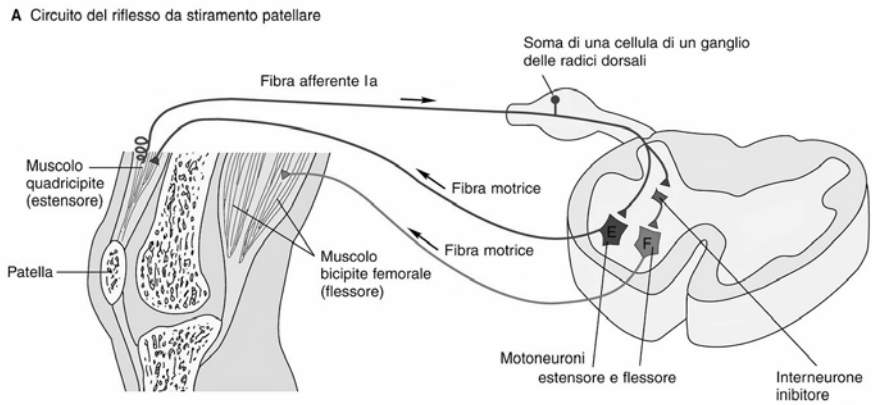
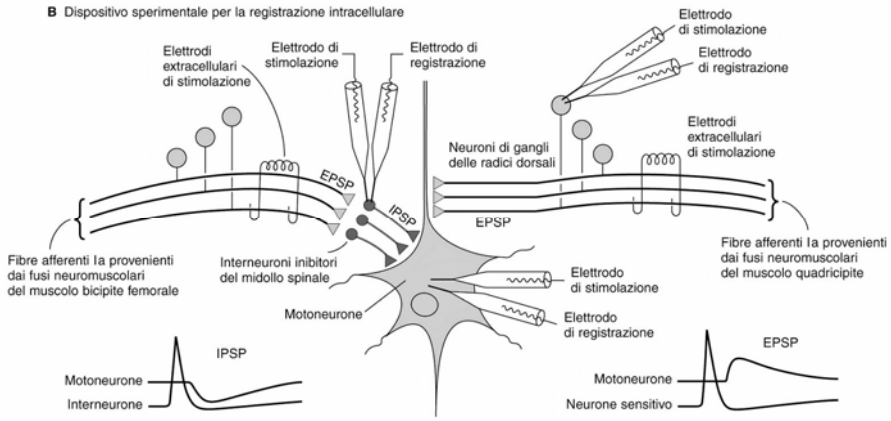
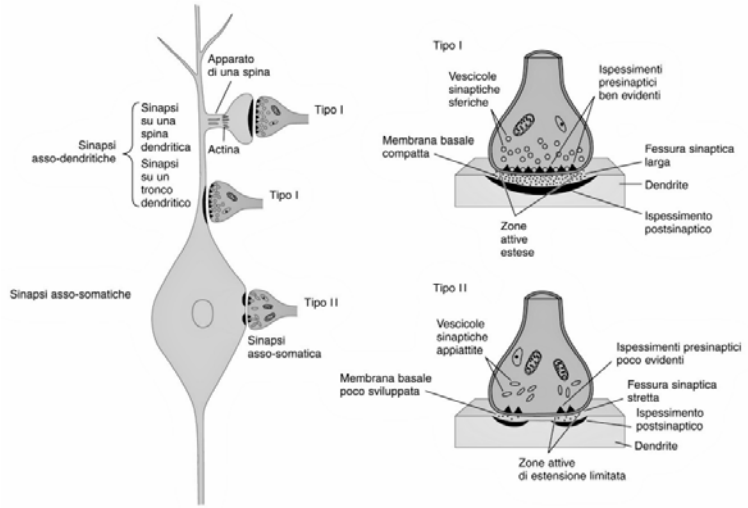
Il riflesso miotatico come modello



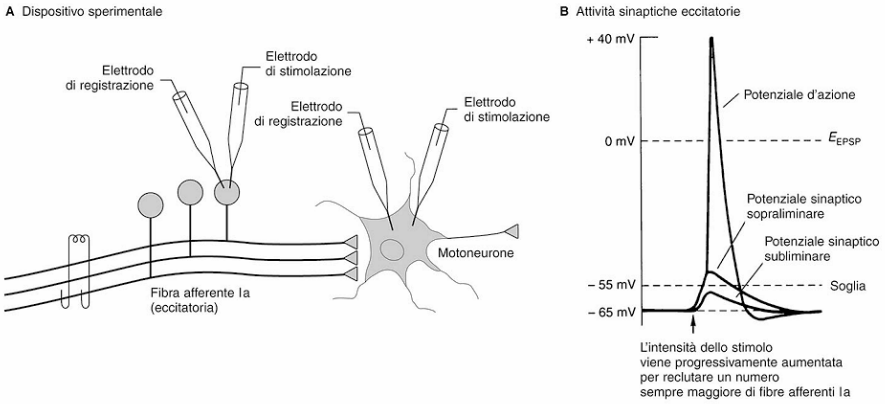
Apparato sperimentale



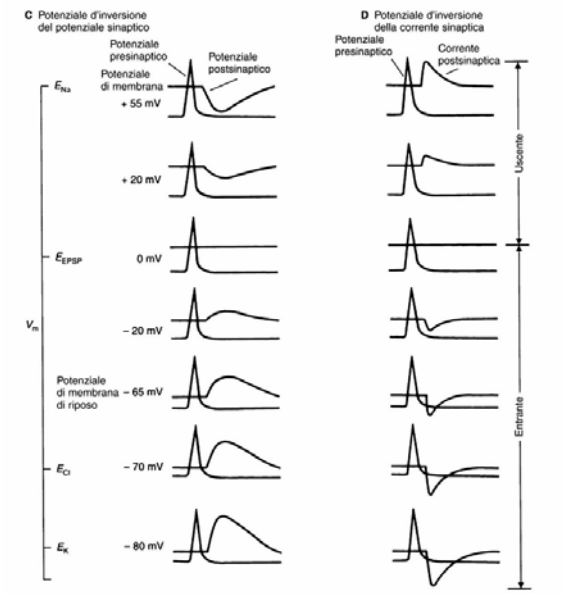
Tipi morfologici di sinapsi



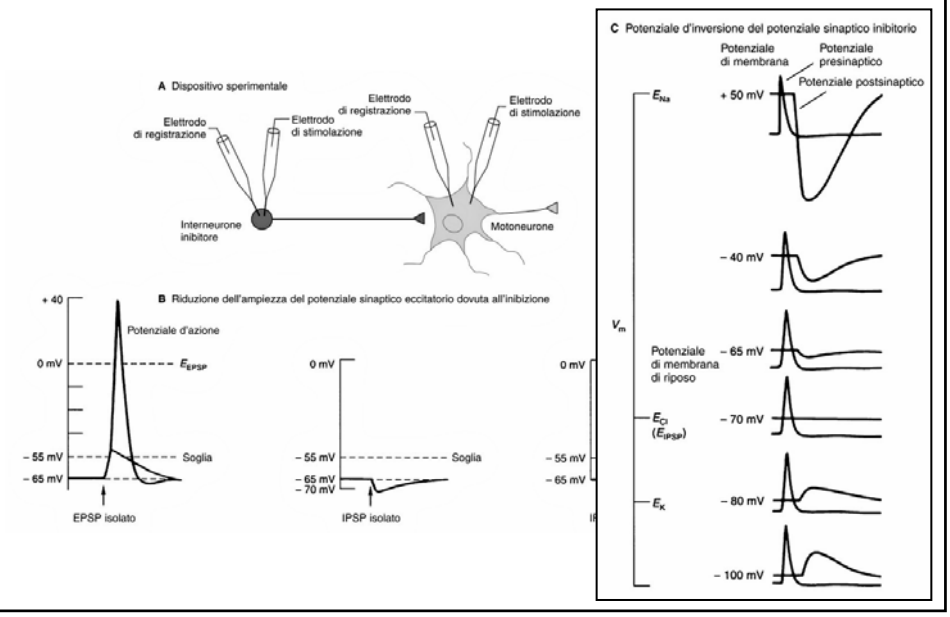
Attività eccitatori dovuta a Na^+ e K^+



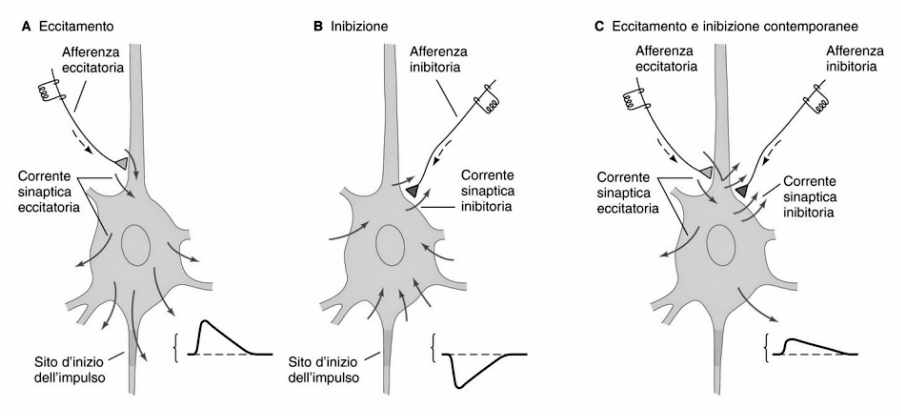
Potenziale d'inversione per i canali cationici



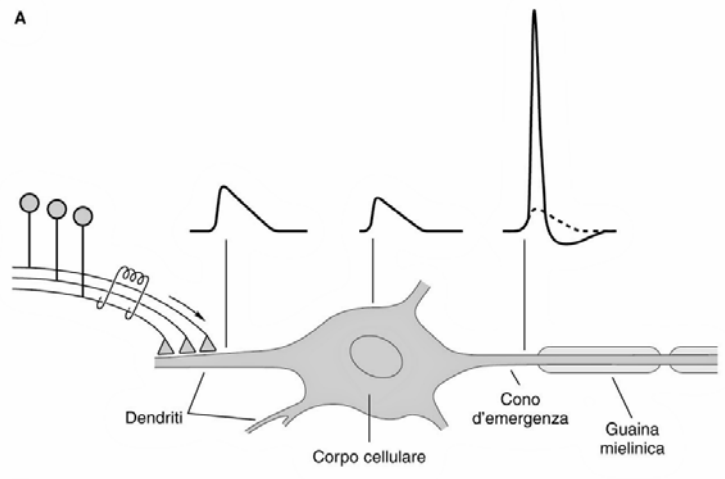
Attività inibitoria dovuta a Cl^-



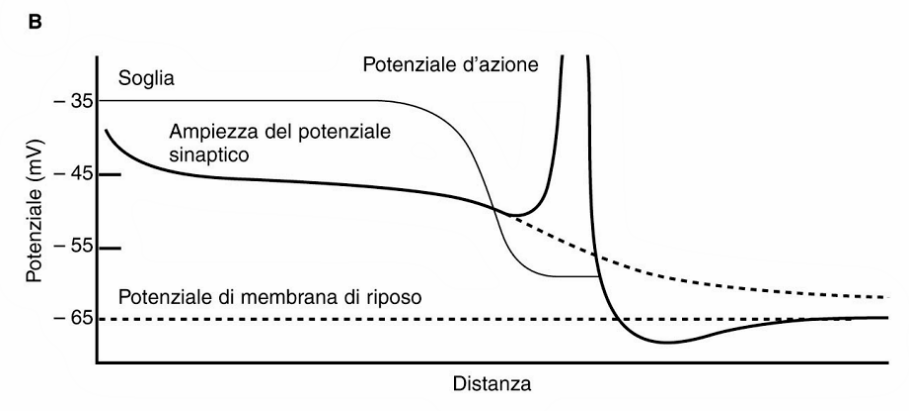
Effetti competitivi



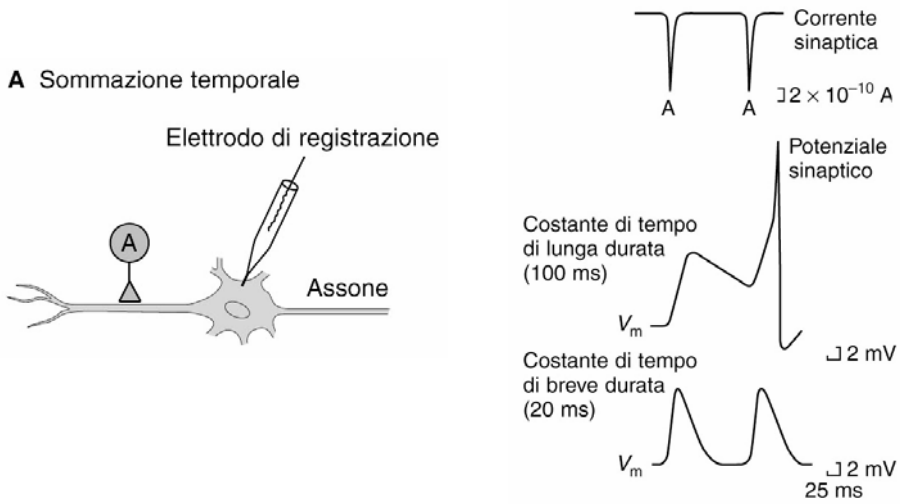
Propagazione del potenziale postsinaptico



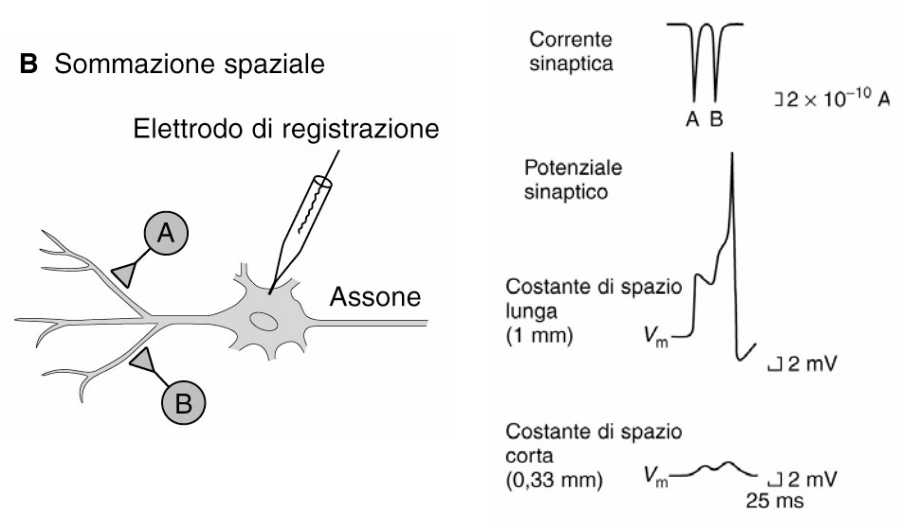
Propagazione del potenziale postsinaptico



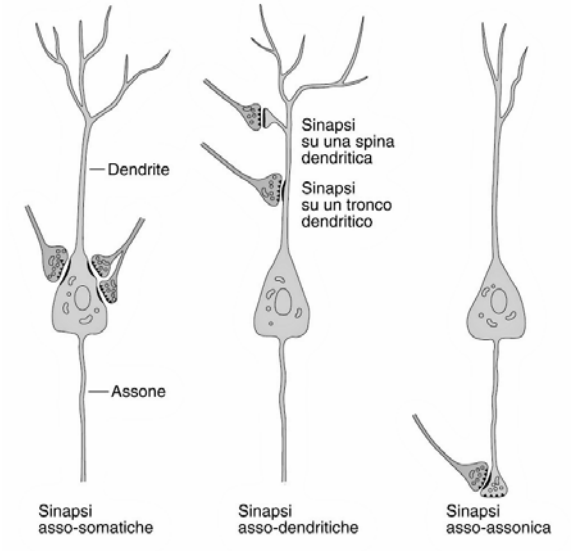
Sommazione temporale



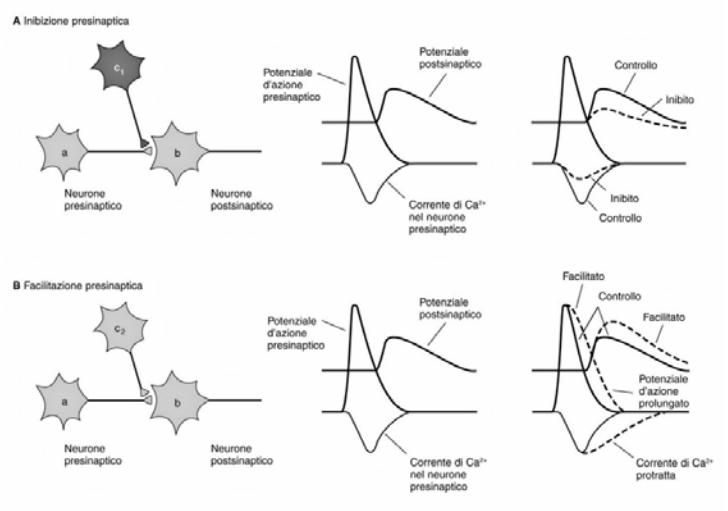
Sommazione spaziale



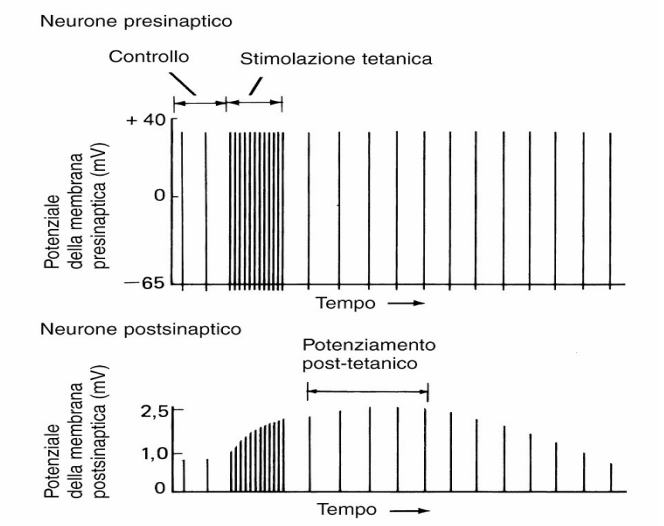
Tipi di sinapsi



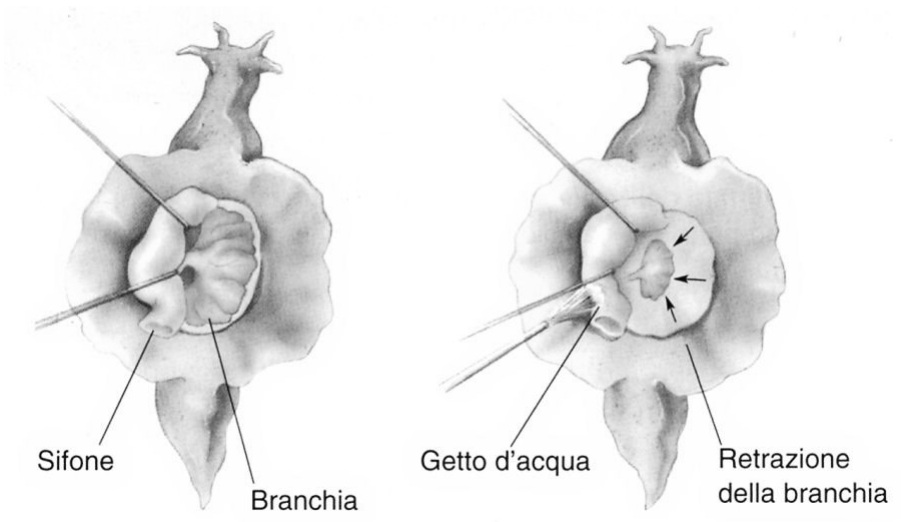
Sinapsi asso-assoniche

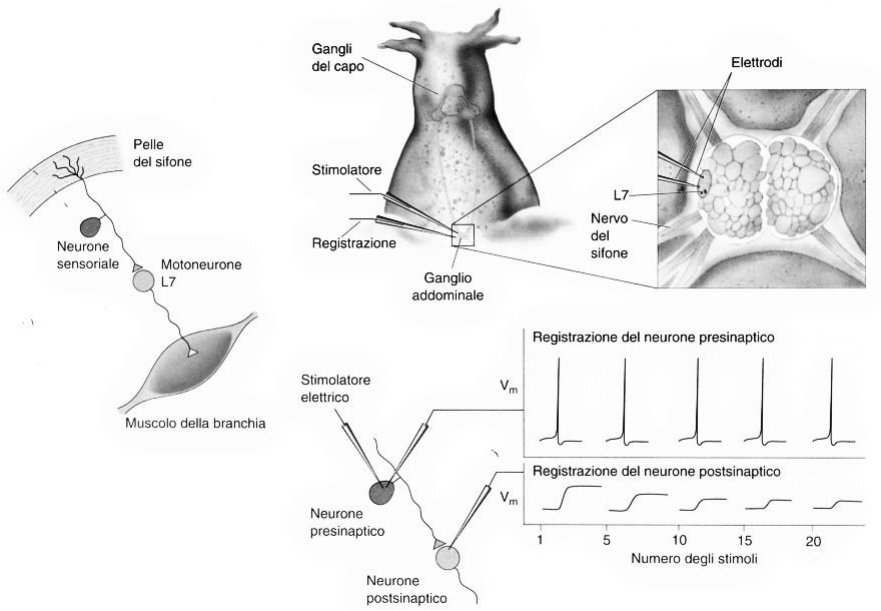


Potenziamento post-tetanico

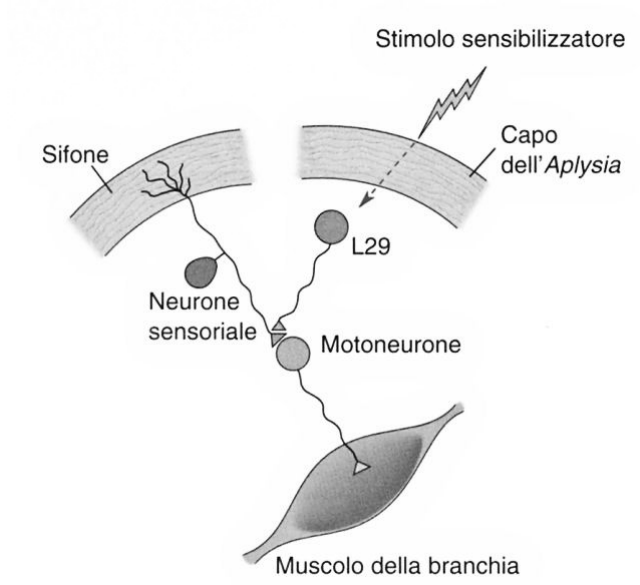


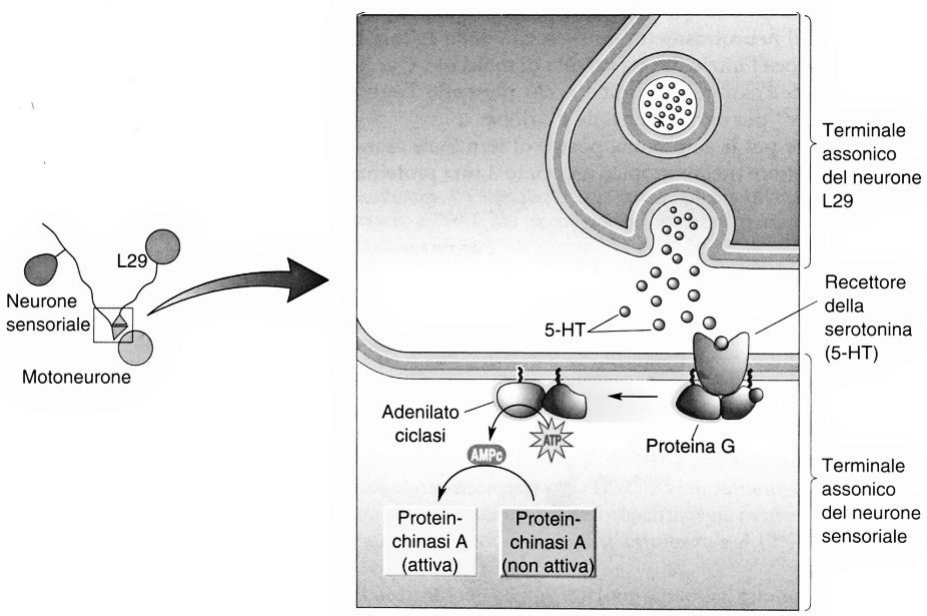
Abituazione

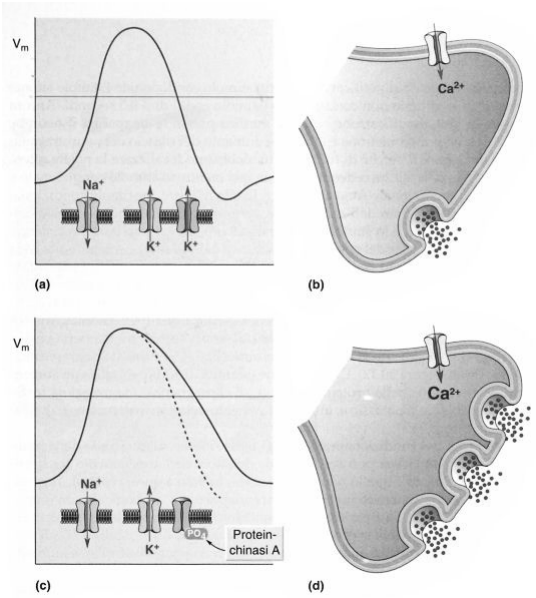




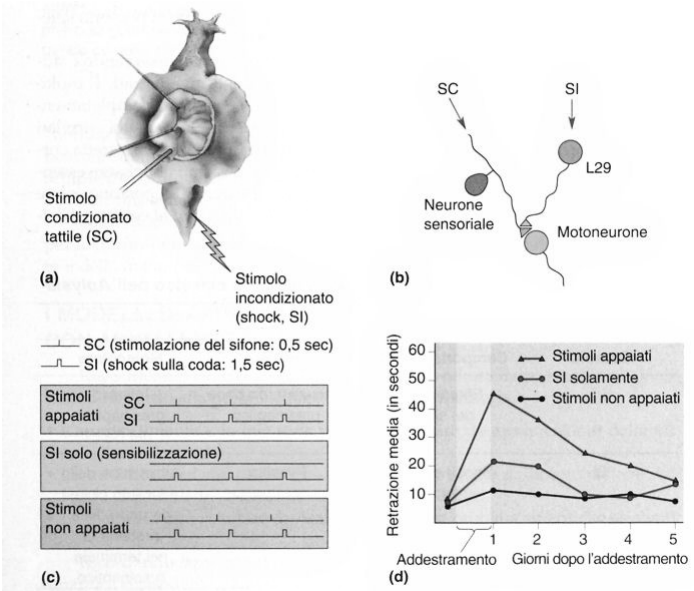
Sensibilizzazione

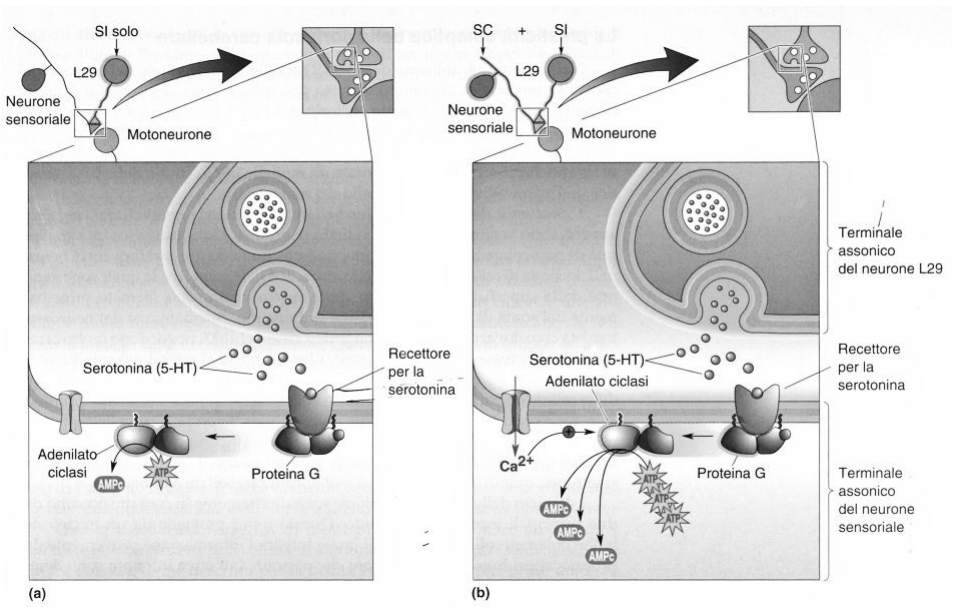


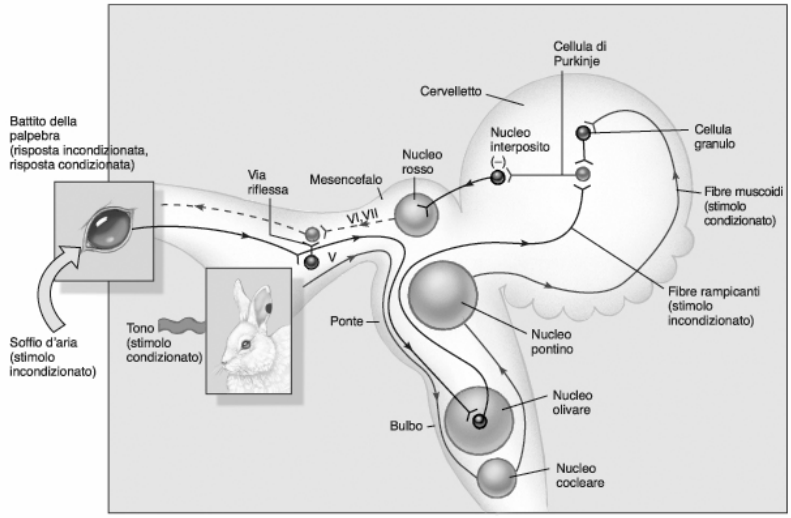




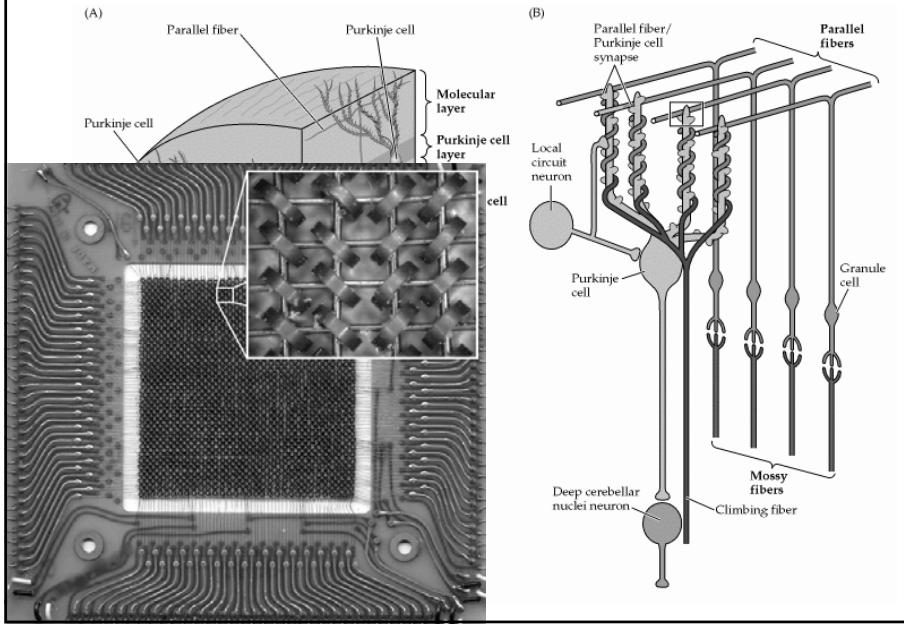
Apprendimento associativo



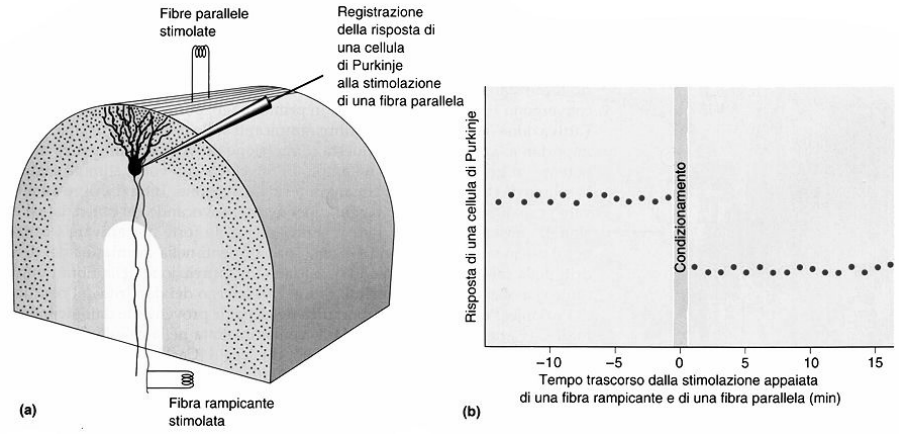

SI solo
L29
Neurone sensoriale
Motoneurone
Serotonina (5-HT)
Recettore per la serotonina
Adenilato ciclasi
AMPc
ATP
Proteina G
(a)
SC
+
SI
L29
Neurone sensoriale
Motoneurone
Terminale assonico del neurone L29
Serotonina (5-HT)
Adenilato ciclasi
Recettore per la serotonina
Ca^{2+}
Proteina G
Terminale assonico del neurone sensoriale
(b)


Cellula di Purkinje
Cervelletto
Battito della palpebra (risposta incondizionata, risposta condizionata)
Nucleo interposito
Cellula granulo
Nucleo rosso
Via riflessa
Mesencefalo
VI, VII
V
Fibre muscoidi (stimolo condizionato)
Fibre rampicanti (stimolo incondizionato)
Soffio d'aria (stimolo incondizionato)
Tono (stimolo condizionato)
Ponte
Nucleo pontino
Nucleo olivare
Bulbo
Nucleo cocleare

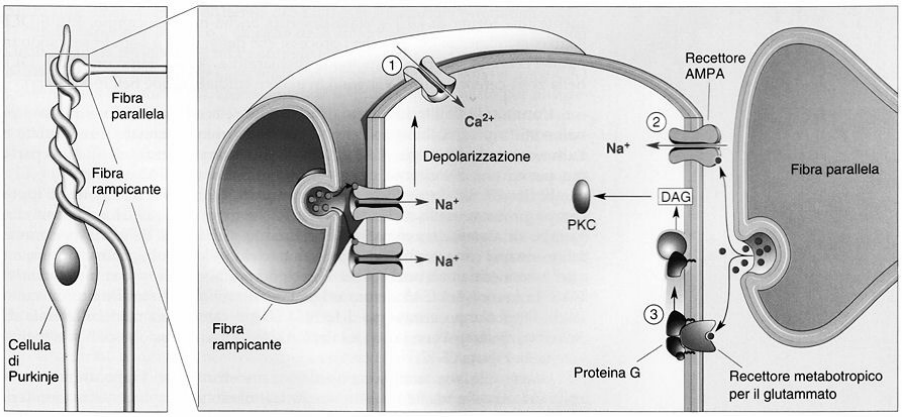
Apprendimento nel cervelletto



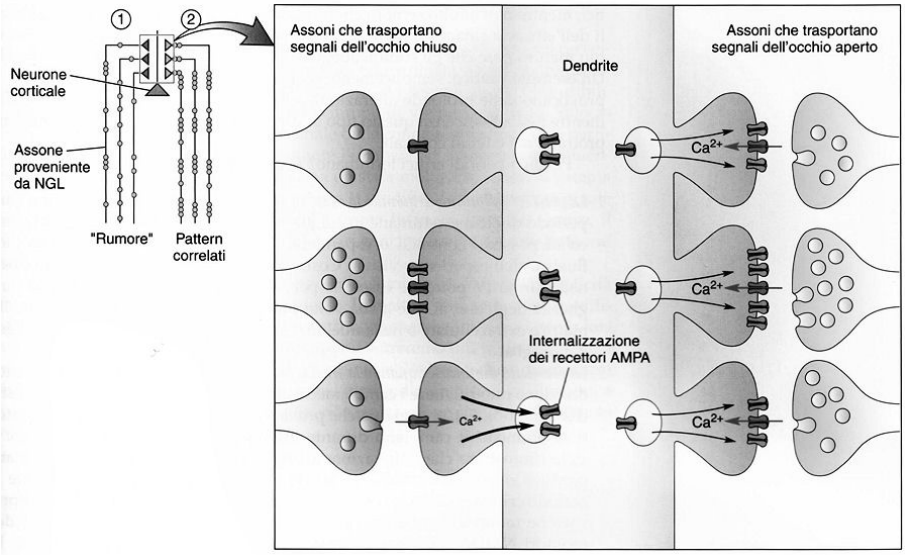
LTD cerebellare



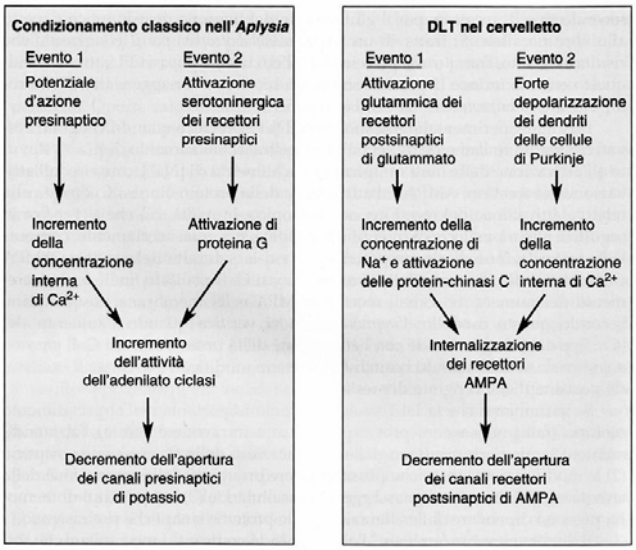
Meccanismo d'azione



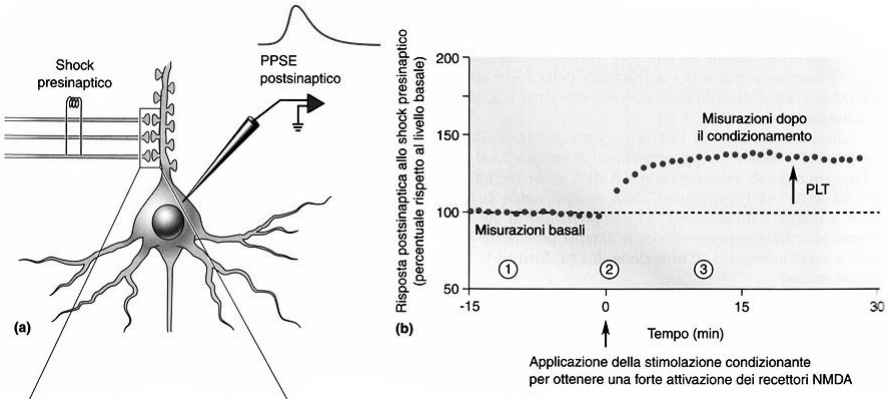
Internalizzazione dei recettori AMPA



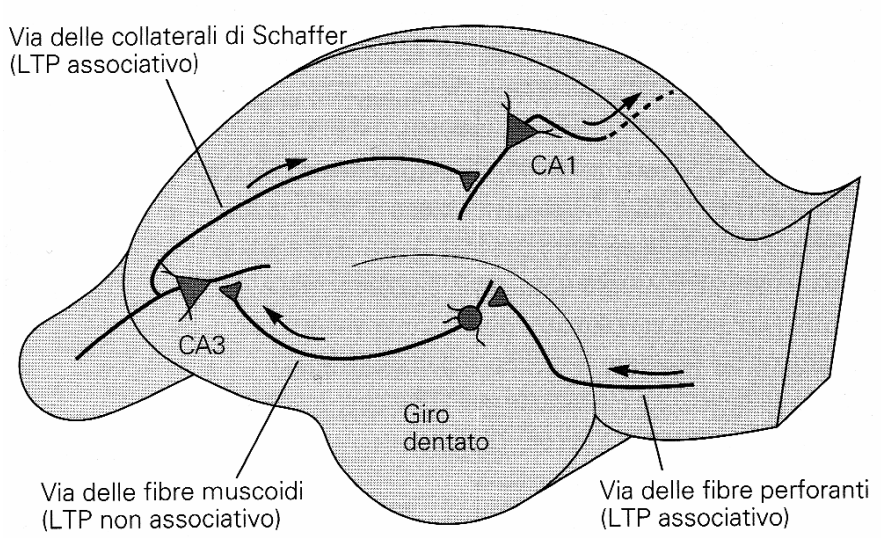
Meccanismi di plasticità



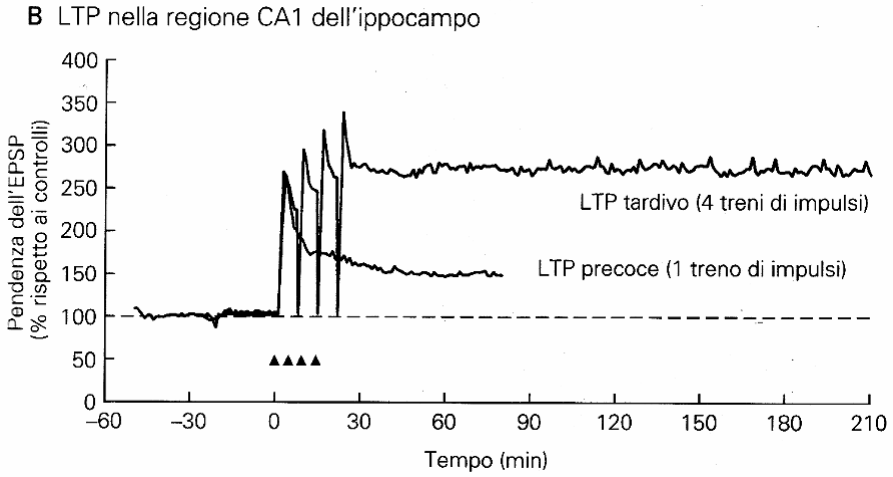
Long Term Potentiation



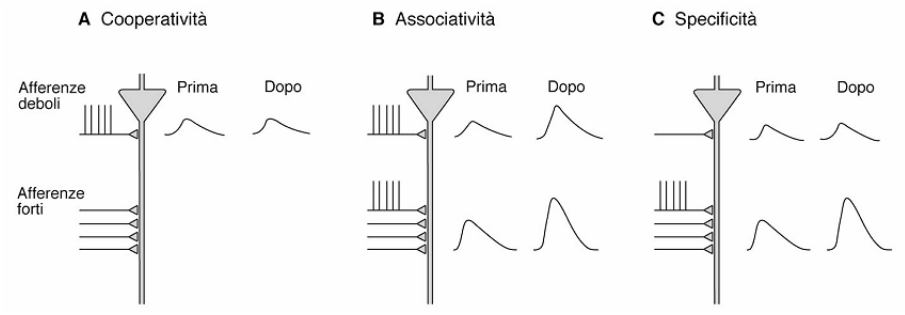
L'ippocampo



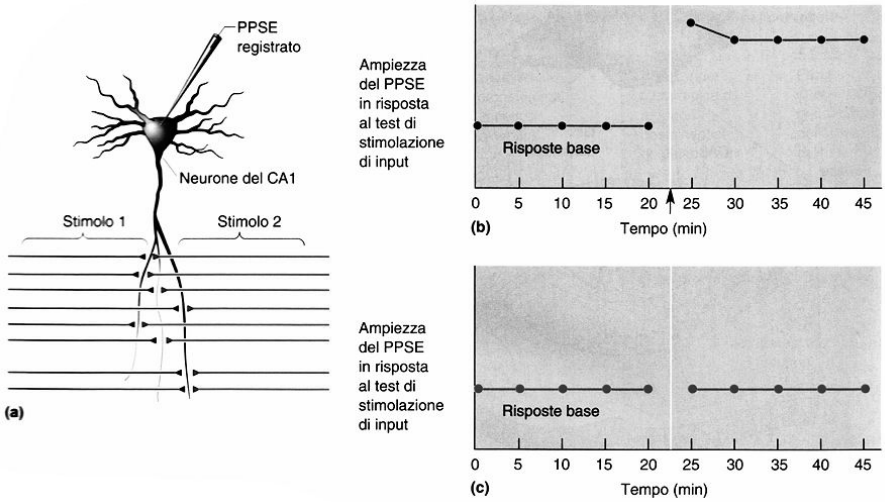
LTP associativo

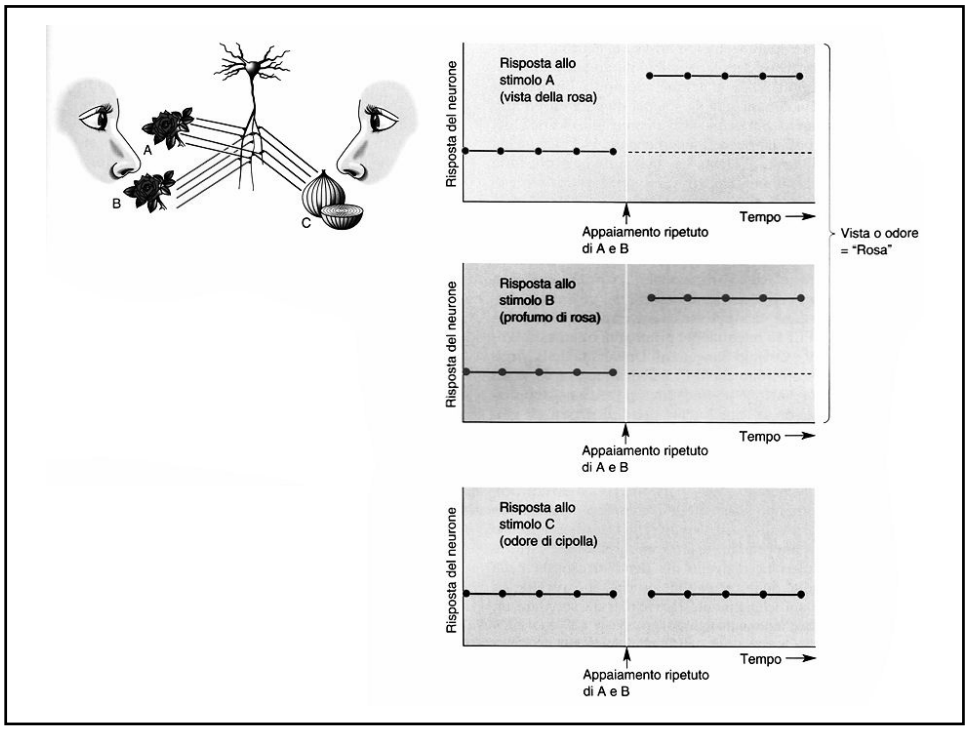


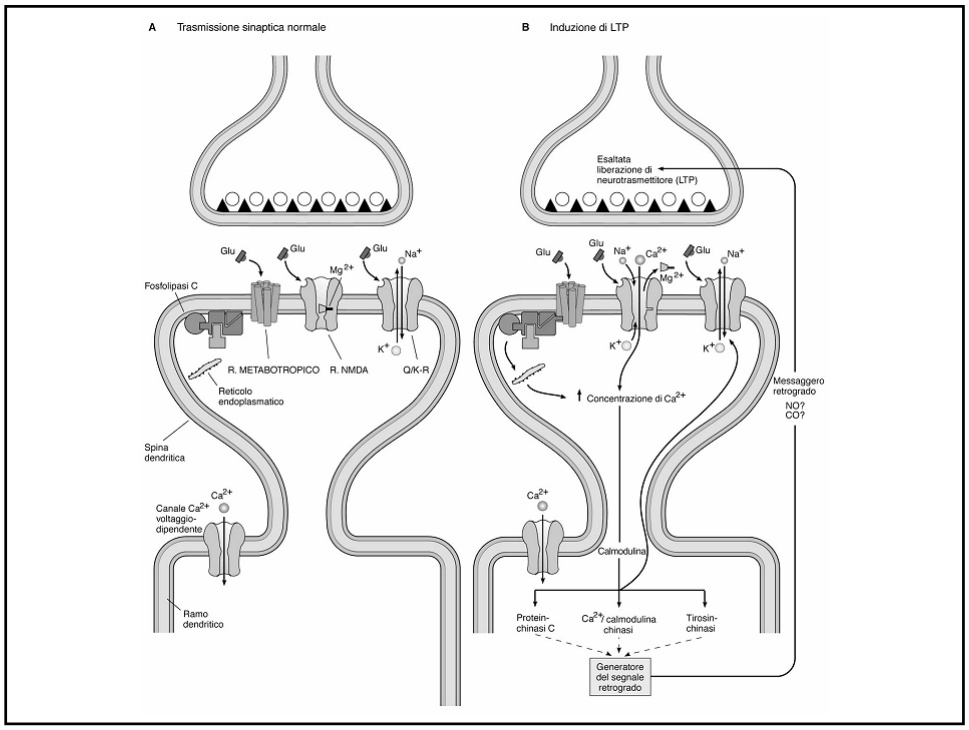
Caratteristiche dello stimolo

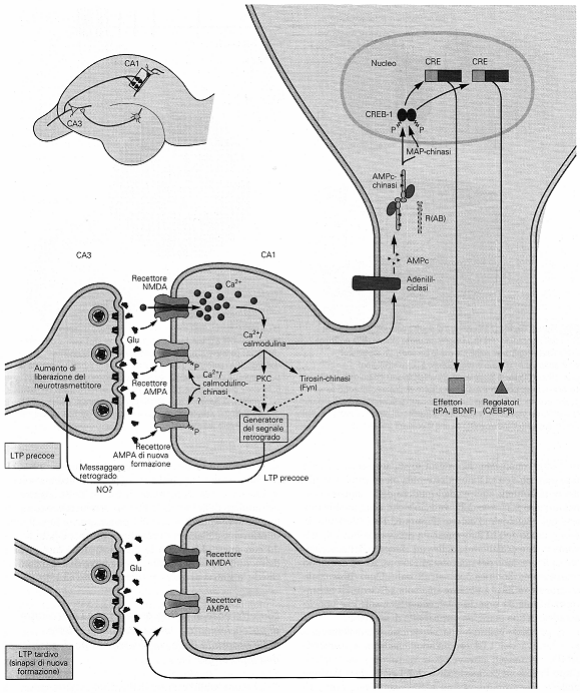


Long Term Potentiation

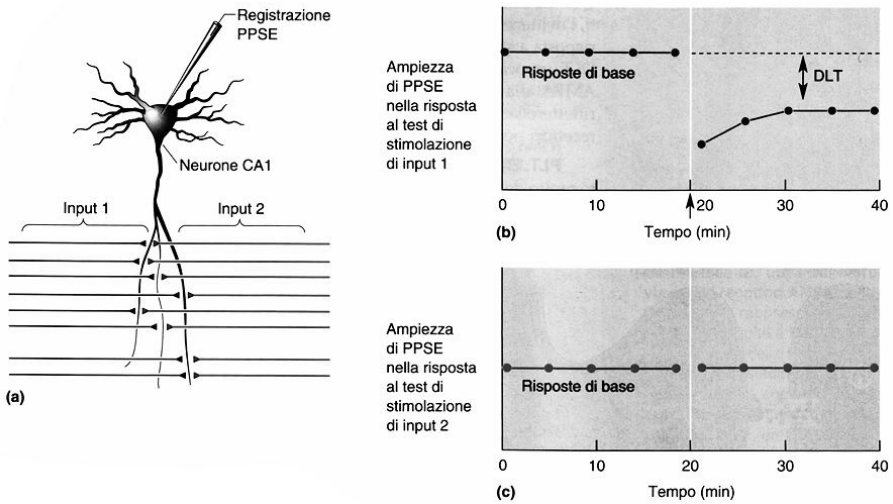
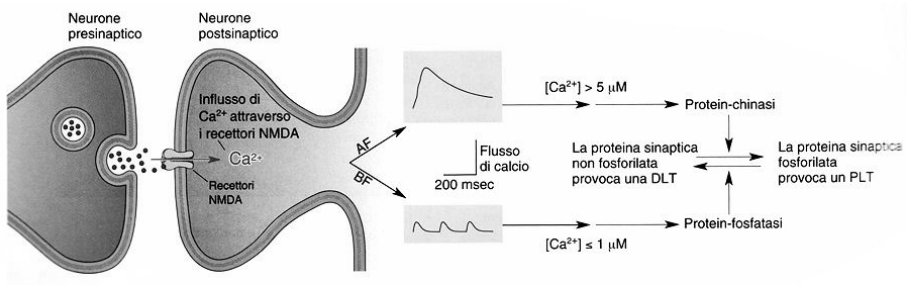



A
B
C
Risposta del neurone
Risposta allo stimolo A (vista della rosa)
Tempo
Appaiamento ripetuto di A e B
Vista o odore = "Rosa"
Risposta allo stimolo B (profumo di rosa)
Risposta allo stimolo C (odore di cipolla)


A Trasmissione sinaptica normale
B Induzione di LTP
Glu
Na+
Mg2+
Fosfolipasi C
R. METABOTROPICO
R. NMDA
Q/K-R
K+
Reticolo endoplasmatico
Spina dendritica
Canale Ca2+ voltaggio-dipendente
Ca2+
Ramo dendritico
Esaltata liberazione di neurotrasmettitore (LTP)
Concentrazione di Ca2+
Messaggero retrogrado
NO?
CO?
Calmodulina
Protein-chinasi C
Ca2+/calmodulina chinasi
Tirosin-chinasi
Generatore del segnale retrogrado



Long term depression



Induzione LTP/LTD