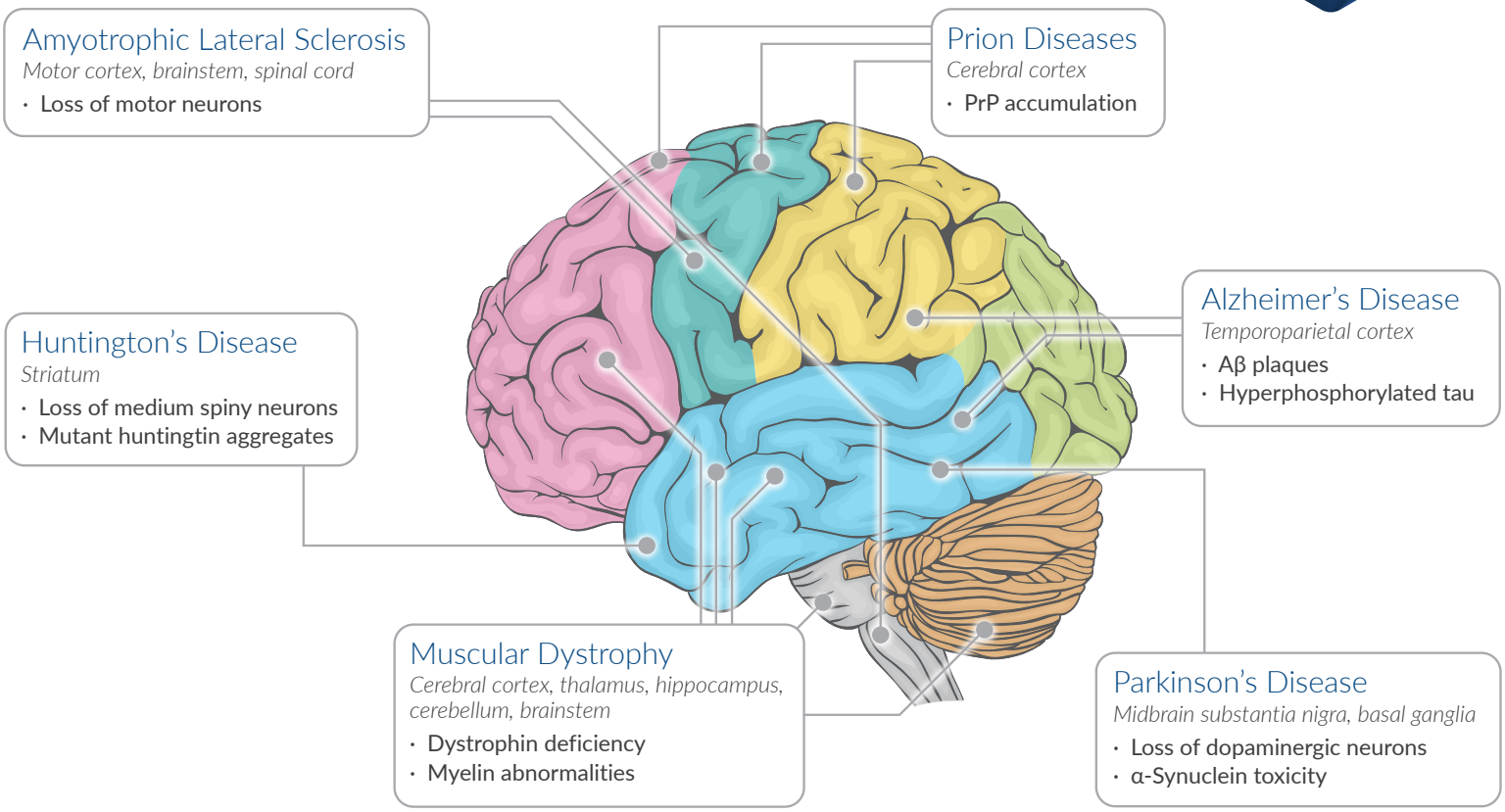
Neurodegenerative Disorders

Cayman Chemical offers a broad collection of tools to study the mechanisms underlying various neurodegenerative disorders. This includes key compounds, peptides, antibodies, and assay kits used to research the disease pathways of Alzheimer's disease, Parkinson's disease, amyotrophic lateral sclerosis (ALS), muscular dystrophy, Huntington's disease, and prion diseases.



Alzheimer's Disease

Cayman offers compounds that target amyloid-β (Aβ) peptide production and aggregation, prevent tau protein phosphorylation and modification, and block cholinesterase (AChE and BuChE) activity and excessive glutamate excitotoxicity.

Amyloid-β Antibody, Peptides, and Fluorescent Probes

Item No.	Product Name	Summary
11610	Amyloid-β Monoclonal Antibody (Clone 6C3, MOAB-2)	**Host:** Mouse · **Species Reactivity:** (+) Human · **Applications:** ELISA, ICC, IP, WB
10229	Amyloid-β (1-8, A2V) Peptide	Model peptide (dominant negative mutant) for design of amyloid formation inhibitors
20574	Amyloid-β (1-42) Peptide	A 42-residue Aβ protein fragment
21617	Amyloid-β (1-40) Peptide (human)	A 40-residue Aβ protein fragment
19814	CRANAD 2	A near-infrared Aβ fluorescent probe (K_d = 38 nM)
20476	Methoxy-X04	A brain-permeable fluorescent probe for Aβ
18520	NIAD-4	A fluorescent probe for Aβ (K_i = 10 nM)

View additional inhibitors of Aβ at www.caymanchem.com

BACE and γ-Secretase Inhibitors

Item No.	Product Name	Summary
11001	(R,S)-Anatabine	Reduces BACE transcription and diminishes Aβ production, lowering the amount of Aβ1-40 and Aβ1-42 in SHSY-5Y cells
14000	Auraptene	Inhibits BACE1 activity (IC_{50} = 345.1 µM)
15579	Compound E	Inhibits γ-secretase, blocking the cleavage of both APP and Notch carboxyl-terminal fragments (IC_{50}s = ~0.3 nM)
13197	DAPT	Inhibits γ-secretase, blocking the production of total Aβ and Aβ42 in human primary neuronal cultures (IC_{50}s = 115 and 200 nM, respectively)
14627	DBZ	Inhibits dipeptidic γ-secretase, demonstrating anti-Alzheimer activity in an APP transgenic mouse model by reducing Aβ40 levels
21599	LY2886721	Selectively inhibits BACE (IC_{50} = 20 nM for recombinant hBACE1)

View additional inhibitors of BACE and γ-Secretase at www.caymanchem.com

Tau Phosphorylation Inhibitors

Item No.	Product Name	Summary
16676	AZD 1080	Inhibits hippocampal tau phosphorylation and reverses cognitive deficits induced by the NMDA receptor antagonist (+)-MK-801 (Item No. 10009019)
15578	CHIR98014	Inhibits GSK3α and GSK3β (IC_{50}s = 0.65 and 0.58 nM, respectively), reducing tau phosphorylation in rat brains
14704	GSK3β Inhibitor VIII	Inhibits tau phosphorylation (IC_{50} = 2.7 µM) at a GSK3-specific site (Ser^{396}) in cells
13314	Indirubin-3'-monoxime	Inhibits GSK3β (IC_{50} = 22 nM), preventing tau phosphorylation
13237	Thiamet G	Selectively inhibits O-GlcNAcase (K_i = 21 nM) and blocks phosphorylation of tau protein

Glutamate and Acetylcholine Signaling Inhibitors

Item No.	Product Name	Summary
13245	Donepezil	Reversibly inhibits AChE which readily crosses the blood-brain barrier to reduce the breakdown of acetylcholine
14184	Memantine (hydrochloride)	Blocks the NMDA open-channel (K_i = 1.2 µM at -60 mV); uncompetitive antagonist
14270	Rivastigmine (tartrate)	Irreversibly inhibits AChE and BuChE (IC_{50}s = 4.15 µM and 37 nM, respectively)
70240	Tacrine (hydrochloride)	Inhibits both AChE and BuChE (IC_{50}s = 31 and 26.5 nM, respectively)

Parkinson's Disease

Cayman offers dopamine-sparing compounds, anticholinergics, sirtuin inhibitors, and blockers of mutant leucine-rich repeat kinase 2 (LRRK2) all of which have been identified as therapeutic strategies to address the decline of dopamine-generating cells in the substantia nigra.

Dopamine-Sparing Compounds and Anticholinergics

Item No.	Product Name	Summary
16094	(−)-Apomorphine (hydrochloride)	A non-selective dopamine receptor agonist with anti-parkinsonian and neuroprotective actions
16214	Benztropine (mesylate)	A centrally acting M_1 mAChR antagonist (K_i = 0.59 nM in rat); inhibits dopamine uptake through the dopamine transporter (K_i = 160 nM)
13248	L-DOPA	A metabolic precursor of dopamine that crosses the blood-brain barrier
14153	Entacapone	A peripherally acting COMT inhibitor (K_i = 145 nM); decreases 3-OMD levels in rat brain and prolongs L-DOPA bioavailability
15622	GBR 12909 (hydrochloride)	A dopamine uptake inhibitor *in vivo*, leading to consequent stimulation of dopamine receptors
17422	Raclopride	A selective dopamine D_2 and D_3 receptor antagonist (K_is = 1.8 and 3.5 nM, respectively)
11982	SB 277011A (hydrochloride)	A selective dopamine D_3 receptor antagonist (pK_i = 8.0)
15631	SCH 23390 (hydrochloride)	A selective dopamine D_1 and D_5 receptor antagonist (K_is = 0.2 and 0.3 nM, respectively)

View additional dopamine sparing compounds and anticholinergics at www.caymanchem.com

α-Synuclein Toxicity Inhibitors

Item No.	Product Name	Summary
13145	AGK2	Selectively inhibits SIRT2 (IC_{50} = 3.5 µM); rescues dopamine neurons from α-synuclein toxicity
16214	Benztropine (mesylate)	An aldehyde product of the oxidative deamination of dopamine by MAO that can oligomerize and precipitate α-synuclein
15046	R-(−)-Deprenyl (hydrochloride)	Prevents apoptosis induced by α-synuclein

LRRK2 Inhibitors

Item No.	Product Name	Summary
14052	Diapocynin	Reverses motor coordination deficits in the $LRRK2^{R1441G}$ mouse model of early Parkinson's disease
14603	GSK2578215A	Inhibits both wild-type and G2019S mutant of LRRK2 (IC_{50}s = 8.9 and 10.1 nM, respectively)
22905	JH-II-127	A selective LRRK2 inhibitor (IC_{50}s = 2.2, 6.6, and 47.7 nM for G2019S-mutant, wild-type, and A2016T-mutant LRRK2, respectively)
18094	LRRK2-IN-1	Inhibits both wild-type and G2019S-mutant LRRK2 (IC_{50}s = 13 and 6 nM, respectively)

Amyotrophic Lateral Sclerosis (ALS)

Cayman offers a select group of assay kits, antibodies, and inhibitors to study many of the targets identified as potential factors leading to the development of ALS. This includes inhibitors of NADPH oxidase and superoxide dismutase (SOD), as well as antagonists of prostaglandin D_2 (PGD_2) and glutamate receptors.

Inhibitors and Antagonists

Item No.	Product Name	Summary
14321	AEBSF (hydrochloride)	Prevents the activation of NADPH oxidase, an enzyme involved in ALS
11976	Apocynin	Inhibits the assembly of a functional NADPH oxidase complex
14832	Ibudilast	Inhibits PDE4 (IC_{50} = 54-239 nM), suppressing elaboration of mediators involved in inflammation
10009835	MK-0524	Selective DP_1 receptor antagonist (K_i = 0.57 nM); blocking PGD_2 and its receptor activity may be protective for motor neuron survival
14577	Riluzole (hydrochloride)	Blocks presynaptic release of glutamate, indirectly antagonizing glutamate receptors and inactivating neuronal voltage-gated Na^+ channels (ED_{50} = 2.3 µM)

SOD Antibodies

Item No.	Product Name
10011388	Cu/Zn SOD (human) Polyclonal Antibody
10011387	Cu/Zn SOD (rat) Polyclonal Antibody

Assay Kits

Item No.	Product Name
512031	Prostaglandin D_2 ELISA Kit
706002	Superoxide Dismutase Assay Kit

View additional assay kits at www.caymanchem.com

Muscular Dystrophy

Cayman offers small molecules to study dystrophin deficiency and the disruption of abnormal PGD_2 production *via* hematopoietic prostaglandin D synthase (H-PGDS), which is thought to be related to the expansion of muscle necrosis. Recombinant PGDS proteins and assays are also available.

Small Molecules

Item No.	Product Name	Summary
20316	21-desacetyl Deflazacort	Active glucocorticoid that demonstrates benefits in certain muscular dystrophies
20309	Ezutromid	An orally bioavailable upregulator of utrophin gene transcription; increases muscle function in dystrophin-deficient *mdx* mice
10134	HQL-79	A selective inhibitor of H-PGDS
16256	Prostaglandin D Synthase (hematopoietic-type) Inhibitor I	A selective blocker of H-PGDS (IC_{50}s = 0.7 and 32 nM in enzyme and cellular assays, respectively)

PGDS Proteins

Item No.	Product Name
10006593	Prostaglandin D Synthase (hematopoietic-type; human recombinant)
10006788	Prostaglandin D Synthase (lipocalin-type; human recombinant)

PGDS Assay Kits

Item No.	Product Name
10007684	Prostaglandin D Synthase (lipocalin-type; human) ELISA Kit
600007	Prostaglandin D Synthase (hematopoietic-type) FP-Based Inhibitor Screening Assay Kit - Green

View additional PGDS proteins at www.caymanchem.com

Huntington's Disease

Cayman offers compounds to investigate polyglutamate expansion and the accumulation of mutant huntingtin protein, which is thought to lead to degeneration of neurons in the striatum.

Small Molecules

Item No.	Product Name	Summary
14004	AK-7	A SIRT2 inhibitor that diminishes neuronal cell death induced by mutant huntingtin fragment
21177	C2-8	Inhibits polyglutamine-aggregation in Huntington's disease
14882	Cystamine (hydrochloride)	An orally available tissue transglutaminase inhibitor that is neuroprotective in mouse models of Huntington's disease
16946	7,8-Dihydroxyflavone	Improves motor function and extends survival in an animal model of Huntington's disease
17729	Ferrostatin-1	Inhibits cell death in models of Huntington's disease
22942	PAOA	Prevents formation of huntingtin protein aggregates in the brain and reduces the cognitive deficits in the N171-82Q mouse model of Huntington's disease
15043	Probucol	Protective against behavioral and striatal oxidative damage by increasing the activity of glutathione peroxidase in an *in vivo* mouse model of Huntington's disease
20380	Tetrabenazine	An orally available chorea modulator that inhibits vesicular monoamine transporter 2

Prion Disease

Cayman offers small molecules that can be used to study prion protein (PrP) aggregation and misfolding.

Small Molecules

Item No.	Product Name	Summary
10010740	CAY10550	Inhibits the accumulation of PrP^{c} (IC_{50} = 3 nM)
13533	E-64d	Inhibits protease-resistant PrP accumulation in scrapie-infected neuroblastoma cells (IC_{50} = 0.5 µM)
16674	Flupirtine (maleate)	Decreases neurotoxicity associated with prion disease
15041	Quinacrine (hydrochloride hydrate)	Prevents misfolding of PrP (EC_{50} = 0.3 µM)
11190	Termitomycamide B	Protects against ER stress-dependent cell death
11191	Termitomycamide E	Protects against ER stress-dependent cell death

To view a complete list of our tools for neurodegenerative disorders, visit us online at **www.caymanchem.com**