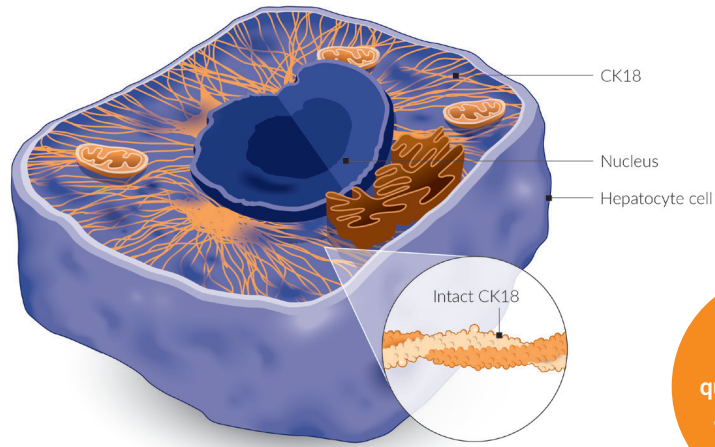




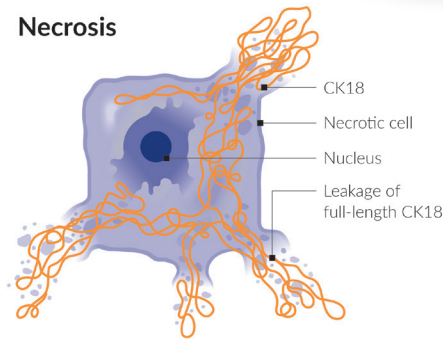
PEVIVA Product Line Overview

Your Toolbox for Apoptosis and Necrosis Measurements

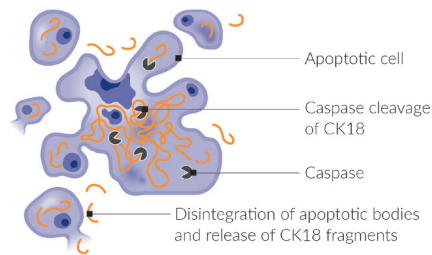




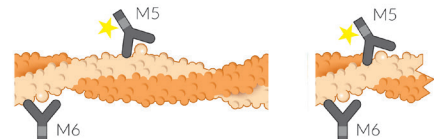
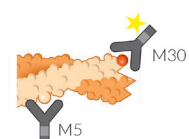
Products for accurate quantification of apoptosis and necrosis

Necrosis



Apoptosis



Only intact CK18	Caspase-cleaved CK18
	
<p>M65[®] ELISA M65 EpiDeath[®] ELISA</p> 	<p>M30 Apoptosense[®] ELISA M30 CytoDeath[™] ELISA</p> 
<p>Measurement of intact and cleaved CK18</p> <p>The M65 ELISAs measure total cell death (necrosis and apoptosis)</p>	<p>Measurement of cleaved CK18 only</p> <p>The M30 ELISAs measure only apoptosis</p>

The PEVIVA[®] Product Line is manufactured by VLVbio[™], a Swedish biotechnology company devoted to the manufacture, R&D, and sale of unique bioassays intended for:

- Non-invasive testing in liver disease research
- Preclinical research in drug development
- Rapid and non-invasive assessment of therapeutic efficacy of drug candidates in oncology studies

The PEVIVA[®] ELISAs are based on Keratin 18 (K18) antibodies: M30[®] is a unique apoptosis marker which measures the amount of caspase cleaved K18 (ccK18) leaked from epithelial cells, and which is used in the M30 Apoptosense[®] ELISA and the M30 CytoDeath[™] ELISA. The M65[®] ELISA, M65 EpiDeath[®], and M65 EpiRat[™] ELISA are based on two K18 mouse monoclonal antibodies (M5 and M6) measuring total cell death (apoptosis and necrosis) by quantifying cleaved and intact K18.

M30[®] ELISA products



Specific measurement tool for apoptosis

M30 Apoptosense[®] ELISA

(Product Number P10011) For research use only.

The M30 Apoptosense[®] ELISA measures the concentration of caspase-cleaved keratin 18 (ccK18) in human plasma, serum, or cell culture supernatants, reflecting the amount of apoptosis. The assay is based on the unique M30[®] antibody, which recognizes a neo-epitope of keratin 18 (K18) formed after caspase cleavage. The assay can be combined with the M65[®] ELISA for the analysis of cell death mode (necrosis or apoptosis).

Research Applications for the M30 Apoptosense[®] ELISA:

- **Hepatology:** Measure the level of hepatocyte apoptosis in research studies of subjects with liver diseases, e.g. NASH, AH, HCV and more. Assess treatment response in NASH and AH drug development studies.
- **Oncology:** Research chemotherapy induced apoptosis in epithelial carcinomas.
- **Toxicology:** Suitable for evaluating different chemical or pharmaceutical agents' impact on hepatocyte apoptosis, e.g. drug-induced liver injury (DILI) and toxicant-associated steatohepatitis (TASH).

Features of the M30 Apoptosense[®] ELISA:

- Tool for measuring apoptosis of K18 positive cells.
- Suitable for use in combination with M65[®] ELISA for analysis of cell death mode: apoptosis, necrosis, and total cell death.
- Sandwich ELISA (96-well plate) in a convenient ready-to-use format.
- 96 determinations: 7 standards, 2 controls, and 39 test samples in duplicate.
- Measuring range 0 – 1000 U/L. Working range 75 – 1000 U/L. Sensitivity 20 U/L.
- Assay procedure: approximately 5 hours.
- Recommended sample types: human serum or serum from xenograft models. Multiple freeze-thaw cycles of samples are well tolerated.
- Reagent storage: 2 – 8 °C.
- Can be split up for use on several occasions.



Suitable for measurement of apoptosis in cell cultures

M30 CytoDeath[™] ELISA

(Product Number P10900) For research use only.

The M30 CytoDeath[™] ELISA offers a unique possibility to measure apoptotic cells in 2D cell cultures, multicellular spheroids, and organ culture systems. The M30 CytoDeath[™] ELISA is a product developed for cell culture applications, with a dynamic range and sensitivity suitable for *in vitro* work, making it a useful drug research tool.

Similar to the M30 Apoptosense[®] ELISA, the M30 CytoDeath[™] ELISA is based on the M30[®] antibody, detecting the caspase-cleaved keratin 18.

Research Applications for the M30 CytoDeath[™] ELISA:

- **Oncology:** Research chemotherapy induced apoptosis in epithelial carcinoma cell cultures.
- **Toxicology:** Suitable for *in vitro* characterization of apoptosis-inducing drugs, including establishment of time course kinetics and dose-response relationships.

Features of the M30 CytoDeath[™] ELISA:

- Tool for measuring apoptosis of K18 positive cells in *in vitro* research studies.
- Suitable for cell cultures and spheroids.
- Sandwich ELISA (96-well plate) in a convenient ready-to-use format.
- 96 determinations: 4 standards and 44 test samples in duplicate.
- Measuring range 0 – 3000 U/L. Working range 250 – 3000 U/L. Sensitivity of 60 U/L.
- Assay procedure: approximately 5 hours.
- Recommended sample types: supernatant or cell lysate from 2D cell cultures, multicellular spheroids, and organ culture systems. Multiple freeze-thaw cycles of samples are well tolerated.
- Reagent storage: 2 – 8 °C.
- Can be split up for use on several occasions.

M65[®] ELISA products



Intended to be used together with the M30 Apoptosense[®] ELISA



The preferable stand-alone kit for measurement of total cell death

M65[®] ELISA

(Product Number P10020) For research use only.

The M65[®] ELISA measures soluble keratin 18 (K18) released from dying epithelial cells. It can be used to assess overall cell death due to apoptosis and necrosis. The M65[®] ELISA is intended use with for human serum samples.

The M65[®] ELISA is primarily intended to be used together with the M30 Apoptosense[®] ELISA. The combination of the M30 Apoptosense[®] ELISA and the M65[®] ELISA allows for the determination of the relative contribution of apoptosis or necrosis to the total amount of cell death.

Research Applications for the M65[®] ELISA:

- **Hepatology:** Measure the level of total hepatocyte death in research studies of subjects with liver diseases, e.g. NASH, AH, HCV and more. Assess treatment response in NASH and AH drug development studies.
- **Oncology:** Research chemotherapy induced cell death in epithelial carcinomas
- **Toxicology:** Suitable for evaluating different chemical pharmaceutical agents' impact on hepatocyte death, e.g. drug-induced liver injury (DILI), toxicant-associated steatohepatitis (TASH), or acute toxicity.

Features of the M65[®] ELISA:

- Tool for measuring total cell death of K18 positive cells.
- Optimized for use in combination with the M30 Apoptosense[®] ELISA for research of apoptosis, necrosis, and total cell death.
- Sandwich ELISA (96-well plate) in a convenient ready-to-use format.
- 96 determinations: 7 standards, 2 controls, and 39 test samples in duplicate.
- Measuring range 0 – 2000 U/L. Working range 125 – 2000 U/L. Sensitivity 11 U/L.
- Assay procedure: approximately 3 hours.
- Recommended sample types: human serum. Multiple freeze-thaw cycles of samples are well tolerated.
- Reagent storage: 2 – 8 °C.
- Can be split up for use on several occasions.

M65 EpiDeath[®] ELISA

(Product Number P10040) For research use only.

The M65 EpiDeath[®] ELISA measures soluble keratin 18 (K18) released from dying epithelial cells. It can be used to assess overall cell death due to apoptosis and necrosis. The M65 EpiDeath[®] ELISA is intended use with for human serum and cell culture supernatants.

The M65 EpiDeath[®] ELISA represents the next generation of K18 positive bioassays. It is the preferable stand-alone kit for measurement of total cell death.

Research Applications for the M65 EpiDeath[®] ELISA:

- **Hepatology:** Measure the level of total hepatocyte cell death in research studies of subjects with liver diseases, e.g. NASH, AH, HCV and more. Assess treatment response in NASH and AH drug development studies.
- **Toxicology:** Suitable for evaluating different chemical pharmaceutical agents' impact on hepatocyte death, e.g. drug-induced liver injury (DILI), toxicant-associated steatohepatitis (TASH), or acute toxicity.

Features of the M65 EpiDeath[®] ELISA:

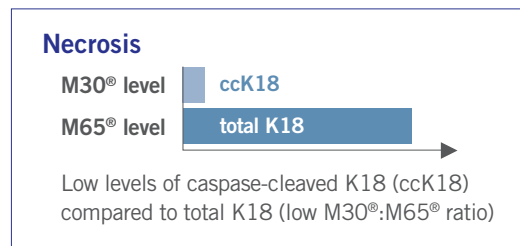
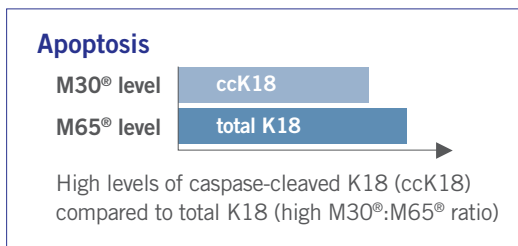
- Tool for measuring total cell death of K18 positive cells.
- Sandwich ELISA (96-well plate) in a convenient ready-to-use format.
- 96 determinations: 8 standards, 2 controls, and 38 test samples in duplicate.
- Measuring range 0 – 5000 U/L. Working range 67 – 5000 U/L. Sensitivity 25 U/L.
- Assay procedure: approximately 5 hours.
- Recommended sample types: human serum and epithelial cell cultures supernatants. Multiple freeze-thaw cycles of samples are well tolerated.
- Reagent storage: 2 – 8 °C.
- Can be split up for use on several occasions.

The PEVIVA® Product Line can be used with blood samples, samples from cell cultures and spheroids, or on xenografts to measure apoptosis, total cell death, and the ratio between apoptosis and necrosis.

Product	Apoptosis	Total Cell Death	Cell Cultures	Spheroids	Xenografts	Blood/Plasma Samples
M30 Apoptosense® ELISA	✓	—	✓	✓	✓	✓
M30 CytoDeath™ ELISA	✓	—	✓	✓	—	—
M65® ELISA	—	✓	✓	✓	✓	✓
M65 EpiDeath® ELISA	—	✓	✓	✓	✓	✓

M30®:M65® Ratios Indicate Cell Death Mode

The ratios between M30 Apoptosense® ELISA (measuring caspase-cleaved keratin 18, ccK18) and M65® ELISA (measuring total keratin 18, K18) reflect the cell death mode. The amount of apoptosis (M30®) is compared to the amount of total cell death (M65®) by calculating the M30®:M65® ratio. High M30®:M65® ratios indicate that the cell death is mainly due to apoptosis. In contrast, low M30®:M65® ratios suggest necrosis is the predominant cause of cell death.



M65 EpiRat™ ELISA (Product Number P10060)



Perfect for translational research studies

The M65 EpiRat™ ELISA measures the concentration of soluble keratin 18 (K18) in rat serum and plasma samples. The K18 levels reflect the amount of total cell death due to apoptosis and necrosis in rat epithelial cells.

M65 EpiRat™ ELISA was developed for measuring liver damage in pre-clinical studies for safety and efficacy making it useful as a drug screening tool.

Research Applications for the M65 EpiRat™ ELISA:

- **Pre-clinical studies:** Assess treatment effect and disease progression. Perfectly suited for translational research studies of new drug candidates in oncology and hepatology, e.g. NASH and DILI.
- **Toxicology:** Allows for the quantification of the amount of cell death in hepatocytes to assess liver toxicity.

Features of the M65 EpiRat™ ELISA:

- Sandwich ELISA (96-well plate) in a convenient ready-to-use format.
- 96 determinations: 5 standards and 43 test samples in duplicate.
- Measuring range 0 – 2000 U/L. Working range 98 – 2000 U/L. Sensitivity 50 U/L.
- Assay procedure: approximately 5 hours.
- Sample type: rat serum and plasma (heparin, citrate, EDTA) samples.
- Reagent storage: 2 – 8 °C.
- Can be split up for use at several occasions.



PEVIVA® Product Line

ELISA Products	Use	Prod. No.
M30 Apoptosense® ELISA	RUO	P10011
M30 CytoDeath™ ELISA	RUO	P10900
M65® ELISA	RUO	P10020
M65 EpiDeath® ELISA	RUO	P10040
M65 EpiRat™ ELISA	RUO	P10060



diapharma

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8948 Beckett Road, West Chester, OH 45069

VLVbio

HOW TO ORDER

Phone:

800.526.5224

Fax:

513.860.9635

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info@diapharma.com

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