

List of Abbreviations

ACM	: Astrocyte Conditioned Media
ADC	: Acquired Immune Deficiency Syndrome Dementia Complex
ADP	: Adenosine Diphosphate
AIDS	: Acquired Immune Deficiency Syndrome
AIF	: Apoptosis Inducing Factor
AMP	: Adenosine Monophosphate
AMPA	: α -Amino-3-Hydroxy-5-Methyl-4-Isoxazole Propionic Acid Receptor
ANI	: Asymptomatic Neurocognitive Impairment
APAF	: Apoptosis Protease Activating Factor-1
AQP4	: Aquaporin4
ART	: Anti-Retroviral Therapy
ATP	: Adenosine Triphosphate
A β	: Amyloid Beta
BAPTA-AM	: 1,2-Bis(o-Aminophenoxy)ethane-N,N,N',N'-tetraacetic Acid Aceto-Methyl Ester
BBB	: Blood-brain Barrier
BBG	: Brilliant Blue G
BCA	: Bicinchoninic Acid
BDNF	: Brain-Derived Neurotrophic Factor
bFGF	: Basic Fibroblast Growth Factor
BMEC	: Brain Microvascular Endothelial Cells
BSA	: Bovine Serum Albumin
BT	: Beta Tubulin
BzATP	: 2'(3')-O-(4-benzoylbenzoyl) Adenosine Triphosphate
[Ca ²⁺] _i	: Intracellular Calcium Ions
CaCl ₂	: Calcium Chloride
cAMP	: Cyclic Adenosine Monophosphate
CBX	: Carbenoxolone
cART	: Combined Antiretroviral Therapy
CBB	: Coomassie Brilliant Blue
CCD	: Charge Couple Device
CCL2	: Chemokine (C-C motif) Ligand 2
CCL5	: Chemokine (C-C Motif) Ligand 5
CCR5	: Chemokine (C-C motif) Receptor 5
CD4	: Cluster of Differentiation 4
cDNA	: Complementary Deoxyribose Nucleic Acid
cGMP	: Guanosine 3,5-cyclic Monophosphate
CNS	: Central Nervous System
CNTF	: Ciliary Neurotrophic Factor
CSF	: Cerebrospinal Fluid
Cx	: Connexin
CXCR4	: C-X-C Chemokine Receptor Type 4
DAPI	: 4,6-diamidino-2-phenylindole
DCFDA	: 7'-Dichlorodihydrofluorescein Diacetate

DDX1	: DEAD (Asp-Glu-Ala-Asp) Box Helicase 1
DEPC	: Diethyl Pyrocarbonate
DKK-1	: Dickkopf related protein-1
DNA	: Deoxyribonucleic Acid
dNTP	: Deoxyribo Nucleoside Triphosphates
DRG	: Dorsal Root Ganglion
DMF	: Dimethyl Formamide
EAA	: Excitatory Amino Acid
EAAT1	: Excitatory Amino Acid Transporter1
EDTA	: Ethylene Diamine Tetraacetic Acid
EGF	: Epidermal Growth Factor
EGTA	: Ethylene Glycol Tetraacetic Acid
ELISA	: Enzyme-Linked Immunosorbent Assay
Env	: Envelope protein
ER	: Endoplasmic Reticulum
ERK1/2	: Extracellular-Signal-Regulated Kinase 1/2
EtBr	: Ethidium Bromide
FBS	: Fetal Bovine Serum
FI	: Fluorescence Intensity
Fluo-3AM	: Fluo-3 Acetomethyl ester
GABA	: Gamma-Aminobutyric Acid
Gag	: Group-Specific Antigen
GAPDH	: Glyceraldehyde 3-phosphate dehydrogenase
GDNF	: Glial Cell Line-Derived Neurotrophic Factor
GFAP	: Glial Fibrillary Acidic Protein
GLT-1	: Glutamate Transporter-1
GluR1	: Glutamate Receptor 1
gp	: Glycoprotein
GS	: Glutamine Synthase
GSK3 β	: Glycogen Synthase Kinase-3 beta
H3	: Histone 3
HAART	: Highly Active Anti-Retroviral Therapy
HAD	: HIV-Associated Dementia
HAND	: HIV-Associated Neurocognitive Disorders
HBSS	: Hank's Buffer Salt Solution
HCl	: Hydrogen Chloride
HDAC	: Histone Deacetylases
HEK293	: Human Embryonic Kidney 293
HEPES	: 2-[4-(2-hydroxyethyl)piperazin-1-yl]ethanesulfonic acid
HIV	: Human Immunodeficiency Virus
HIVE	: Human Immunodeficiency Virus Encephalitis
hNPCs	: Human Neural Precursor Cells
HRP	: Horse Radish Peroxidase
HTLV	: Human T-cell Lymphotropic Virus
ICAM-1	: Intercellular Adhesion Molecule-1
IFN γ	: Interferon Gamma

IGF	: Insulin-like Growth Factor
IHDS	: International Human Immunodeficiency Virus Dementia Scale
I κ B	: Inhibitor of kappa B
IL	: Interleukin
iNOS	: Inducible Nitric Oxide Synthase
IP-10	: Interferon gamma Induced Protein 10
IP3	: Inositol triphosphate
IRIS	: Immune Reconstitution Inflammatory Syndrome
JC-1	: 5,5',6,6'-tetrachloro-1,1',3,3'-tetraethylbenzimidazolylcarbocyanine iodide
JNK	: c-Jun NH ₂ -terminal Kinase
KCl	: Potassium Chloride
KN-62	: 1-[N, O-Bis (5-isoquinolinesulfonyl)-N-methyl-L-tyrosyl]-4-phenylpiperazine
LIF	: Leukaemia Inhibitory Factor
LRP	: Lipoprotein Receptor-related Protein
LTP	: Long- Term Potentiation
LTR	: Long-terminal Region
LY	: Lucifer Yellow
M1 receptor	: Muscarinic receptor
MAPK	: Mitogen-Activated Protein Kinase
MCP-1	: Monocyte Chemoattractant Protein-1
MDM	: Monocyte-Derived Macrophages
MeATP	: Methyl Adenosine Triphosphate
MEM	: Minimum Essential Medium
MG-6	: Microglial-6
MgCl ₂	: Magnesium Chloride
MHC	: Major Histocompatibility Complex
MIP	: Macrophage Inflammatory Protein
MMPs	: Matrix Metalloproteinases
MND	: Mild Neurocognitive Disorders
mRNA	: messenger Ribonucleic Acid
MTT	: 3-(4,5-Dimethylthiazol-2-yl)-2,5-Diphenyltetrazolium Bromide
MVC	: Maraviroc
Na ⁺ /H ⁺	: Sodium Hydrogen Exchanger
Na ₃ VO ₄	: Sodium orthovanadate
NaCl	: Sodium Chloride
NAD	: Nicotinamide Adenine Dinucleotide
Nef	: Negative Regulator Factor
NFATc1	: Nuclear Factor of Activated T cells Complex 1
NF- κ B	: Nuclear Factor-Kappa B
NMDAR	: N-Methyl-D-Aspartate Receptor
nNOS	: Neuronal Nitric Oxide Synthase
NP40	: Nonyl Phenoxyethylpolyethoxyl Ethanol
NPC	: Neural Stem/Progenitor cells
NRE	: Negative Response Element

Nrf-2	: Nuclear Factor Erythroid-Derived 2- Related Factor 2
NSF	: Neuronal Survival Factor
NT	: Neurotrophin
oxATP	: oxidized Adenosine Triphosphate
Panx	: Pannexin
PAF	: Platelet Activating Factor
PBS	: Phosphate Buffer Saline
PBS-T	: Phosphate Buffer Solution with Tween 20
PCR	: Polymerase Chain Reaction
PC-12	: Pheochromocytoma-12
PDGF	: Platelet Derived Growth Factor
PDL	: Poly-D-Lysine
pERK	: Phospho-Extracellular-Signal-Regulated Kinase
PFA	: Paraformaldehyde
PKC	: Protein Kinase C
PNS	: Peripheral Nervous System
Pol	: Polymerase Enzyme
PPADS	: Pyridoxalphosphate-6-azophenyl-2',4'-disulfonic acid
PSD-95	: Postsynaptic Density Protein-95
pyk2	: Protein Tyrosine Kinase 2
RBA-2	: Rat Brain Astrocytes-2
RANTES	: Regulated on Activation, Normal T Expressed and Secreted
Rev	: Regulator of Virion
RNA	: Ribonucleic Acid
RNAi	: Interference Ribonucleic Acid
ROI	: Region of Interest
ROS	: Reactive Oxygen Species
RRE	: Rev Response Element
RT	: Room Temperature
RT-PCR	: Reverse Transcriptase Polymerase Chain Reaction
SC	: Spinal Cord
SD	: Standard Deviation
SDS	: Sodium Dodecyl Sulfate
SEM	: Standard Error of Mean
SGC	: Satellite Glial Cells
siRNA	: Small Interfering RNA
SOD-1	: Superoxide Dismutase-1
SVZ	: Sub-Ventricular Zone
Tat	: Transactivator of Transcription
TBST	: Tris Buffered Saline-Tween 20
TCF 4	: Transcription Factor 4
TGF	: Transforming Growth Factor
TIMP	: Tissue Inhibitors of Metalloproteinase
TLR4	: Toll-Like Receptor-4
TM	: Trans-Membrane
TNF- α	: Tumour Necrosis Factor-alpha

Tuj-1	: Beta III tubulin
TUNEL	: Terminal Deoxynucleotidyltransferase-Mediated dUTP Nick End Labelling
UDP	: Uridine Diphosphate
UTP	: Uridine Triphosphate
UNAIDS	: The United Nation Joint Programme on HIV/AIDS
UV	: Ultra Violet
VCAM-1	: Vascular Cell Adhesion Molecule-1
Vif	: Viral Infectivity Factor
Vpr	: Viral Protein R
Vpu	: Viral Protein U
WT	: Wild Type
Ca ²⁺	: Calcium ion
e-Ca ²⁺	: Extracellular calcium ions
Cu ²⁺	: Cupric ion
K ⁺	: Potassium ion
Mg ²⁺	: Magnesium ion
Na ⁺	: Sodium ion
Na ₃ VO ₄	: Sodium orthovanadate
Zn ²⁺	: Zinc ion
C	: Celsius
bp	: Base Pair
g	: Standard gravity
hr	: hour
kDa	: kilodalton
min	: minute
mg	: Milligram
mM	: Millimolar
nM	: nanomolar
ng	: nanogram
nm	: nanometre
pg	: pictogram
ml	: millilitre
α	: alpha
β	: beta
γ	: gamma
κ	: kappa
μ	: micron
μm	: micrometre