event_id,neurochemical_domain,molecular_event,primary_compartment,acute_synaptic_effect,circuit_level_signature,expected_readout,clinical_relevance_context,evidence_tier,citation_key,teaching_level,revision_status
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NEUROBIOC-0002,Glutamatergic Signaling,AMPA receptor insertion following LTP induction,Postsynaptic density,Increased fast excitatory transmission,Higher gain in engaged microcircuits,Upward shift in AMPA-mediated current,Plasticity-related adaptation in cortical/hippocampal networks,Textbook,PURVES2018,Foundational,stable
NEUROBIOC-0003,GABAergic Inhibition,Reduced GABA-A receptor conductance,Postsynaptic soma/proximal dendrite,Weakened inhibitory shunt,Elevated excitability and synchronization risk,Lower IPSC amplitude and shorter inhibitory control window,Hyperexcitability-prone network states,Textbook,BEAR2020,Foundational,stable
NEUROBIOC-0004,Chloride Homeostasis,KCC2 downregulation with intracellular Cl- accumulation,Neuron membrane transport system,GABA reversal potential shifts depolarizing,Inhibition-to-excitation polarity drift,Depolarizing GABA response in patch recordings,Developmental and injury-related inhibitory instability,Review,KAILA2014,Intermediate,stable
NEUROBIOC-0005,Dopaminergic Modulation,D1 receptor cAMP/PKA amplification in striatal pathway,Medium spiny neuron intracellular signaling,Facilitated excitatory integration in D1-expressing cells,Bias toward direct-pathway output,Increased phosphorylation of DARPP-32 targets,Action selection and reinforcement signaling contexts,Textbook,NESTLER2015,Intermediate,stable
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NEUROBIOC-0008,Cholinergic Signaling,Nicotinic receptor activation increases presynaptic release probability,Presynaptic terminal,Enhanced transmitter release at target synapses,State-dependent amplification of attention circuits,Increased miniature event frequency,Attention/arousal-linked neuromodulation frameworks,Textbook,PURVES2018,Foundational,stable
NEUROBIOC-0009,Serotonergic Modulation,5-HT1A receptor Gi signaling reduces neuronal firing

bias,Soma and axon initial segment,Reduced excitability tone,Shifted network set-point under serotonergic tone,Lower spontaneous firing rate,Stress-affect regulatory circuit models,Review,ALBERT2019,Intermediate,stable
NEUROBIOC-0010,Energy Metabolism,Astrocyte-neuron lactate support during high activity,Astrocyte-neuron metabolic interface,Supports sustained synaptic transmission,Stabilized firing during demand peaks,Preserved firing under glucose stress with lactate availability,Activity-dependent metabolic resilience in neural tissue,Review,MAGISTRETTI2018,Intermediate,stable
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NEUROBIOC-0013,Membrane Electrophysiology,Voltage-gated Na+ channel availability sets AP upstroke reliability,Axon initial segment and nodes,Controls spike initiation robustness,Alters timing precision across projection pathways,Shift in threshold and dV/dt max,Conduction fidelity and excitability phenotypes,Textbook,BEAR2020,Foundational,stable
NEUROBIOC-0014,Membrane Electrophysiology,Delayed-rectifier K+ current governs repolarization window,Axon and soma,Shapes refractory period and spike width,Controls high-frequency coding capacity,AP half-width and interspike interval changes,Frequency coding and fatigue susceptibility contexts,Textbook,BEAR2020,Foundational,stable
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