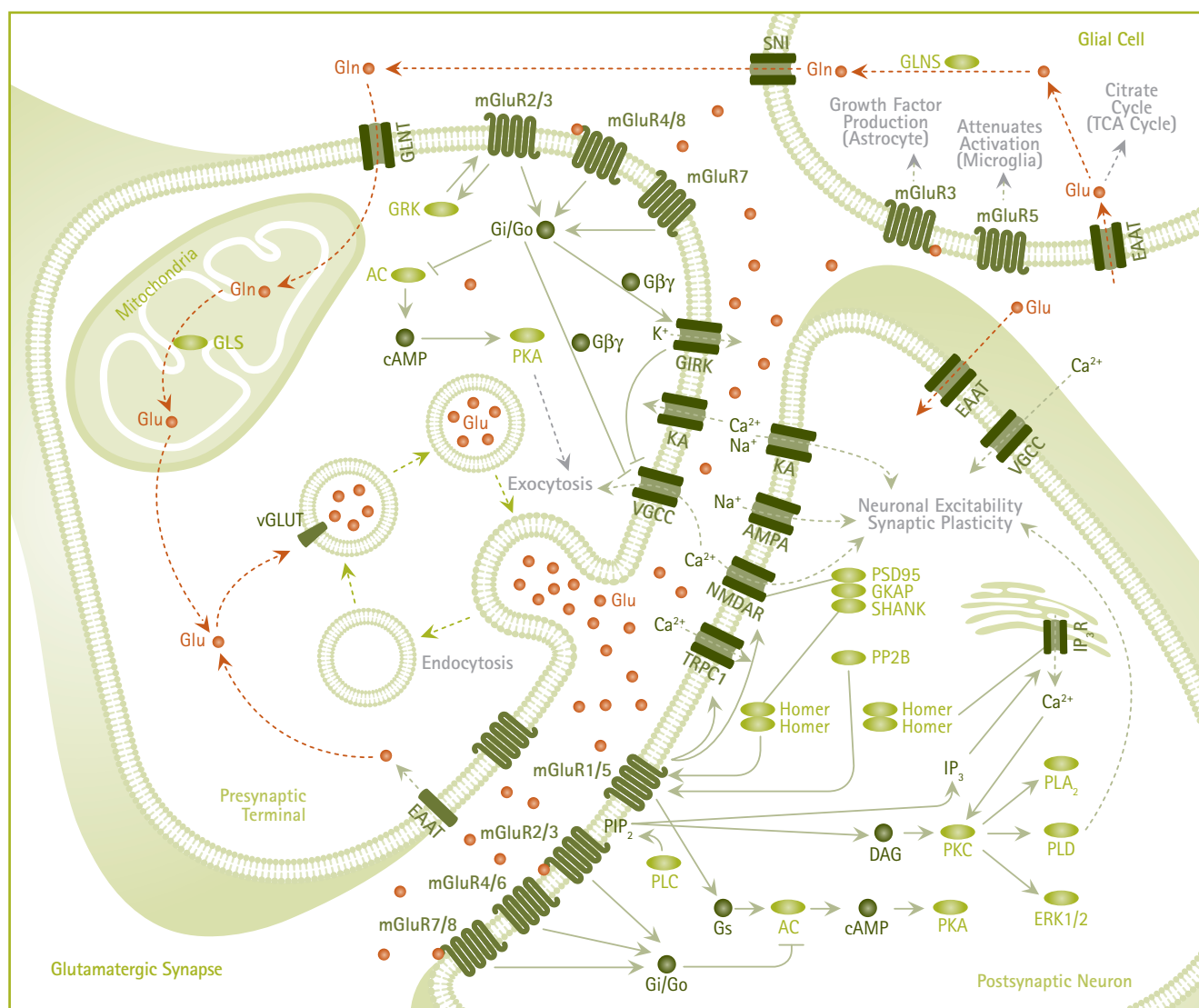


Pathways and Biomarkers of Glutamatergic Synapse



Glutamate is an excitatory neurotransmitter found in the synaptic vesicles of glutamatergic synapses. The post-synaptic neurons in these synapses contain ionotropic and metabotropic glutamate receptors. Glutamate binds to AMPA (α -amino-3-hydroxy-5-methylisoxazole-4-propionic acid) subtype glutamate receptors, leading to sodium influx into the post-synaptic cell and resulting in neuronal excitability and synaptic transmission. The NMDA (N-methyl-d-aspartate) subtype glutamate receptors, on the other hand, regulate synaptic plasticity, and can influence learning and memory. The metabotropic g-protein coupled mGluRs modulate downstream calcium signaling pathways and indirectly influence the synapse's excitability. The synaptic architecture includes intracellular scaffolding proteins (PSD-95, GRIP), intercellular cell adhesion molecules (NCAMs, N-Cadherins), and a variety of signaling proteins (CaMKII/PKA, PP1/PP2B). Processes critical for synaptic transmission and plasticity are influenced by these molecules and their interactions. When the function of these molecules is disrupted, it leads to synaptic dysfunction and degeneration, and can contribute to dementia as seen in Alzheimer's disease.

A Selection of Tools for Glutamatergic Research

For a complete listing of our reagents for synaptic biology visit us at:

www.merckmillipore.com/neuroscience

Description	Cat. No.
Antibodies	
Anti-GluR2, Extracellular, clone 6C4	MAB397
Anti-GluR1-NT (NT), clone RH95	MAB2263
Anti-GluR1	AB1504
Anti-GluR1, clone C3T, Rabbit Monoclonal	04-855
Anti-GluR1 Rabbit pAb	PC246
Anti-GluR2	AB1768-I
Anti-GluR 2 and 3	AB1506
Anti-phospho-GluR1 (Ser845), clone EPR2148, Rabbit Monoclonal	04-1073
Anti-GluR2/3	07-598
Anti-GluR4	AB1508
Anti-GluR3, clone 3B3	MAB5416
Anti-NMDAR1, Rabbit Monoclonal	AB9864
Anti-NMDAR1, CT	05-432
Anti-NMDAR2B	AB1557P
Anti-NR2A	07-632
Anti-NR2B	06-600
Anti-NMDAR1, clone 54.1	MAB363
Anti-NMDAR2A	AB1555P
Anti-NMDAR1, clone 1.17.2.6, Rabbit Monoclonal	AB9864R
Anti-phospho NMDAR2B (Tyr1472)	AB5403
Anti-NMDAR2B, CT	MAB5778
Anti-GluR6/7, clone NL9, Rabbit Monoclonal	04-921
Anti-KA2/GRIK5 (Kainate Receptor)	06-315
Anti-Glutamate Receptor 5, 6, 7, clone 4F5	MAB379
Anti-GluR5	07-258
Anti-Glutamate Receptor Delta 1/2	AB2285
Anti-Glutamate Transporter, Glial	AB1783
Anti-Glutamate Transporter, neuronal	AB1520

Description	Cat. No.
Anti-Excitatory Amino Acid Transporter (GLT-1) Rabbit pAb	PC154
Anti-mGluR1	07-617
Anti-mGluR2/3	06-676
Anti-mGluR4	AB15097
Anti-mGluR5, clone N75/33	MABN540
Anti-mGluR7	07-239
Anti-mGluR8	AB10556
Anti-Glutamate	AB133
Anti-Glutamate	MAB5304
Anti-Glutamate (No Glutaraldehyde)	AB5018
Anti-Glutamate Decarboxylase 65 & 67	AB1511

Glutamate Agonists & Antagonists

mGluR5 Antagonist, MTEP	445874
(+)-MK 801 Maleate	475878
(2R,4R)-APDC ((2R,4R)-4-Aminopyrrolidine-2,4-dicarboxylate)	504472
L-701,324 (7-Chloro-4-hydroxy-3-(3-phenoxy)phenyl-2(1H)-quinolinone)	504481
CP-101,606	504523

Kits and Assays

Neurite Outgrowth Assay Plus Kit (3 µm)	NS230
ChemiSCREEN™ Human Recombinant mGlu2 Calcium-Optimized Stable Cell Line	HTS146C
ChemiSCREEN™ Membrane Preparation Recombinant Human mGlu2	HTS146M
Ready-to-Assay™ mGlu2 Metabotropic Glutamate Receptor Frozen Cells	HTS146RTA

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► TECHNOLOGY HIGHLIGHT

AXIS® Axon Investigation System

An advanced platform for spatially controlled neurite outgrowth and analysis

AXIS® Axon Isolation Device is a two chamber system, each composed of two wells and an interconnected channel, separated by a set of microgrooves. The hydrostatic pressure formed by volume differential between chambers induces fluidic isolation of the solution on the low volume side of the device.



Highlights

- Organize, visualize, and characterize neuronal cell culture.
- Detect protein expression with better spatial resolution.
- Isolate cell bodies from axons through fluidics.
- Reduce time and expense through optimized protocols and QC validated products.
- Attain superior performance over in-house protocols.
- Optically clear transparent, inert, non-toxic, and nonflammable polymer mold.

The AXIS® Axon Isolation Device comes in these formats:

150 µm: AX15010TC, AX15005PB

450 µm: AX45005TC, AX45010TC, AX45005PB

900 µm: AX90010TC

6-well: AX50010TC, AX50005PB



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