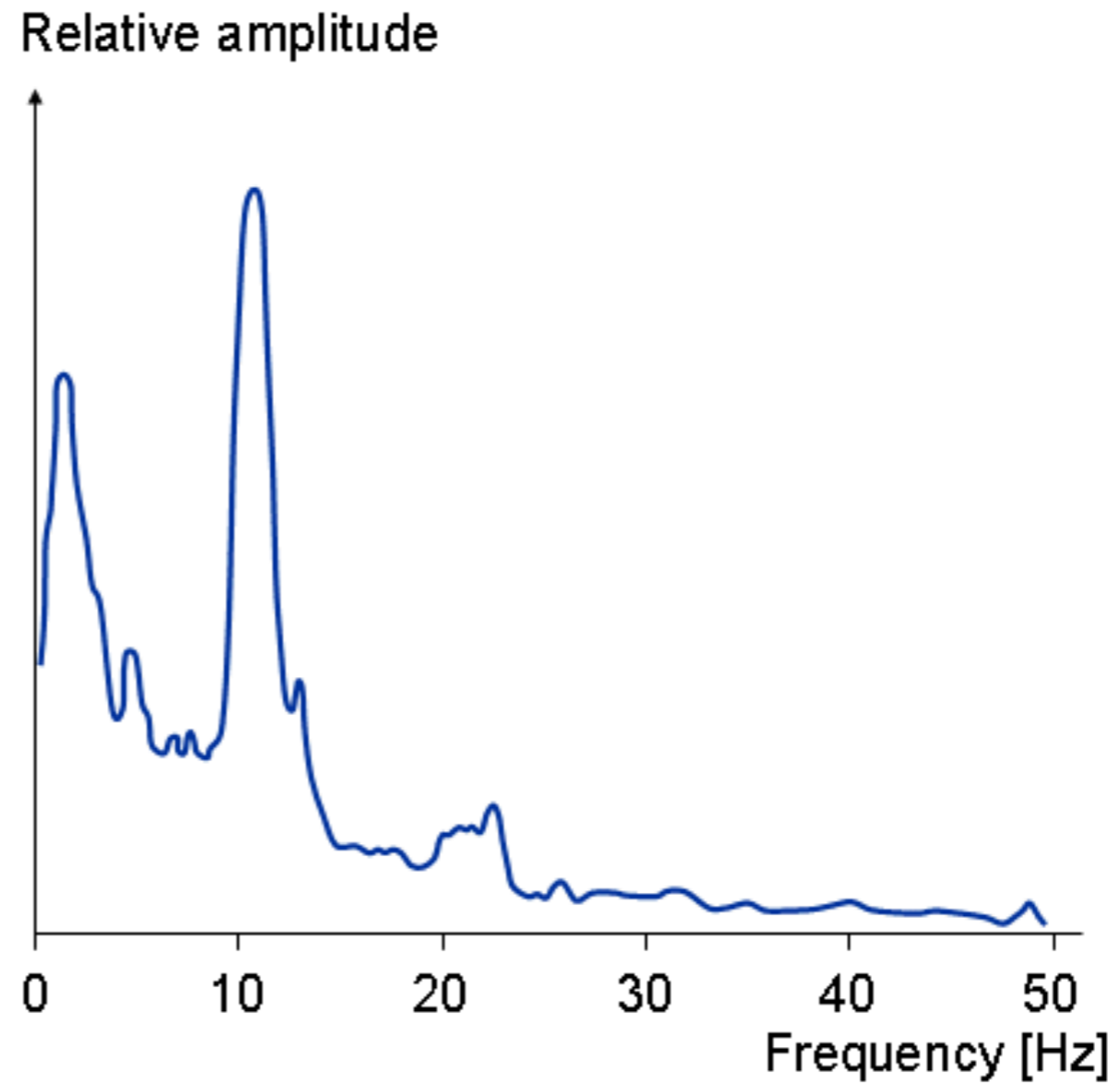
**Fig. 5.6.** The division of sensory (left) and motor (right) functions in the cerebral cortex. (From Penfield and Rasmussen, 1950.)

# Nervi craniali

**Table 5.2.** The cranial nerves

Number	Name	Sensory/ Motor	Functions	Origin or terminus in the brain
I	olfactory	s	smell	cerebral hemispheres (ventral part)
II	optic	s	vision	thalamus
III	oculomotor	m	eye movement	midbrain
IV	trochlear	m	eye movement	midbrain
V	trigeminal	m	masticatory movements	midbrain and pons
		s	sensitivity of face and tongue	medulla
VI	abducens	m	eye movements	medulla
VII	facial	m	facial movement	medulla
VIII	auditory	s	hearing	medulla
	vestibular	s	balance	
IX	glossopharyngeal	s,m	tongue and pharynx	medulla
X	vagus	s,m	heart, blood vessels, viscera	medulla
XI	spinal accessory	m	neck muscles and viscera	medulla
XII	hypoglossal	m		medulla

# spettro EEG



**Fig. 13.1.** Frequency spectrum of normal EEG.

# cellula piramidale

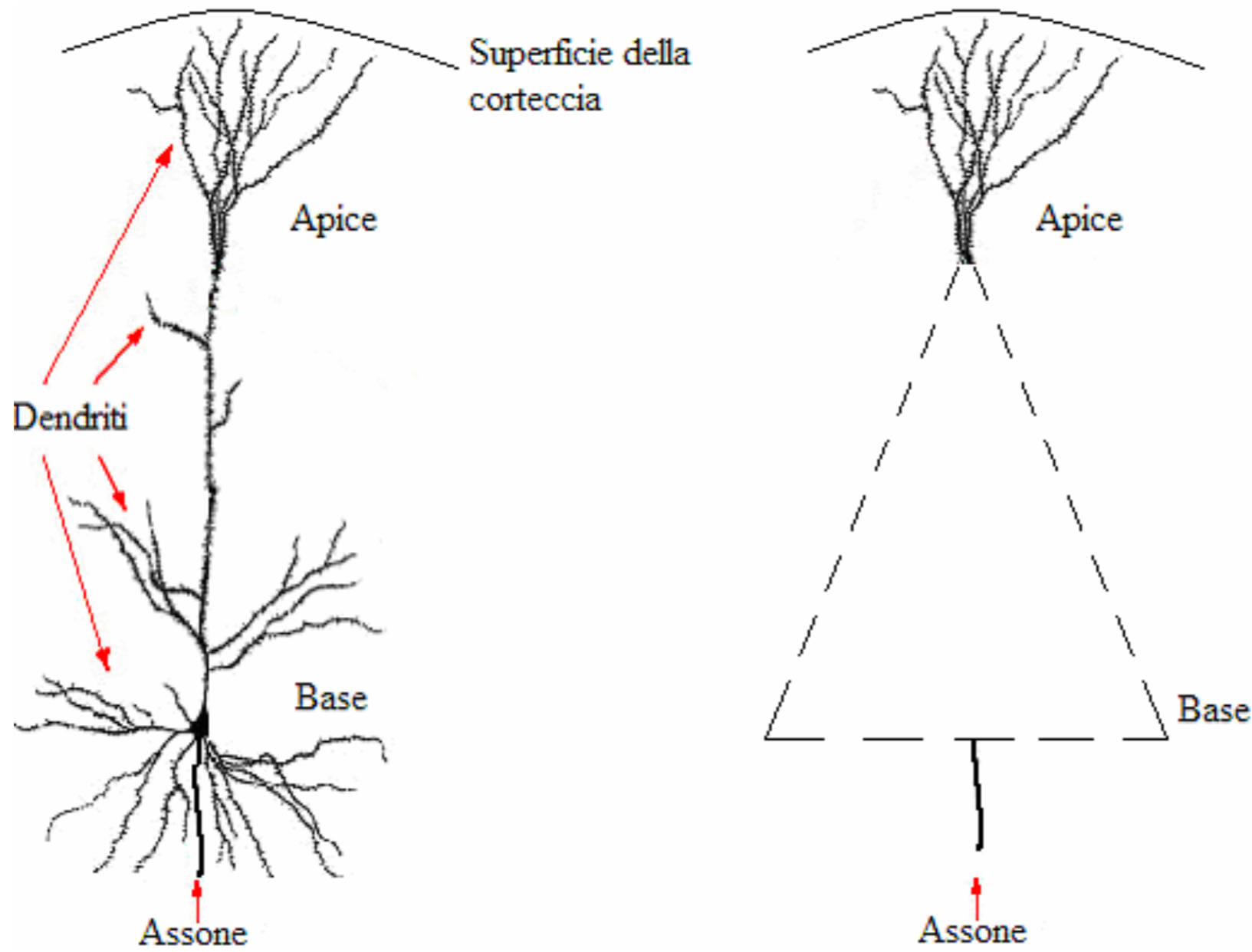
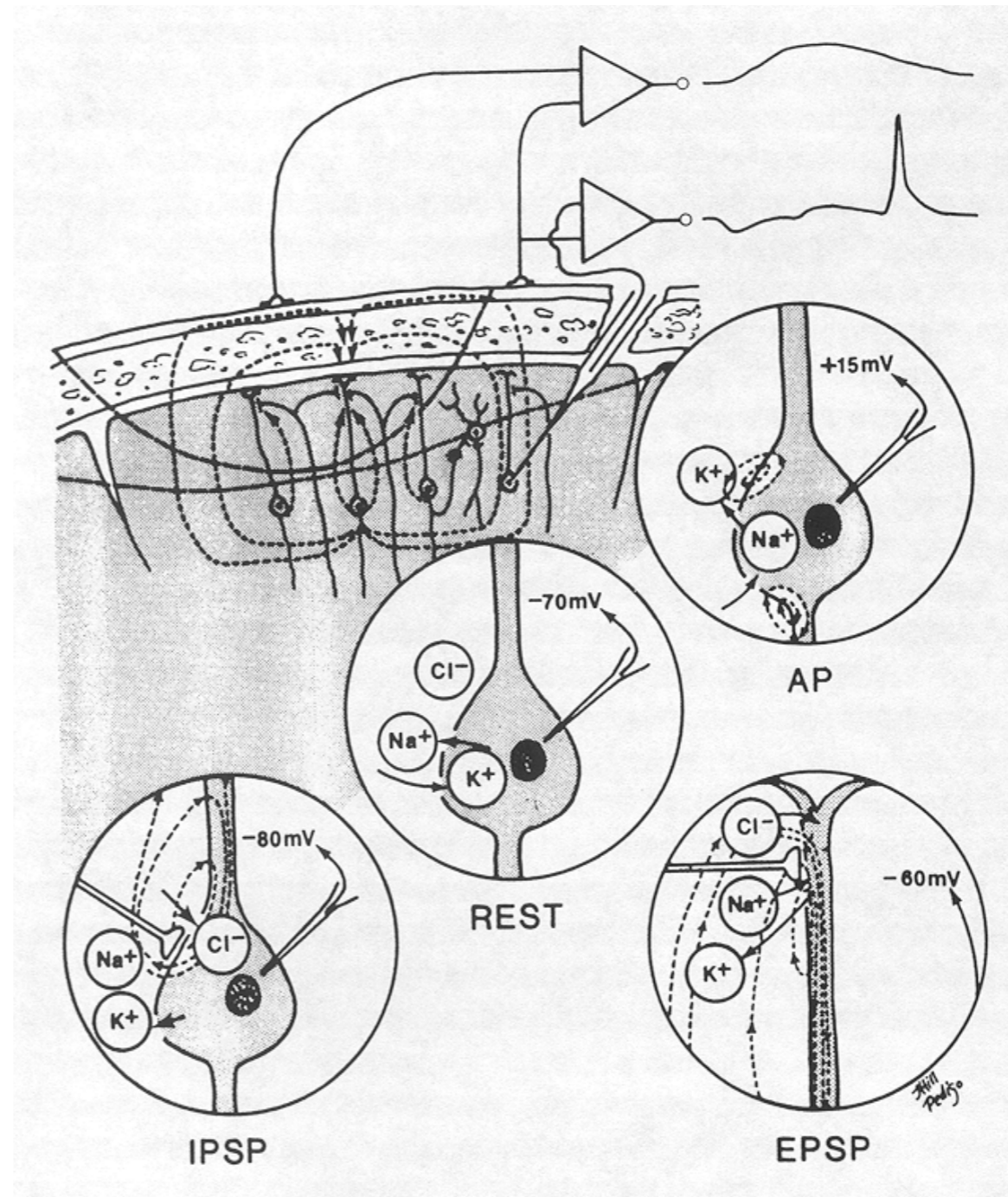
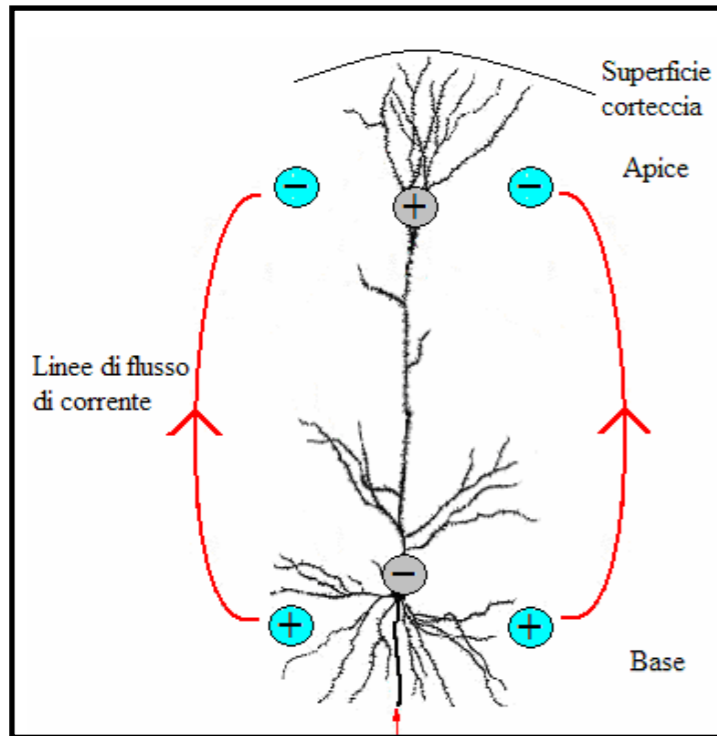


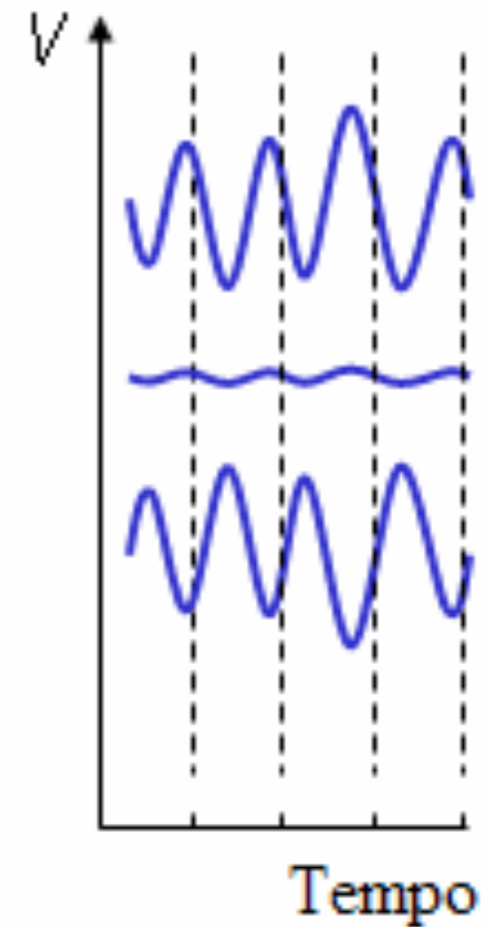
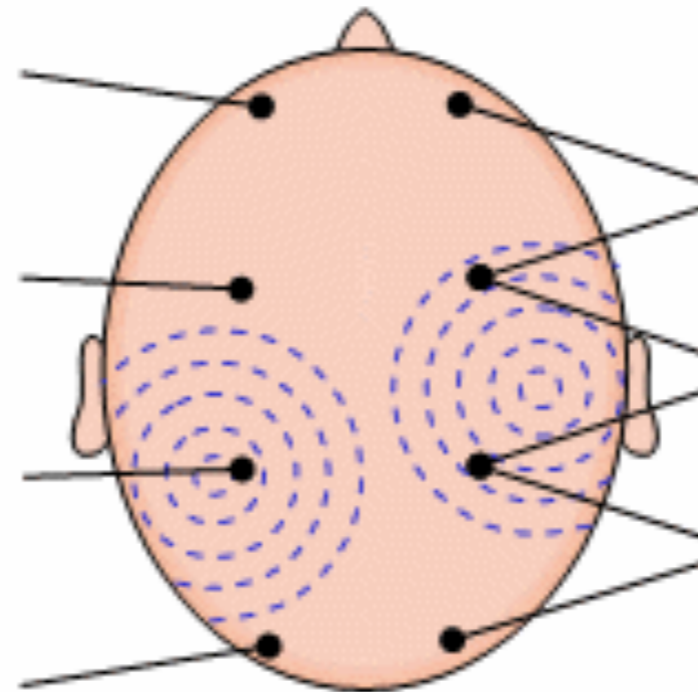
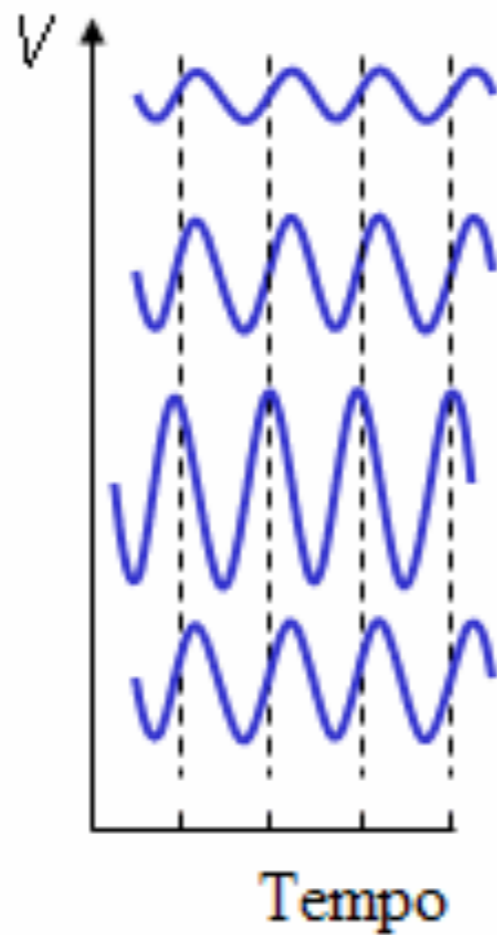
Figura 5 Struttura di una cellula piramidale.

# generazione del potenziale



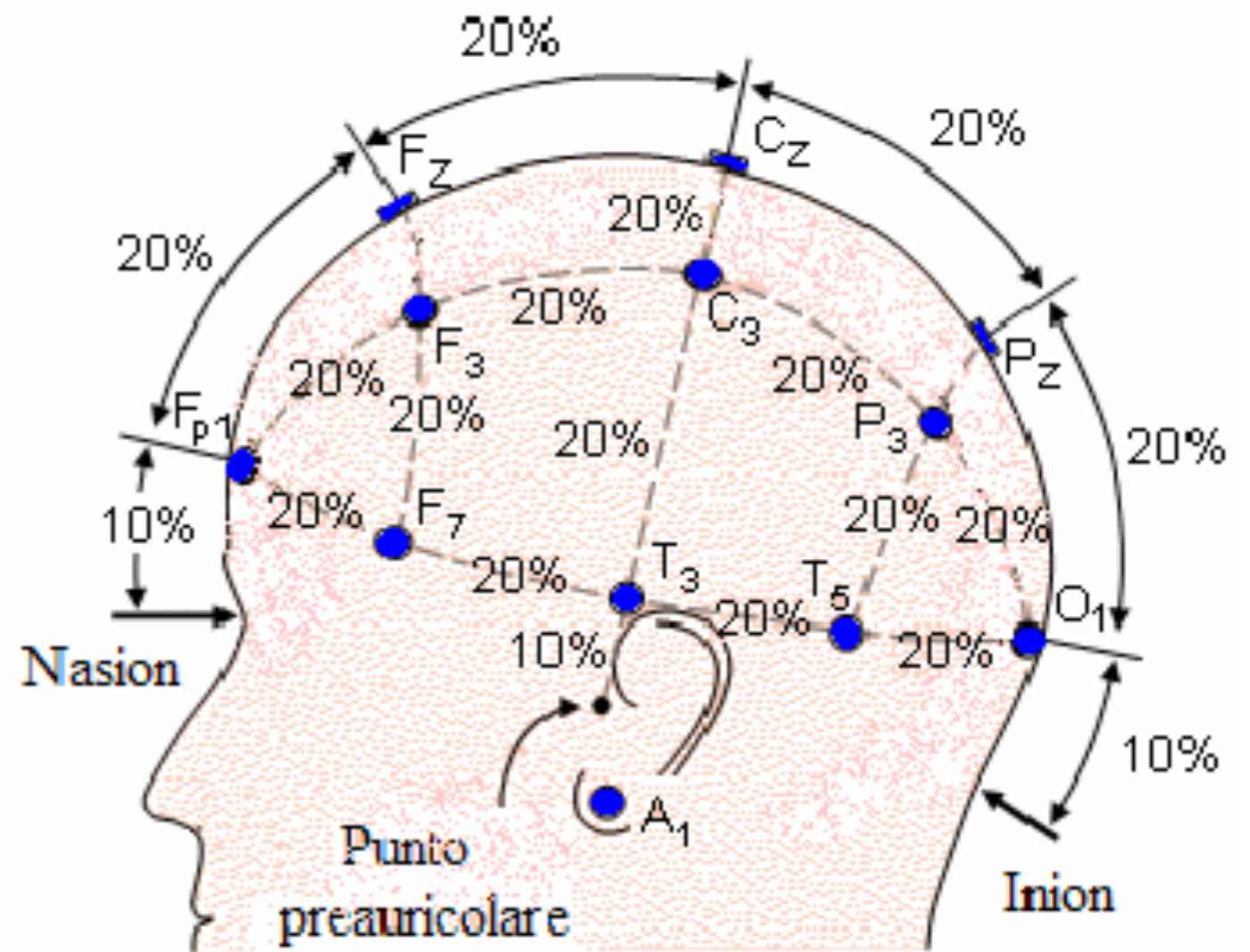
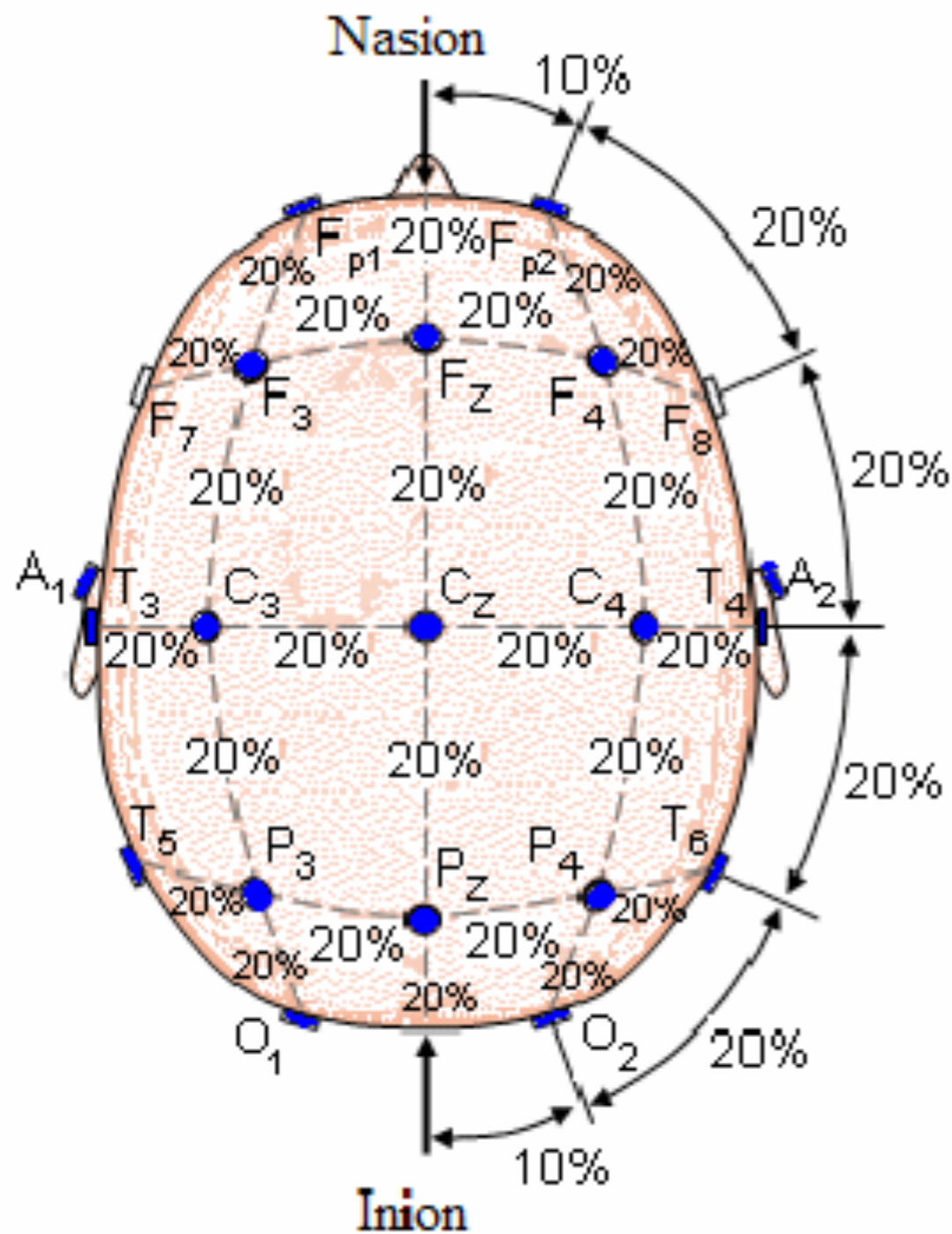


# derivazioni monopolari e bipolari





# posizionamento standard

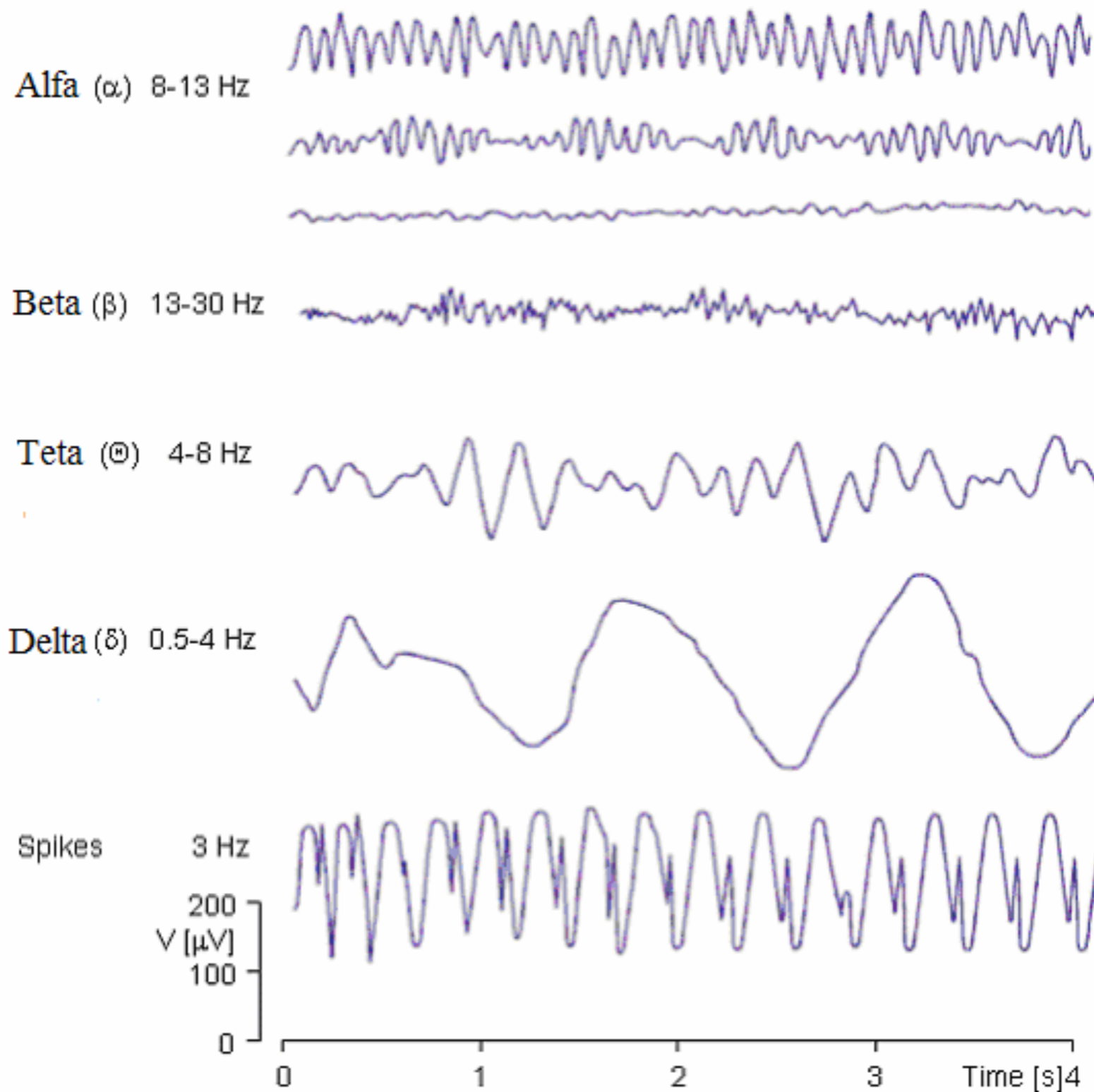


# Segnali rilevabili

**Tabella 19. 1 Banda di alcuni segnali bioelettrici cerebrali.**

<b>Segnale</b>	<b>Banda frequenziale</b>
Potenziali EEG	0.5 – 30 Hz
Potenziali evocati somatosensoriali	1 – 3000 Hz
Potenziali evocati uditivi	100 – 3000 Hz
Potenziali evocati visivi	0.5 – 100 Hz
Potenziali evocati evento-correlati	0.1 – 30 Hz

# Segnali rilevabili



# potenziale evocato

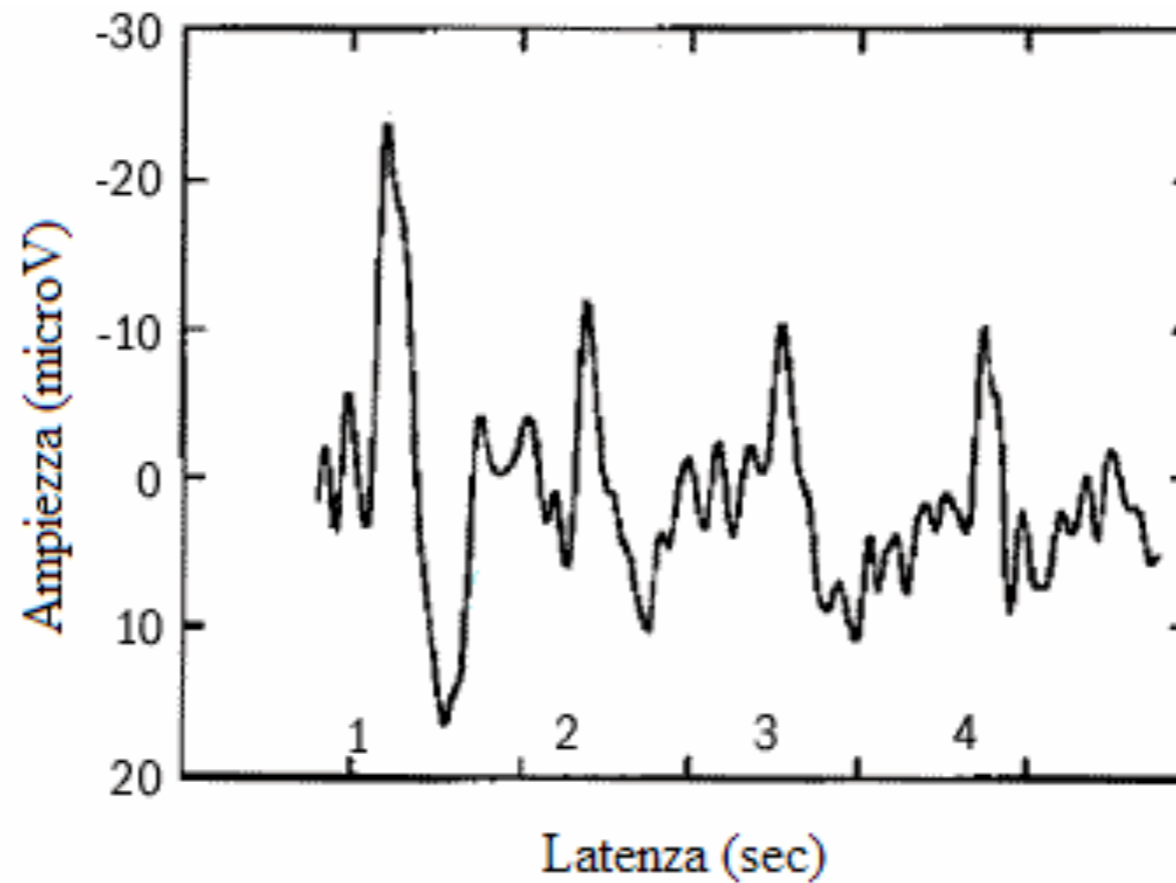


Figura 11 Esempio di un potenziale evocato da una serie di quattro stimoli uditivi (adattata da [www.clinicalwindow.net](http://www.clinicalwindow.net))

# segnale eeg

Veglia



Sonno leggero



Fase REM del sonno



Sonno profondo



Morte cerebrale



V [μV]  
100  
50  
0

0 1 2 3 4  
Time [s]