It is estimated that 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**
- APP ΔC31 ELISA Kit
- Tau & Phospho-Tau Antibodies
- 14-3-3 Proteins & Antibodies
- β-amyloid Peptides & Antibodies
- BACE Enzymes & Inhibitors
- Presenilin 1 & 2 mAbs
- 24(S)-Hydroxycholesterol ELISA Kit
- 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-ID® Superoxide Detection Kit

**Spinal Muscular Atrophy (SMA)**
- SMN ELISA Kit
- SMN Protein & Antibody

**Neural Aggregates**

**Altered Processes**

**Gene Expression & Copy Number**
- CYTAG® CGH Labeling Kits
- BIDARRAY™ Amplification & Labeling Systems
- SCREEN-WELL® Epigenetics Compound Library
- FLUOR DE LYS® HDAC & Sirtuin Assays

**Protein Synthesis & Folding**
- STRESSGEN® HSP/Chaperone Products
- HSP70/HSP40/HSP27/HSF-1 Antibodies & ELISAs
- αB-crystallin Protein & Antibodies

**Post-translational Modification**
- Mono- & Polyubiquitinylation Antibodies
- Ubiquitination & SUMOylation Kits
- SUMO-1, -2, -2/3 & -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
- SCREEN-WELL® Autophagy Compound Library
- LYSO-ID® Red Detection Kit
- Proteasome ELISA Kit

**Oxidative Stress**
- Heme Oxygenase ELISAs & Antibodies
- ROS-ID® ROS/RNS Detection Kit
- SOD Antibodies & Activity Assays
- SCREEN-WELL® REDOX Compound Library

**High Quality Antibodies**

- We offer over 3,000 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 3,000 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 Mechanism of Action analysis.
Although the mechanism may vary from one class of neurodegenerative disease to another, the principle pathologies 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 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 proteins

Heat Shock Proteins & Oxidative Stress
The definitive collection of STRESSGEN® ELISA Kits and reagents for molecular chaperones and oxidative stress

<table>
<thead>
<tr>
<th>Protein</th>
<th>ELISA Kit</th>
</tr>
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<tbody>
<tr>
<td>αB-Crystallin</td>
<td>HSP70 &amp; HSC70</td>
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<tr>
<td>Calnexin</td>
<td>HSP90</td>
</tr>
<tr>
<td>Calreticulin</td>
<td>Grp75</td>
</tr>
<tr>
<td>DNA Damage (8-OHdG)</td>
<td>Grp94</td>
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<tr>
<td>HSP25/27</td>
<td>Heme Oxygenase</td>
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<tr>
<td>HSP40</td>
<td>Superoxide Dismutase (SOD)</td>
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<tr>
<td>HSP60</td>
<td>ROS-ID™ ROS/RNS Detection Kit</td>
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</tbody>
</table>

AGGREGATE CLEARANCE AND SURVIVAL

CYTO-ID® AUTOPHAGY DETECTION KITS (ENZ-51031/ENZ-KIT175)
A no-transfection quantitative assay for measuring autophagy in live cells

p62 & NBR1 ELISA Kits (ADI-900-211/212)
Sensitive & specific ELISAs for detection of key autophagosomal scaffold proteins

SCREEN-WELL® Autophagy Compound Library (BML-2837)
94 ready-to-screen compounds with defined autophagy-inducing or -inhibiting activity

LYSO-ID® Red & Green Detection Kits (ENZ-51005/51034)
Highly photostable dyes to specifically monitor the lysosomal degradation pathway

Ubiquitin & Proteasome Solutions
Extensive portfolio of ubiquitin ligases, ubiquitinated substrates, and antibodies for detection of mono- and poly-ubiquitination, proteasome inhibitors, and more

APOPTOSIS/NECROSIS

MITO-ID® MEMBRANE POTENTIAL CYTOTOXICITY KIT (ENZ-51019)
A real-time mitochondrial membrane potential assay with superior sensitivity

GFP-CERTIFIED® 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

<table>
<thead>
<tr>
<th>Protein</th>
<th>ELISA Kit</th>
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<tbody>
<tr>
<td>Annexin V</td>
<td>Bax</td>
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<tr>
<td>Bcl-2</td>
<td>Cytochrome C</td>
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<tr>
<td>DNA Damage</td>
<td>p53/MDM2</td>
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<tr>
<td>Survivin</td>
<td>XIAP</td>
</tr>
</tbody>
</table>

Detect Mitochondrial Toxicity With 10X More Sensitivity Than JC-1
High-throughput analysis of mitotoxicity

Quantify Aggresomes and Inclusion Bodies by Flow Cytometry
Flow cytometry-based analysis

Profile Autophagy Without Transfection

Quantify autophagic vesicles with minimal background

www.enzolifesciences.com/neuroscience
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.

**Calcium Mobilization Assay Kits**

**FLUOFORTE® CALCIUM ASSAY KITS (ENZ-51016)**

Brighter, More Robust Fluorescent Calcium Mobilization Assays
- Dyes optimized for cell permeability and retention deliver superior signal
- Low-cost alternative developed for use with conventional dual-dispensing microplate readers
- GFP-CERTIFIED® FLUOFORTE® Calcium Assay Kit (ENZ-51020) compatible with common green-emitting fluorescent markers

ATP dose response curves in CHO-M1 cells. CHO cells were seeded overnight. The cells were incubated with 100 µL of Life Technologies’ Fluo-4 Direct™ kit, Molecular Device’s Calcium 4 kit or FLUOFORTE® dye. ATP (20 µL/well) was added by FlexStat to achieve the final indicated concentrations. FLUOFORTE® generated the highest intensity signal.

**FOCUSED COMPOUND LIBRARIES FOR NEUROMODULATOR SCREENING**

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

More than just libraries...

Enzo offers over 3,000 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 3,000 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.

MULTIPLEX DETECTION KITS

Superior MULTIVIEW® IHC Kits for Efficient Detection of Multiple Antigens in a Single Tissue Sample

- Biotin-free nanopolymer-based system for superior multiplex antigen detection
- Complete kit includes HIGHDEF® chromogens for sensitive, crisp 2-color development
- Preserves precious tissue while reducing reagent and labor costs
- Expandable with additional chromogens (sold separately)

### Multiplex Detection Kits

<table>
<thead>
<tr>
<th>PRODUCT NAME</th>
<th>PRODUCT #</th>
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</thead>
<tbody>
<tr>
<td>MULTIVIEW® (mouse-HP/rabbit-AP) Kit</td>
<td>ADI-950-100</td>
</tr>
<tr>
<td>MULTIVIEW® (mouse-HP/mouse-AP) Kit</td>
<td>ADI-950-101</td>
</tr>
</tbody>
</table>

### Nanopolymer Detection Reagents & Kits

Highest Sensitivity, Lowest Background POLYVIEW® PLUS HRP Detection Reagents & Kits

- Biotin-free nanopolymer detection circumvents endogenous biotin background
- High intensity color development delivers sharp, crisp staining
- Suitable for both IHC and ISH detection
- Compatible for both manual and automated platforms

### Nanopolymer Detection Reagents & Kits

<table>
<thead>
<tr>
<th>PRODUCT NAME</th>
<th>PRODUCT #</th>
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<tr>
<td>POLYVIEW® PLUS HRP (Anti-Rabbit) Reagent</td>
<td>ENZ-ACC103</td>
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<tr>
<td>POLYVIEW® PLUS HRP (Anti-Mouse) Reagent</td>
<td>ENZ-ACC104</td>
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<tr>
<td>POLYVIEW® PLUS AP (Anti-Rabbit) Reagent</td>
<td>ENZ-ACC110</td>
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<tr>
<td>POLYVIEW® PLUS HRP-DAB (Anti-Rabbit) Kit</td>
<td>ENZ-KIT159</td>
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<tr>
<td>POLYVIEW® PLUS HRP-DAB (Anti-Mouse) Kit</td>
<td>ENZ-KIT160</td>
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</table>

### Streptavidin Detection Reagents

High Sensitivity, Low Background SAVIEW® PLUS Reagents

- Streptavidin-based detection with reduced background
- Applicable for custom multiplexing IHC protocols
- Suitable for IHC and ISH detection
- Compatible for both manual and automated platforms

### Streptavidin Detection Kits

<table>
<thead>
<tr>
<th>PRODUCT NAME</th>
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<tr>
<td>SAVIEW® PLUS HRP Reagent</td>
<td>ENZ-ACC102</td>
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<tr>
<td>SAVIEW® PLUS AP Reagent</td>
<td>ENZ-ACC111</td>
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### WORRY-FREE NEUROTRANSMITTERS

<table>
<thead>
<tr>
<th>NEUROTRANSMITTERS</th>
<th>NEUROTRANSMITTER BIOSYNTHESES</th>
<th>NEUROTRANSMITTER RECEPTORS</th>
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<tbody>
<tr>
<td>ACTH, NPY</td>
<td>Aromatic L-amino acid decarboxylase (AADC)</td>
<td>Adrenergic (α2A, α2B, β1, β2)</td>
</tr>
<tr>
<td>ANP, GABA</td>
<td>Dopamine β3-hydroxylase (DBH)</td>
<td>Glutamatergic (M1, M2, M3)</td>
</tr>
<tr>
<td>BNP</td>
<td>Glutamic Acid Decarboxylase (GAD)</td>
<td>Opioid (δ &amp; μ)</td>
</tr>
<tr>
<td>CCK, Serotonin (5-HT)</td>
<td>Heme Oxygenase-1 (HO-1)</td>
<td>Serotonin (5-HT1A)</td>
</tr>
<tr>
<td>CGRP, Substance P</td>
<td>Phenylenethanolamine N-methyltransferase (PNMT)</td>
<td>Somatostatin (1,2,3,4)</td>
</tr>
<tr>
<td>Dopamine</td>
<td>Tyrosine Hydroxylase (TH)</td>
<td>Vasopressin (V1a, V1b, V2)</td>
</tr>
</tbody>
</table>

### NEURODEGENERATIVE MARKERS

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

### 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
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