



NEUROSCIENCE

Essential Research Tools for
Neurodegeneration & Neural Signaling

DISSECT COMPLEX NEURODEGENERATIVE DISEASE PATHWAYS & NEURAL SIGNALING NETWORKS

FUELING DISCOVERY IN THE ETIOLOGY, PATHOLOGY, AND TREATMENT OF NEURODEGENERATIVE DISEASE

It is estimated the aging worldwide population will result in over 100 million sufferers of dementia by the year 2050, a postulate that continues to drive major research efforts in neurodegenerative diseases and the associated loss of cognitive function. Diseases such as Alzheimer's (AD), Parkinson's (PD), Huntington's (HD), and Amyotrophic Lateral Sclerosis (ALS) are diseases of protein homeostasis (proteostasis), characterized by loss of specific neuronal populations, and the presence of inclusion bodies consisting of insoluble, unfolded proteins. Drug development programs for treatment of these diseases include modulators of key proteins and enzymes that regulate proper protein folding, modification, and clearance, seeking to reverse or prevent the accumulation of protein.

Neurodegenerative Markers

Alzheimer's Disease

Tau & Phospho-Tau Antibodies
14-3-3 Proteins & Antibodies
 β -amyloid Peptides & Antibodies
BACE enzymes & Inhibitors
Presenilin 1 & 2 mAbs
24(S) Hydroxycholesterol ELISA
Caspase-6 Enzyme & Inhibitors

Parkinson's Disease

α -synuclein Protein & Antibodies
Parkin (human) pAb
HSC70 Protein & Antibodies

Huntington's Disease

Huntingtin pAb
Huntingtin Interacting Protein (HIP) mAbs
Caspase-6 Enzyme & Inhibitors

ALS

SOD-1 Antibodies
Mito-ID[®] Membrane Potential Detection Kit
ROS/Superoxide & ROS/RNS Detection Kits

Spinal Muscular Atrophy (SMA)

SMN ELISA Kit
SMN Protein & Antibody

Altered Processes

Gene Expression & Copy Number

aCGH Labeling Kits
BioArray[®] Amplification & Labeling Systems
Epigenetics Compound Library
Fluor de Lys[®] HDAC & Sirtuin Assays

Protein Synthesis & Folding

Stressgen[®] HSP/Chaperone Products
HSP70/HSP40/HSP27/HSF-1 Antibodies & ELISAs
 α B-crystallin Protein & Antibodies

Post-translational Modification

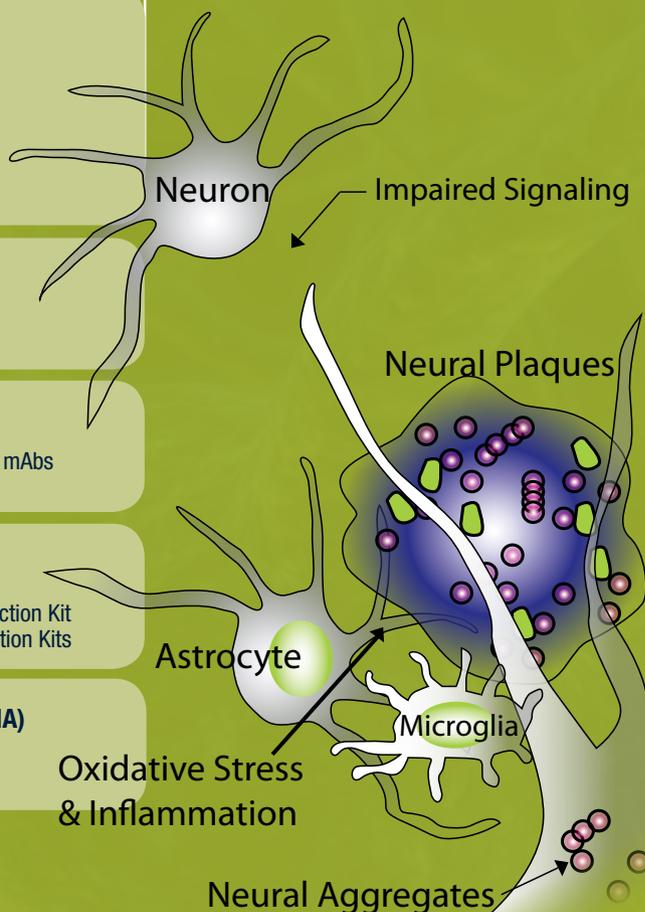
Mono- & Polyubiquitinylation Antibodies
In Vitro Ubiquitinylation & SUMOylation Kits
UbiQapture[™]-Q & SUMO Qapture-[™]-T Kits
SUMO 1 & SUMO 2/3 Antibodies
Fluor de Lys[®] HDAC6 Drug Discovery Kit

Aggregate Clearance/Protein Degradation

ProteoStat[®] Aggresome Detection Kit
Cyto-ID[®] Autophagy Detection Kit
p62 (SQSTM1)/NBR1 ELISA Kits
Autophagy Compound Library
Lyso-ID[®] Red Detection Kit
Proteasome ELISA Kit

Oxidative Stress

Heme Oxygenase ELISAs & Antibodies
ROS/RNS Detection Kits
SOD Antibodies & Activity Assays
REDOX Compound Library



Assay Kits

Our portfolio of over 300 ELISA and detection kits includes sensitive, specific assays for neuroactive peptide hormones, signaling molecules, oxidative stress and cell death critical to neural signaling and neurodegenerative pathways.

Enzo CELLestial[®] fluorescent probes and assay kits include innovative assays for monitoring protein aggregation, autophagy, calcium mobilization, oxidative stress and toxicity profiling. Our dye-based assays are optimized for the most demanding imaging applications to delivery consistent, reproducible results.



High Quality Antibodies

Enzo Life Science offers over 3000 antibodies, including monoclonal and polyclonal antibodies for the detection of key markers of neurodegeneration and neural signaling such as tau, β -amyloid, Parkin, LC-3, SMN1, ion channels, and synaptic vesicle markers.

Every antibody is backed by our Worry-free Antibody Trial Program, allowing you to evaluate any of our antibodies of interest for your specific application or species without risk.



Small Molecule Chemistry & Compound Libraries

Our long-standing, flagship Screen-Well[®] Compound Library portfolio offers an easy, ready-to-use method to streamline compound screening. The Enzo catalog of over 3000 biologically characterized small molecules includes curated collections of Neurotransmitters, Bioactive Lipids, Ion Channel Ligands, Endocannabinoids, and Natural Products. Pathway targeting libraries for Autophagy, Epigenetics, and Wnt modulators facilitate MOA analysis.



MONITOR NEURODEGENERATIVE PROTEIN AGGREGATION, AUTOPHAGY, AND CYTOTOXICITY

Although the mechanism may vary from one class of neurodegenerative disease to another, the principle pathology of AD, PD, HD, and ALS are similar: the cell's defense mechanisms against protein aggregation (i.e., molecular chaperones, protein degradation & recycling pathways) become overwhelmed, leading to structural defects, apoptosis, and ensuing cognitive defects associated with loss or impairment of neural cell function.



Protein Folding & Aggregation

ProteoStat® Aggresome Detection Kit - ENZ-51035

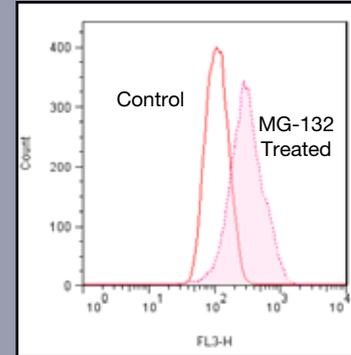
Molecular-rotor dye yields robust, quantitative detection of aggregated protein.

Heat Shock Proteins & Oxidative Stress

The definitive collection of Stressgen® ELISA Kits and reagents for molecular chaperones & oxidative stress.

αB-Crystallin	HSP70 & HSC70
Calnexin	HSP90
Calreticulin	Grp75
DNA Damage (8-OHdG)	Grp94
HSP25/27	Heme Oxygenase
HSP40	Superoxide Dismutase (SOD)
HSP60	ROS/RNS Detection Kits

Quantify Aggresomes and Inclusion Bodies by Flow Cytometry



Aggregate Clearance & Survival

Cyto-ID® Autophagy Detection Kit - ENZ-51031

A no-transfection quantitative assay for measuring autophagy in live cells.

p62 & NBR1 ELISA Kits

Sensitive & specific ELISAs for detection of key autophagosomal scaffold proteins

Autophagy Compound Library

97 ready-to-screen compounds with defined autophagy-inducing or –inhibiting activity

Lyso-ID® Red & Green Detection Kits

Highly photostable dyes to specifically monitor the lysosomal degradation pathway.

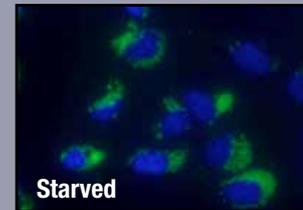
Ubiquitin & Proteasome

Extensive portfolio of ubiquitin ligases, ubiquitinated substrates, and antibodies for detection of mono- and poly-ubiquitination, proteasome

Profile Autophagy Without Transfection



Control



Starved



Apoptosis/ Necrosis

Mito-ID Membrane Potential Cytotoxicity Kit -ENZ-51019

A real-time mitochondrial membrane potential assay with superior sensitivity

Apoptosis/Necrosis Detection Kit - ENZ-51002

Multiplex analysis of apoptotic and necrotic cells, compatible with GFP expressing cell lines and other green fluorescent probes.

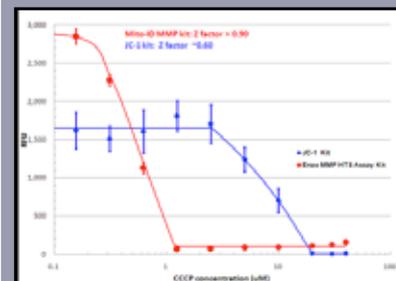
Caspase-6 Activity

Screen activators and inhibitors of this executioner caspase with high-activity enzyme and colorimetric (pNa) and fluorimetric (AMC) labeled substrates.

Apoptosis ELISA Kits

Bax	p53/MDM2	Bcl-2	Survivin
Cytochrome C	XIAP	M30/M65 Epithelial Cell Death	

Detect Mitochondrial Toxicity With 10X More Sensitivity Than JC-1



QUANTIFY NEUROACTIVE PEPTIDES & SECOND MESSENGERS WITH HIGH-SENSITIVITY ASSAY KITS

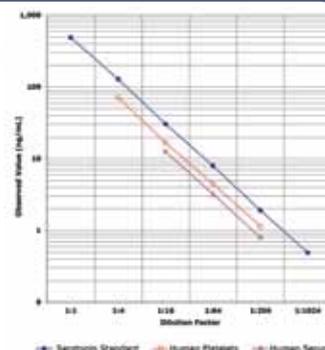
As our understanding of neurodegenerative disease origins increases, so does the need for innovative, high quality research tools for developing potential therapeutics. The breadth of Enzo's expertise across research disciplines from proteostasis and cell analysis, to small molecule chemistry and assay development provides a unique collection of innovative reagents and assays to monitor neural signaling networks.

Neuroactive Peptide & Stress Hormone ELISAs

Angiotensin	LVV-Hemorphin
Bradykinin	Oxytocin
Corticosterone	Serotonin
Cortisol	Substance P
Endothelin-1	Vasopressin
Gastrin	

Serotonin ELISA Kit ADI-900-175

- No acylation step
- Measure <300 pg/mL
- Validated for platelets, plasma, serum, and urine



Cyclic Nucleotide Analysis

The most sensitive colorimetric ELISA kits for detection of cAMP and cGMP, key second messenger signaling molecules.

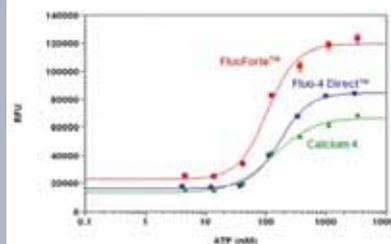
- Cyclic AMP Complete/Direct ELISAs
- Cyclic GMP Complete/Direct ELISAs
- Phosphodiesterase Assay Kit

FluoForte® Calcium Assay Kits - ENZ-51016

Brighter, More Robust Fluorescent Calcium Mobilization Assays

- Dyes optimized for cell-permeability and retention deliver superior signal
- Economical alternative developed for use with conventional dual-dispensing microplate readers
- GFP-Certified® dye (ENZ-51020) compatible with common green-emitting fluorescent markers

Obtain Robust Signal Intensity 2x Brighter Than Fluo-4



Did You Know?

Enzo also offers high-activity phosphodiesterase (PDE) recombinant enzymes and high purity PDE inhibitors.

FOCUSED COMPOUND LIBRARIES FOR NEUROMODULATOR SCREENING

Put over 25 years of compound sourcing experience to work for you!

Tired of procuring small molecules from multiple sources? Enzo has a long and successful history identifying, synthesizing, and commercializing known bioactives for use as research tool compounds and assembling focused libraries for chemical genomics, receptor de-orphaning, drug repurposing, pathway analysis, and more.

- Compounds supplied in ready-to-screen format in biocompatible solvents
- Complete documentation includes SD files for inclusion in your database
- Bulk compounds available for re-supply

Library	Compounds
Neurotransmitters	651
Ion Channel Ligands	71
Orphan Ligands	84
Endocannabinoids	60
Fatty Acids	68
Natural Products	502
FDA Approved Drugs	640



More than just libraries...

Enzo offers over 1500 biologically characterized small molecules as stand-alone catalog items, including ion channel activators, neurotransmitters, kinase, protease & phosphatase inhibitors, and more.

WORRY-FREE NEUROSCIENCE ANTIBODIES

Enzo offers over 3000 widely cited and thoroughly validated antibodies, including nearly 500 for key markers of neurodegenerative disease, GPCRs, nerve cell structure proteins, and neural signal transduction. Each of our antibodies is backed by our Worry-free Antibody Trial Program. Learn more at www.enzolifesciences.com/promos.

Neurotransmitters

ACTH	NPY
ANP	GABA
BNP	GLP-1
CCK	Serotonin (5-HT)
CGRP	Substance P
Dopamine	

Neurotransmitter Biosynthesis

Aromatic L-amino acid decarboxylase (AADC)
Dopamine β -hydroxylase (DBH)
Glutamic Acid Decarboxylase (GAD)
Heme Oxygenase-1 (HO-1)
Phenylethanolamine N-methyltransferase (PNMT)
Tyrosine Hydroxylase (TH)
Tryptophan Hydroxylase (TPH)

Neurotransmitter Receptors

Adrenergic (α_{2A} , α_{1B} , β_1 , β_2)
Angiotensin II (AT_1 & AT_2)
Bradykinin (B_1 & B_2)
Cannabinoid (CB_1 & CB_2)
Dopamine (D_1 & D_2)
GABAA & GABAB
GluR1
Muscarinic (M_1 , M_2 , M_3)
Opioid (δ & μ)
Serotonin (5-HT_{1A})
Somatostatin (1,2,3,4)
Vasopressin (V_{1a} , V_{1b} , V_2)

Neurodegenerative Markers

14-3-3	α -Synuclein
β -amyloid	Parkin
BACE	SOD-1
GSK-3 β	SMN1
Huntingtin & HIP	
Presenilin 1 & 2	
Tau & Phospho-Tau	

Synaptic Vesicle Markers

Actin	Synapsin
Bassoon	Synaptophysin
Munc-18	Synaptotagmin
PSD95	Syntaxin
SAP97	VAMP
SNAP α/β	

Ion Channel Antibodies

2-Pore Domain Potassium Channels
Voltage-gated Potassium Channels
Sodium Calcium Exchanger
GABA Receptor Subunits
TRP Channels (A, C, M, V)
NMDA Receptor Subunits

Complex Networks. Simplified Analysis.

www.enzolifesciences.com



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Put our experience to work for you!
Contact Enzo to learn more about how our scientists are working to provide innovative tools for your research.