



Bioprocess

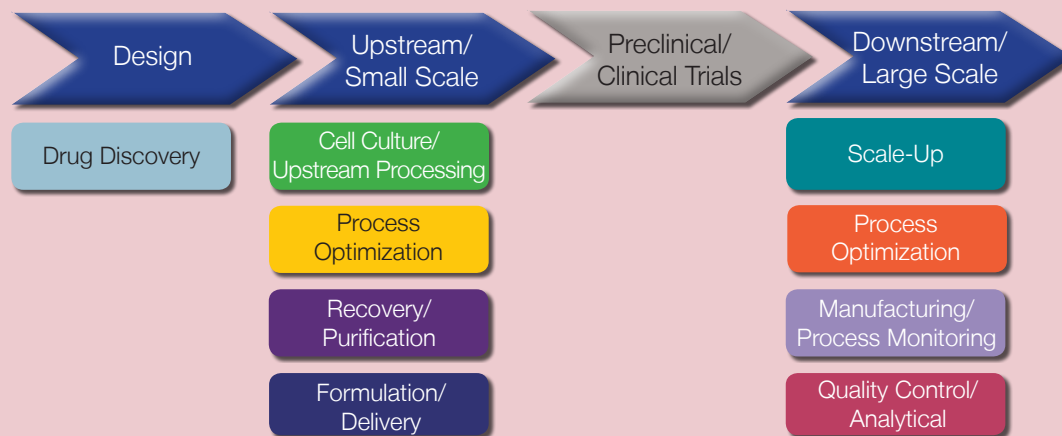
Innovative Tools for
Biotherapeutics Development



BETTER DETECTION UPSTREAM. MAXIMIZE PRODUCTION DOWNSTREAM.

Enabling Solutions for Bioprocess Optimization

Development of a biotherapeutic requires significant investment of resources. Each step of the process from early discovery through production and delivery must be fully explored, characterized, and understood to prevent issues resulting from cell stress, cell death, protein aggregation, and factors affecting reliable manufacturing of the drug. Whether you work in drug discovery, upstream, or downstream bioprocessing, Enzo offers a range of products to help you maintain cell line viability, optimize and monitor product integrity, and maximize yield.



Small Molecules	ELISA and Detection Kits
Osmotic Stress Modulators ●●●	Oxidative Stress ●●●●
Hybridoma Modulators ●●●●●	Cell Death: Autophagy, Apoptosis, Necrosis ●●●●●
Autophagy Inhibitors ●●●●	Cell Line Instability ●●●●
Compound Libraries	IgG ELISAs ●●●●●
Toxicity ●	Contamination Control (Protein A & Host Cell Proteins) ●●●●
Protease Inhibitors ●●●●●	PEGylated Protein ●●●●●
Bioactives ●●●●●	Thermal Shift (Stability) ●●●●●●●●
Hybridoma Production	Refolding ●●●●●
DiSH™ Kit ●●●	Protein Aggregates ●●●●●●
CHO Semi-Solid Media ●●●	Biosimilar Conformational ELISAs ●●●●●●

Fluorescent Probe Chemistry

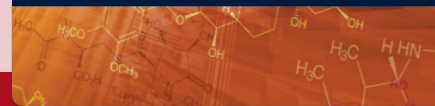
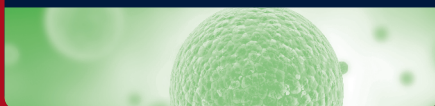
Our combined expertise in fluorescent probe chemistry and cellular analysis provides high-sensitivity fluorescent probes for use in various bioprocess settings. PROTEOSTAT® dyes and assays utilize a unique molecular rotor dye to enable characterization and quantification of protein aggregation in a convenient fluorescent readout. Our patented nucleic acid labeling technologies and CELLESTIAL® dyes for live cell analysis simplify monitoring of cell line stability, viability, cell stress, organelle function, and more.

Immunoassays & Antibodies

Our catalog of widely cited and thoroughly validated ELISAs and antibodies includes bioprocess-focused kits for detection of host-cell proteins, PEGylated proteins and Protein A residuals. This offering is supported by over 300 ELISAs and more than 3,000 antibodies to enhance your discovery and manufacturing workflow. Our novel DiSH™ kit improves efficiency by streamlining generation and screening of hybridomas.

Small Molecule Chemistry

With more than 3,000 biologically characterized small molecules and the industry's most diverse collection of compound libraries, Enzo's ultra-high purity compounds and proteins can be used to maximize yield via modulation of autophagy, proteases, and osmotic stress. Our SCREEN-WELL® libraries enable benchmarking against molecules with defined bioactivity and organ-specific toxicity, or panels of defined pathway modulators.



OPTIMIZE AND MONITOR PRODUCT INTEGRITY

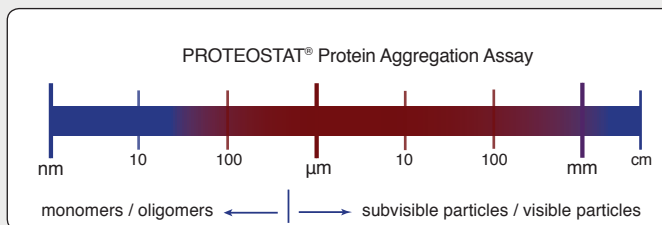
Accelerate Bioprocess Optimization with PROTEOSTAT® Aggregation and Stability Detection Assays

PROTEOSTAT® Protein Aggregation Assay

The PROTEOSTAT® Protein Aggregation Assay is a simple, sensitive, homogeneous fluorescent microplate assay. The novel molecular rotor dye used detects a broad range of different protein aggregates from visible to subvisible particles.

- Delivers superior results when compared to conventional protein detection dyes
- High-throughput method for monitoring protein stability when used with flow cytometry
- Provides a convenient, complementary orthogonal method for cross-validation of instrumentation-intensive techniques
- Useful assay to troubleshoot protein damage, from protein development through manufacturing stages

Broadest Detection Range From Visible to Subvisible Particles



PRODUCT NAME	PRODUCT #
PROTEOSTAT® Protein Aggregation Assay	ENZ-51023
PROTEOSTAT® Protein Aggregation Standards	ENZ-51039

PROTEOSTAT® Thermal Shift Stability Assay

The PROTEOSTAT® Thermal Shift Stability Assay is a rapid, simple screening method based on a novel molecular rotor dye which detects protein aggregation.

- Perform accelerated screening for protein stability as a function of pH, ionic strength, and concentration
- Screen for ligand binding to proteins of unknown function
- Screen protein variants to determine their relative stabilities or excipients to determine optimal protein storage conditions
- Identify protein-protein interaction inhibitors

PRODUCT NAME	PRODUCT #
PROTEOSTAT® Thermal Shift Stability Assay	ENZ-51027
PROTEOSTAT® Protein Refolding & Aggregation Sensing Kit	ENZ-51040

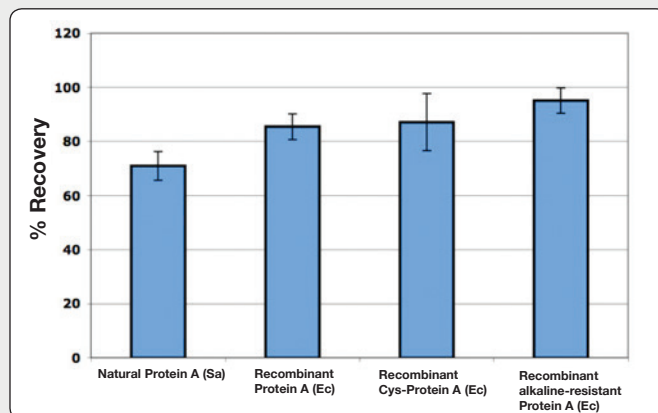
Monitor Product Integrity and Maximize Yield with Highly Sensitive and Reproducible ELISA Kits

Protein A ELISA Kit (ADI-900-057)

The Protein A ELISA Kit is a sensitive and reproducible sandwich immunoassay to quantify Protein A residuals in monoclonal antibody preparations. This extensively validated ELISA kit enables efficient detection of natural and recombinant Protein A constructs with up to 100% recovery.

- Detects 1 ppm of Protein A residuals in human IgG
- Recognizes 4 different Protein A variants
- Useful for contamination analysis and measurement of Protein A variants in monoclonal antibody preparations
- Produces results in less than 3 hours with low cost per test

Recognize All Commonly Used Protein A Constructs



Host Cell Protein ELISA Kits

The Host Cell Protein ELISA kits and reagents are ideal for impurity analysis, Host Cell Protein quantitation and Western blots.

- Quantitatively measures host cell protein contamination in *E.coli*- and CHO-derived biologics
- High-throughput format with results in 2.5 hours

PRODUCT NAME	PRODUCT #
<i>E. coli</i> Host Cell Protein ELISA Kit	ENZ-KIT127
<i>E. coli</i> Host Cell Protein Standards	ENZ-PRT121
CHO Host Cell Protein ELISA Kit	ENZ-KIT128
CHO Host Cell Protein Standards	ENZ-PRT122

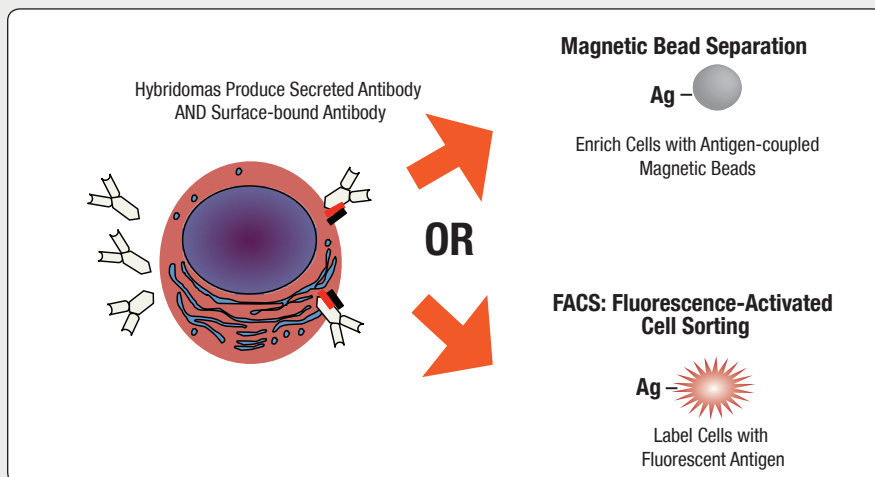
IMPROVE SCREENING FOR BIOTHERAPEUTIC CANDIDATES

Reduce Hybridoma Screening & Cloning Time by 75%

DiSH™ Kit (ENZ-71001)

The DiSH™ Kit is a unique technology for the rapid production of hybridomas. Using a genetically-modified myeloma partner (AbeoClone™, US Patent No. 7,148,040), the kit creates hybridomas capable of both secreting and surface-expressing antigen-specific antibodies, enabling screening and selection of positive clones by FACS. The components of the kit are available as standalone products as well.

- Enables faster, improved selection of specific, stable hybridomas
- Minimizes manipulation of cloned cell lines relative to approaches requiring Limiting Dilution Subcloning (LDS)
- Decreases time and labor costs

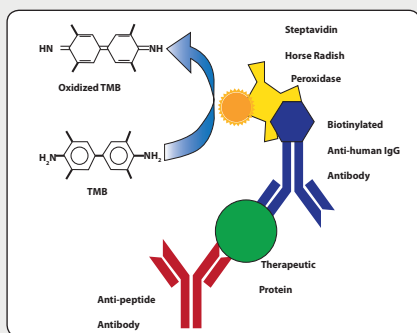


PRODUCT NAME	PRODUCT #
DiSH™ Kit	ENZ-71001
AbeoClone™ (Base Semi-solid Medium)	ENZ-70009
AbeoClone™ (HAT Semi-solid Medium)	ENZ-70004
AbeoClone™ (CHO TCSC Semi-solid Medium)	ENZ-70010

BIOLIKE® Conformational ELISA Kits

The BIOLIKE® Conformational ELISA Kits allow for 3D conformational comparison and higher-order structure (HOS) characterization, between biosimilars and marketed mAbs. This technology provides a sensitive, systematic, and robust measurement of bio-similar conformation comparability at the molecular level.

- Unique measurement of biosimilar mAb HOS Comparability
- Detects small amounts of conformational impurity, $\geq 0.1\%$
- Correlates well with bioassays and glycosylation analysis



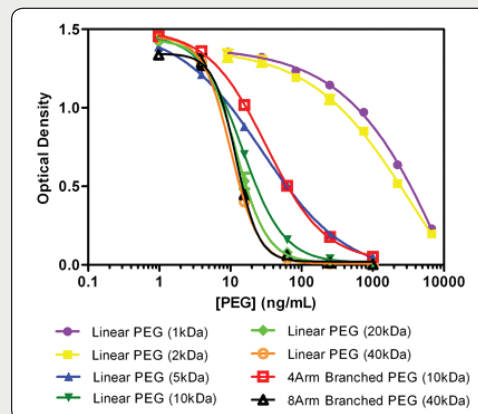
PRODUCT NAME	PRODUCT #
BIOLIKE® Adalimumab Conformational ELISA Kit	ENZ-KIT122
BIOLIKE® Alemtuzumab Conformational ELISA Kit	ENZ-KIT119
BIOLIKE® Bevacizumab Conformational ELISA Kit	ENZ-KIT118
BIOLIKE® Cetuximab Conformational ELISA Kit	ENZ-KIT120
BIOLIKE® Infliximab Conformational ELISA	ENZ-KIT124
BIOLIKE® Palivizumab Conformational ELISA Kit	ENZ-KIT126
BIOLIKE® Rituximab Conformational ELISA Kit	ENZ-KIT125
BIOLIKE® Trastuzumab Conformational ELISA Kit	ENZ-KIT121
BIOLIKE® Conserved mAb Sequence Conformational ELISA Kit	ENZ-KIT123

PEGylated Protein ELISA Kit (ADI-900-213)

The sensitive PEGylated Protein ELISA Kit is ideal for drug development and pharmaceutical manufacturing applications including drug formulations, pharmacokinetics analysis, drug comparison, lead candidate identification, lot release criteria, and in-process QC studies.

- Validated for a wide range of MW linear and branched PEGs, both in free form and when conjugated to proteins
- Sensitive assay measures < 1 ng/mL of PEGylated molecules
- Quantifies PEGylated target molecules in complex matrices to allow monitoring of drug levels or its accumulation in tissue
- High-throughput format allows analysis of up to 35 samples in duplicate in just 2 hours

Sensitive Detection of Linear and Branched PEG Molecules



PRODUCT NAME	PRODUCT #
PEGylated Protein ELISA Kit	ADI-900-213

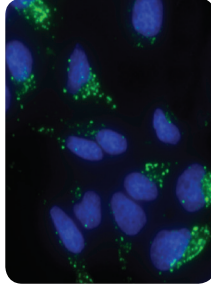
MONITOR CELL CULTURE AND BIOREACTIVE CONDITIONS

CELL DEATH

SIMPLIFY YOUR CELL DEATH ANALYSIS

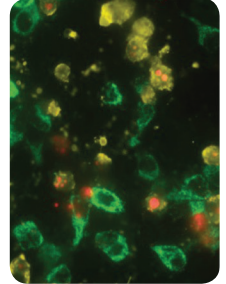
CYTO-ID® Autophagy Detection Kit 2.0 (ENZ-KIT175)

- No transfection required
- Brighter, more photostable dye specifically stains autophagic vesicles
- Rapidly quantifies autophagy in native heterogeneous cell populations
- Negligible staining of lysosomes reducing background



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

- True multiplexing capabilities with GFP and other green fluorescent probes
- Readily distinguishes between healthy, early apoptotic, late apoptotic, and necrotic cells
- Optimized for both fluorescence microscopy and flow cytometry



OXIDATIVE STRESS

SENSITIVE ASSAYS FOR OXIDATIVE STRESS

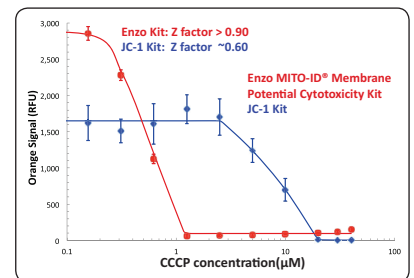
ROS-ID™ Hypoxia/Oxidative Stress Detection Kit (ENZ-51042)

- Sensitive hypoxia dye fluoresces red when converted by nitroreductases
- Total ROS dye enables simultaneous detection of hypoxia (red) and ROS (green)
- Non-toxic, cell permeable dye optimized to avoid artifactual fluorescence
- Suitable for microscopic or flow cytometry analysis of adherent or suspension cells

MITO-ID® Membrane Potential Cytotoxicity Assay Kit (ENZ-51019)

- 10x more sensitive than JC-1 with superior aqueous solubility
- Photostable dual-emission dye
- Separate MITO-ID® Red/Green assays available for detection of mitochondrial mass
- Suitable for high-throughput applications

High-throughput Analysis of Mitotoxicity



SMALL MOLECULES

BIOACTIVES FOR DRUG DEVELOPMENT

Ultra-high Purity | Cost Effective | Extensively Validated

PRODUCT NAME	PRODUCT #
Compound Libraries	
SCREEN-WELL® Autophagy Library	BML-2837
SCREEN-WELL® Cardiotoxicity Library	BML-2850
SCREEN-WELL® Hepatotoxicity Library	BML-2851
SCREEN-WELL® Hematopoietic Toxicity Library	BML-2852
SCREEN-WELL® ICCB Known Bioactives Library	BML-2840
SCREEN-WELL® FDA Approved Drug Library	BML-2843
SCREEN-WELL® Bioactive Lipid Library	BML-2800
SCREEN-WELL® Protease Inhibitor Library	BML-2833

PRODUCT NAME	PRODUCT #
Autophagy Modulators	
3-Methyladenine	BML-AP502
LY 294002	BML-ST420
Rapamycin	BML-A275
Wortmannin	BML-ST415
Osmotic Stress Inhibitors	
JX-401	BML-EI366
PD 169,316	ALX-270-258
SB202190	BML-EI294
SB220025	ALX-270-325
Protease Inhibitors	
Protease Inhibitor Cocktail	BML-KI103
3,4-Dichloroisocoumarin	BML-PI110
Actinonin	ALX-260-128
Chymostatin	ALX-260-005
Cystatin C (human)	BML-SE479

RELATED PRODUCTS	
PRODUCT NAME	PRODUCT #
Express DNA Methylation Kit	ENZ-45001
MEGACD40L® Protein (soluble) (human), (recombinant)	ALX-522-110
MEGACD40L® Protein (soluble) (mouse), (recombinant)	ALX-522-120
Methotrexate ELISA Kit	ENZ-KIT142
Protein Carbonyl ELISA Kit	ALX-850-312
PROTEOSTAT® Protein Refolding and Aggregation Sensing Kit	ENZ-51040
Sodium butyrate	ALX-270-301
Transferrin ELISA Kit	ENZ-KIT143
R-848	ALX-420-038
Valproic acid . sodium salt	ALX-550-304



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