

Drug Discovery Integrated Solutions Driving Innovation in Drug Discovery

enzolifesciences.com

Integrated Solutions Driving Innovation in Drug Discovery

Introduction

Enabling Drug Discovery

Drug discovery is a complex scientific endeavor centered around identifying, designing, and developing bioactives with therapeutic potential. Along with identifying and validating target molecules associated with diseases, drug discovery progresses through stages such as high-throughput screening, hit-to-lead optimization, and preclinical testing. Successful drug discovery culminates in developing a therapeutic agent that undergoes rigorous clinical trials before reaching the market.

Enzo provides a comprehensive array of products and services to expedite your drug discovery program across various stages. Whether you are working with small molecules or biologics, our offerings cover everything from target discovery and validation to formulation and manufacturing.

Empower your drug development journey with Enzo's cutting-edge tools. Experience enhanced efficiency, cost savings, and overall success in the drug discovery process. By choosing Enzo's products and services, you gain the ability to streamline operations, making drug development more accessible. Join us in advancing pharmaceutical research to new heights.



Target Identification

Target identification is a crucial step in the drug discovery process, which aims to identify a biological target for a specific disease or condition. There are several approaches to target identification, including genetic approaches, biochemical approaches, and phenotypic screening.

AMPIVIEW[™] EGFR (AS) Dig RNA Probes Set (ENZ-GEN129)

To address the challenges of target identification and gene expression in Drug Discovery, the AMPIVIEW[™] RNA probes, powered by Enzo's LoopRNA ISH[™] technology, provide visualization of the spatial localization of target genes in their tissue context without disrupting cell morphology.

- Detection of unique nucleic acid targets (DNA/RNA or RNA) down to a single cell level
 - Simple protocols of 2-hour hybridization and one-step amplification
- Adaptable products ready for any workflow (Manual or Automated)

AMPIVIEW[™] RNA Probes Deliver Superior Sensitivity and Specificity



AMPIVIEW[™] RNA probes workflow diagram. Detection of epidermal growth factor receptor (EGFR) in prostate tissue with A. AMPIVIEW[™] EGFR (AS) Dig RNA probes and B. AMPIVIEW[™] NSP Dig RNA probes, amplified with DIGX[®] anti-digoxigenin, detected with POLYVIEW[®] PLUS AP combined with HIGHDEF[®] Red AP chromogen and hematoxylin.

AMPIVIEW[™] RNA Probes

AMPIVIEW[™] Ubiquitin (AS) Dig RNA Probes Set AMPIVIEW[™] GAPDH (AS) Dig RNA Probes Set AMPIVIEW[™] EGFR (AS) Dig RNA Probes Set AMPIVIEW[™] Nestin (AS) Dig RNA Probes (Rat) Set AMPIVIEW[™] Wnt5a (AS) Dig RNA Probes (Rat) Set AMPIVIEW[™] HPV 6/11 RNA Probes Set AMPIVIEW[™] HPV 16/18 RNA Probes Set AMPIVIEW[™] HPV 16/18 RNA Probes Set AMPIVIEW[™] HPV 31/33/51 RNA Probes Set AMPIVIEW[™] HPV High-Risk RNA Probes Set AMPIVIEW[™] NORAD (AS) Dig RNA Probes (Mouse) Set ENZ-GEN125 ENZ-GEN127 ENZ-GEN129 ENZ-GEN135 ENZ-GEN145 ENZ-GEN146 ENZ-GEN147 ENZ-GEN148 ENZ-GEN178 ENZ-GEN180 Once a potential target has been identified, it must be further evaluated to determine if it is a suitable candidate for drug development. One of the key methods used for target validation is functional studies, which involve testing the biological activity of the target and its role in disease processes.

FLUOR DE LYS[®] HDAC Fluorometric Activity Assay Kit (BML-AK500)

Our portfolio of scalable enzyme activity assays is anchored by our FLUOR DE LYS[®] deacetylase assay platform, featuring kits for screening HDAC and Sirtuin activity modulators. We also offer FRET-based assays for matrix metalloproteinases (MMPs) and caspase activity and phospho-specific antibody-based kinase assays.

- QUALITY: High activity, high purity recombinant enzymes for high-quality hits
- FLEXIBILITY: Bulk enzymes and substrates available for post-screening studies

INNOVATIVE: Patented substrate/ developer chemistries in a variety of readout formats

Related Products

Target Validation

Reaction Scheme of the HDAC Fluorescent Activity Assay



Reaction Scheme of the HDAC Fluorescent Activity Assay. Deacetylation of the substrate sensitizes it to the developer, which then generates a fluorophore (symbol). The fluorophore is excited with 360 nm light and the emitted light (460 nm) is detected on a fluorometric plate reader

FLUOR DE LYS [®] HDAC Fluorometric Activity Assay Kit	BML-AK500
FLUOR DE LYS [®] HDAC6 Fluorometric Drug Discovery Kit	BML-AK516
FLUOR DE LYS [®] SIRT1 Fluorometric Drug Discovery Assay Kit	BML-AK518
Matrix Metalloproteinase (MMP) Multipack-1	BML-AK013
MMP Inhibitor Profiling Kit, Fluorometric	BML-AK016
Matrix Metalloproteinase-2 (MMP-2) Fluorometric Drug Discovery Kit, RED	BML-AK302
Akt Kinase Activity Kit	ADI-EKS-400A
PKA Kinase Activity Kit	ADI-EKS-390A
PKC Kinase Activity Kit	ADI-EKS-420A

High-Throughput Screening ____

High throughput screening (HTS) is a powerful technique used in drug discovery. It enables the rapid screening of large numbers of compounds for their ability to interact with a specific target or pathway. Enzo Life Sciences has a long and successful track record in identifying, synthesizing, and commercializing valuable known bioactives for use as research tools.

SCREEN-WELL[®] Compound Libraries

Our long-standing, flagship SCREEN-WELL[®] Compound Library product family offers an easy, ready-to-use method for compound screening. Our unique offering of focused compound libraries includes FDA-approved drugs, natural products, receptor de-orphaning, chemical genomics, and pathway targeting.

- A unique collection of small molecules including inhibitors, activators and/or inducers
- Complete documentation set that highlights activity descriptions, plate positions, physical information and a structural database (SD) file
- The ability to re-supply individual bulk compounds, custom libraries, or hard to source compound

Forskolin



Activates adenylate cyclase by directly interacting with the catalytic unit of the enzyme leading to an increase in the intracellular concentration of cAMP. Inhibits ion channels by a mechanism that does not involve cAMP. Non-competitive inhibitor of nicotinic acetylcholine receptors. Induces neuronal differentiation in stem cells and several neuroblastoma.

Ordering Information			
SCREEN-WELL [®] Kinase Inhibitor Library	BML-2832		
SCREEN-WELL [®] Protease Inhibitor Library	BML-2833		
SCREEN-WELL [®] Phosphatase Inhibitor Library	BML-2834		
SCREEN-WELL [®] Cancer Library	ENZ-LIB102		
SCREEN-WELL [®] Wnt Pathway Library	BML-2838		
SCREEN-WELL [®] Epigenetics Library	BML-2836		
SCREEN-WELL [®] Natural Product Library	BML-2865		
SCREEN-WELL® FDA Approved Drug Library V2	BML-2843		
SCREEN-WELL® ICCB Known Bioactives library	BML-2840		

Mechanism of Action Studies

Cell-based assays play a crucial role in drug discovery by providing a relevant and predictive model for evaluating the efficacy, safety, and potential mechanisms of action of drug candidates. This knowledge is invaluable for refining drug design and advancing the development of more potent and efficacious therapeutics.

CELLESTIAL® ASSAY KITS

Our CELLESTIAL[®] portfolio of fluorescent probes and assay kits for cellular analysis provides a complete set of tools for monitoring cell viability, proliferation, death, oxidative stress, and toxicology. Our dye-based assays have been optimized for the most demanding imaging applications, including confocal microscopy, wide-field fluorescence microscopy, flow cytometry, and high content screening, where consistency and reproducibility are essential.

- Increased photostability reduces photobleaching
- Reduce false positives by eliminating non-specific dye-associated artifacts
- Compatible with common dyes and fluorescent markers (i.e., GFP) for multiplex analysis

Quantify Autophagic Vacuoles Without Transfection





CYTO-ID[®] Autophagy Detection Kit 2.0 (ENZ-KIT175) was used to detect autophagy in HeLa cells cultured in (A) media under normal conditions, (B) starvation media (EBSS) treated with 40uM Chloroquine for 4 hours. Starved cells show a higher quantity of autophagic vacuoles compared to cells under normal conditions (fluorescent green).

Ordering Information

GFP-CERTIFIED [®] Apoptosis/Necrosis Detection Kit			
CYTO-ID [®] Autophagy Detection Kit			
PROTEOSTAT [®] Aggresome detection kit			
ROS-ID [®] Total ROS/Superoxide Detection Kit			
Nuclear-ID [®] Red DNA Stain			
Mito-ID [™] Membrane Potential			
eFluxx-ID [®] Green Multi-Drug Resistance			
FluoForte™ Calcium Assay Kit			
ER-ID [®] Red assay kit (GFP-CERTIFIED®)			
Calcein AM (Ultra Pure)			

ENZ-51002 ENZ-51031 ENZ-51035 ENZ-51010 ENZ-52406 ENZ-51018 ENZ-51029 ENZ-51026 ENZ-51026

Toxicity Assessment

Cytotoxicity, or the quality of being toxic to cells, is a cellular regulator that can result in various cell fates. Most often, it results in various types of cell death – including necrosis, where the cell dies due to cell lysis; apoptosis, a form of programmed cell death; or other fates. Enzo provides a variety of assays to quantify cytotoxicity in cells, including an LDH Cytotoxicity WST Assay and Cell Counting Kit 8.

GFP-CERTIFIED[®] Apoptosis/ Necrosis Detection Kit (ENZ-51002)

Distinguishing between apoptosis and necrosis provides valuable insights into the specific pathways through which a drug induces cell death, aiding researchers in assessing the safety and efficacy of potential drug candidates.

- Suitable for death pathway analysis and drug/toxin studies
- Readily distinguishes between healthy, early apoptotic, late apoptotic, and necrotic cells
- Optimized for both fluorescence microscopy and flow cytometry applications

Multiplex Healthy, Early Apoptotic, Late Apoptotic, and Necrotic Cells



GFP-CERTIFIED[®] Apoptosis/Necrosis Detection Kit (ENZ-51002) detects four distinct cell states. Mitochondrial GFP-expressing HeLa cells were treated with 2µM Staurosporine for 4 hours. The apoptosis detection reagent (gold) and necrosis detection reagent (red) specifically detect cell states with clear spectral separation from mitochondria-associated GFP signal. Healthy cells (A), cells undergoing apoptosis (B), cells undergoing late-stage apoptosis (C), and necrotic cells (D).

Ordering Information

LDH Cytotoxicity WST Assay	ENZ-KIT157
LYSO-ID [®] Red Cytotoxicity Kit	ENZ-51015
MITO-ID [®] Membrane potential Cytotoxicity Kit	ENZ-51019
GFP-CERTIFIED® Apoptosis/Necrosis Detection Kit	ENZ-51002

Integrity Assessment

The reliability of the drug product, from its inception in the laboratory to its application in clinical settings, is a determining factor in the journey of therapeutic development. Robust product integrity and stability are the foundation upon which efficacy, safety, and the ultimate success of emerging therapeutics hinge. Protein aggregation poses substantial risks during drug discovery, impacting therapeutic efficacy and safety.

PROTEOSTAT[®] Protein Aggregation Assay (ENZ-51023)

Aggregated proteins may lose biological activity, induce immunogenicity, and alter pharmacokinetics, raising concerns about toxicity and reduced bioavailability. Formulation challenges, clinical relevance, and manufacturing hurdles further compound these issues. Addressing aggregation risks is crucial, and innovative solutions like the PROTEOSTAT[®] protein aggregation assays offer valuable insights.

- Monitor bulk freezing and freeze/thaw cycle-induced aggregation and define post-purification storage conditions
- Identify inhibitors of protein aggregation
- Rank the effectiveness of buffers and excipients in protein formulation

PROTEOSTAT[®] Dye Yields Much Brighter Signal



Signal intensity of PROTEOSTAT[®] aggregate sensing dye compared to other dyes.

Ordering Information		
PROTEOSTAT [®] Protein Aggregation Assay	ENZ-51023	
PROTEOSTAT [®] Protein Aggregation Standards	ENZ-51039	
PROTEOSTAT [®] Protein Refolding and Aggregation Sensing Kit	ENZ-51040	
PROTEOSTAT [®] Thermal Shift Stability Assay Kit	ENZ-51027	
PROTEOSTAT® Aggresome Detection Kit	ENZ-51035	

Enabling Your Drug Discovery Program

With over 45 years of innovation and technical expertise, Enzo provides you with the leverage you need to accelerate your Drug Discovery. The development of a single drug, whether it is a new chemical entity or a biologic therapeutic, requires a significant investment of resources. Each step of the process from early discovery through production and delivery, must be fully explored, characterized, and understood.

From target discovery and validation to formulation and manufacturing, Enzo offers a line of products and services that can accelerate your drug discovery program. Choose from an extensive range of assay kits, enzymes, substrates, and compound libraries for primary and secondary screening, immunodetection assays for reliable biomarker detection, and cytotoxicity assays for in vitro drug safety assessment. Our aim is to deliver innovative tools that make drug development more efficient, cost-effective and successful.



Nucleic Acid Extraction, PCR, qPCR, and NGS



PROTEIN ANALYSIS

ELISA, Western Blot, Proteins, Peptides, and Enzymatic Assays



CELLULAR ANALYSIS Cell-based Assays, Fluorescent Dyes, and Antibodies

Our Technological Depth is Enabling Efficiency for



Learn More at: enzolifesciences.com/drug-discovery





Compound Libraries



our Customers.

SCIENTISTS ENABLING SCIENTISTS™



Global Headquarters ENZO LIFE SCIENCES, INC.

21 Executive Blvd Farmingdale, NY 11735 Phone: 800.942.0430 Fax: 631.694.7501 info-usa@enzolifesciences.com

LOCAL EUROPEAN OFFICES

Belgium, The Netherlands & Luxembourg

Enzo Life Sciences BVBA Avenue Louise 65/Box 11 1050 Bruxelles Belgium Phone: +32 3 466 0420 Fax: +32 3 808 7033 info-be@enzolifesciences.com

European Sales Office ENZO LIFE SCIENCES (ELS) AG

Industriestrasse 17 CH-4415 Lausen, Switzerland Phone: +41 61 926 8989 Fax: +41 61 926 8979 info-eu@enzolifesciences.com

France

Enzo Life Sciences (ELS) AG Branch Office Lyon 43, quai Perrache 69002 Lyon, France Phone: +33 472 440 655 Fax: +33 481 680 254 info-fr@enzolifesciences.com

Germany

Enzo Life Sciences GmbH Basler Strasse 57a DE-79540 Lörrach Germany Phone: +49 7621 5500 526 Fax: +49 7621 5500 527 info-de@enzolifesciences.com

UK & Ireland

Enzo Life Sciences (UK) Ltd. 1 Colleton Crescent Exeter EX2 4DG Phone (UK customers): 0845 601 1488 Phone: +44 1392 825900 Fax: +44 1392 825910 info-uk@enzolifesciences.com

For local distributors and detailed product information visit us online: enzolifesciences.com

Simplify Your Science[™] At Enzo Biochem, we focus on creating a healthier world using scientific innovation through Drug Discovery, Development, and Diagnostic products and services.

For Research Use Only. Not for use in Diagnostic Procedures. All product names, logos and brands are the property of their respective owners.



