



# eFluxx-ID™ Multidrug Resistance Assay Kits for flow cytometry

## eFluxx-ID™ Green Multidrug resistance assay kit

ENZ-51029-K100

100 Assays

## eFluxx-ID™ Gold Multidrug resistance assay kit

ENZ-51030-K100

100 Assays

# HIGHLIGHT

- Fast, sensitive and quantitative method for monitoring the activity of multi drug resistance proteins
- Detect and distinguish between three major clinically important multidrug resistance proteins: MDR1 (P-glycoprotein), MRP1/2 and BCRP
- Simple and reproducible mix-and-read protocol optimized for flow cytometry
- Suitable for multidrug resistance analysis and drug/toxicity investigations
- 488 nm laser excitable eFluxx-ID™ dyes are compatible with a wide range of instruments, and with other common fluorescent dyes/fluorescent proteins commonly used in flow cytometry
- Stringently manufactured, to control and eliminate non-specific assay artifacts

Multidrug resistance relates to the resistance of tumor cells to a variety of chemotherapy drugs with different structures and cellular targets. The phenomenon of multidrug resistance (MDR) is a well-known problem in oncology and thus needs profound consideration in cancer treatment. One of the underlying molecular rationales for MDR is the up-regulation of a family of transmembrane ATP binding cassette (ABC) transporter proteins that are present in practically all living organisms. These proteins cause chemotherapy resistance in cancer by actively extruding a wide range of therapeutic compounds from the malignant cells. The same ABC transporters play an important protective function against toxic compounds in a variety of cells and tissues and at blood-tissue barriers.

Enzo Life Sciences' eFluxx-ID™ Multidrug resistance assay kits are designed for functional detection and profiling of multidrug resistant phenotypes in live cells (both suspension and adherent). The kits include either a green fluorescent or orange fluorescent eFluxx-ID™ detection reagent as a major component. Both dyes are excited by a 488 nm laser. Being a substrate for all three main ABC transporter proteins, these reagents serve as indicators of transporter protein activity in cells. The proprietary AM-esters of the eFluxx-ID™ detection reagents are hydrophobic non-

fluorescent compounds that readily penetrate the cell membrane and are subsequently hydrolyzed inside of the cells by intracellular esterases. The resulting probe is a hydrophilic fluorescent dye that is trapped within the cell unless actively pumped out by an ABC transporter. The fluorescence signal of the dye generated within the cells thus depends upon the activity of the ABC transporters. The cells with highly active transporters will demonstrate lower fluorescence because of the active efflux of the reagent from the cell. Application of specific inhibitors of the various ABC transporter proteins, included in the kit, allows differentiation between the three common types of pumps. The activity of a particular MDR transporter is defined by the difference between the amount of the dye accumulated in the presence and in the absence of the inhibitors, respectively

The flow cytometry assay is based upon determining fluorescence intensities of the tested cells after a short *in vitro* incubation of cell suspensions with the eFluxx-ID™ detection reagents, in the presence or absence of specific ABC transporter inhibitors. The results of the test can be quantified by calculating the MDR activity factor (MAF), which allow comparison of multidrug resistance between the samples or cell lines.

#### North/South America

**ENZO LIFE SCIENCES INTERNATIONAL, INC.**

5120 Butler Pike  
Plymouth Meeting, PA 19462-1202 / USA  
Tel. 1-800-942-0430 / (610) 941-0430  
Fax (610) 941-9252  
info-usa@enzolifesciences.com

#### Switzerland & Rest of Europe

**ENZO LIFE SCIENCES AG**

Industriestrasse 17, Postfach  
CH-4415 Lausen / Switzerland  
Tel. + 41/0 61 926 89 89  
Fax + 41/0 61 926 89 79  
info-ch@enzolifesciences.com

#### Benelux

**ENZO LIFE SCIENCES BVBA**

Melkerijweg 3  
BE-2240 Zandhoven / Belgium  
Tel. +32/0 3 466 04 20  
Fax +32/0 3 466 04 29  
info-be@enzolifesciences.com

#### France

**ENZO LIFE SCIENCES FRANCE**

c/o Covalab s.a.s  
13, avenue Albert Einstein,  
69100 Villeurbanne, France  
Tel. +33/0 472 440 655  
Fax +33/0 437 484 239  
info-fr@enzolifesciences.com

#### Germany

**ENZO LIFE SCIENCES GmbH**

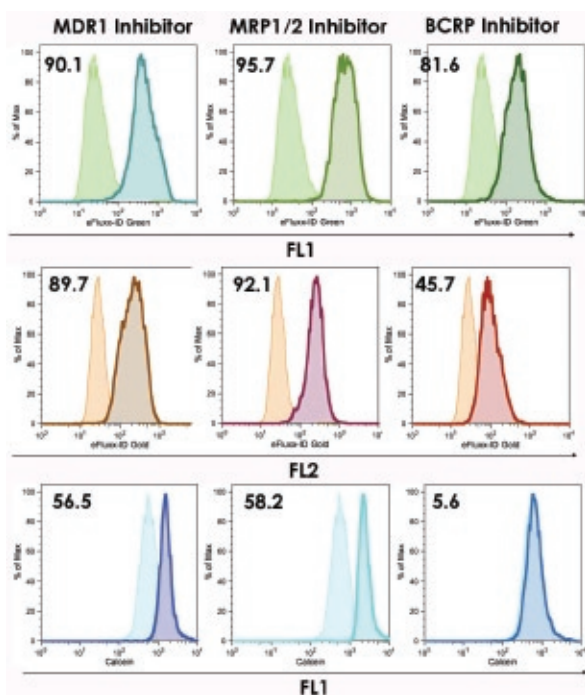
Marie-Curie-Strasse 8  
DE-79539 Lörrach / Germany  
Tel. +49/0 7621 5500 526  
Toll Free: 0800 6649518  
Fax +49/0 7621 5500 527  
info-de@enzolifesciences.com

#### UK & Ireland

**ENZO LIFE SCIENCES (UK) LTD.**

Palatine House  
Matford Court  
Exeter EX2 8NL / UK  
Tel. 0845 601 1488 (UK customers)  
Tel. +44/0 1392 825900 (overseas)  
Fax +44/0 1392 825910  
info-uk@enzolifesciences.com

**For Local Distributors please visit our Website.**



**FIGURE:** Typical results of the multidrug resistance assay. CHO K1 cells were incubated with eFluor-ID™ Green (Top panel) or Gold (Middle panel) detection reagent with and without specific inhibitors according to the kit protocol. Resulting fluorescence was measured using flow cytometry. Dark tinted histograms show fluorescence of inhibitor-treated samples and lightly tinted histograms show fluorescence of untreated cells. The difference in fluorescence is indicative of a corresponding protein activity (the numbers in the upper left corners are MAF scores (multidrug resistance activity factors) – quantitative characteristics of multidrug resistance). Calcein AM (common probe for MDR assay, bottom panel) is unable to detect BCRP activity.

## Related Products

Product	Prod. No.	Size
<b>GFP-Certified™ Apoptosis/Necrosis detection kit</b>	ENZ-51002-25 ENZ-51002-100	25 Assays 100 Assays
<b>Mito-ID® Membrane potential detection kit</b>	ENZ-51018-K100	100 Assays
<b>Mito-ID® Membrane potential cytotoxicity kit</b>	ENZ-51019-KP002	2 x 96 wells
<b>ROS/RNS detection kit</b>	ENZ-51001-K200	200 Assays
<b>Total ROS/Superoxide detection kit</b>	ENZ-51010	200 Assays