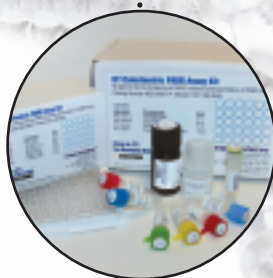
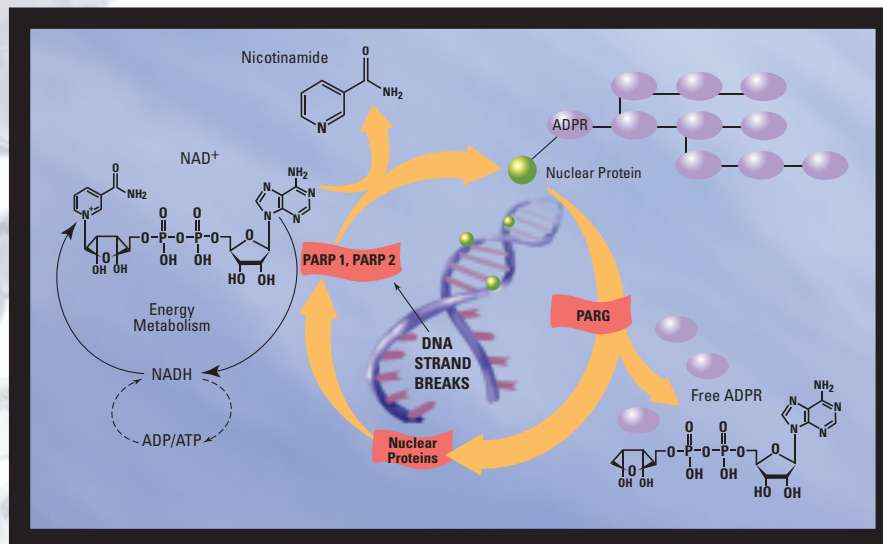


PARP/PAR/PARG KITS and REAGENTS

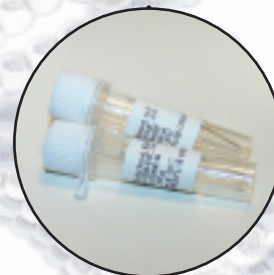
TREVI GEN®



Kits



Enzymes



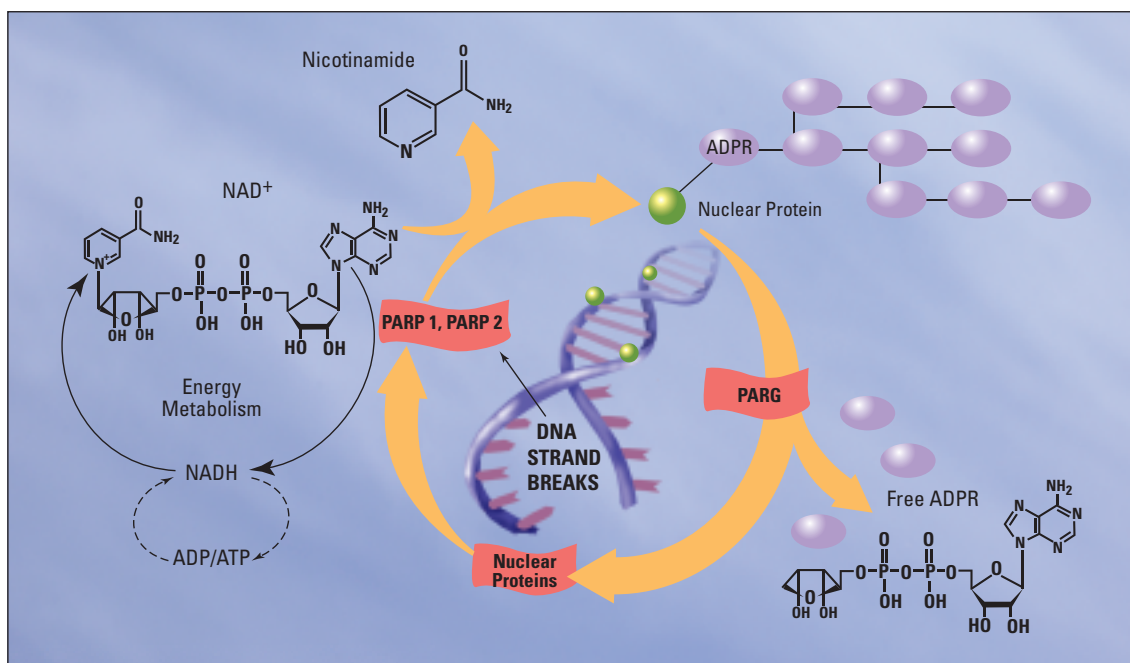
Antibodies

PARP PRODUCTS

PARP/PARG

In response to genotoxic stress Poly(ADP-ribose) polymerases (PARP 1 and PARP 2) are rapidly activated by DNA strand breaks. Once activated, NAD^+ is consumed for the synthesis of highly negatively charged polymers of ADP-ribose (PAR) on target nuclear proteins that include PARP 1 itself as a major acceptor. These highly branched polymers are in turn rapidly degraded by poly(ADP-ribose) glycohydrolase (PARG). As a consequence of PARP activation, extensive DNA damage can lead to the depletion of NAD^+ and in turn reduce the capacity of the cell to generate energy in the form of ATP resulting in cell death.

Trevigen offers kits that measure the *in vivo* and *in vitro* activities of PARP 1 and PARP 2 and PARG. One hallmark of apoptosis is the caspase 1-mediated cleavage and inactivation of PARP 1. The **PARP Apoptosis Kit** measures decreasing levels of PARP activity as cells move through the apoptosis pathway. The homogeneous PARP assay is well suited for the large scale screening of compound libraries. Our **Universal PARP Assay** and **PARG Assay** are designed to analyze small numbers of inhibitors providing accurate IC_{50} information. Once inhibitors to PARP have been identified using *in vitro* screening assays, the *in vivo* activity in cell extracts or peripheral blood mononuclear cells can be measured using Trevigen's **PARP in vivo Pharmacodynamic Assay**. Details for each kit are provided in this brochure.



In response to genotoxic stress Poly (ADP-ribose) polymerase-1(PARP 1) binds to single strand breaks in DNA and synthesizes highly negatively charged and branched poly (ADP-ribose) (PAR) polymers, from NAD^+ ; that covalently modify numerous nuclear proteins including PARP 1. These highly branched polymers are in turn rapidly degraded by poly (ADP-ribose) glycohydrolase (PARG). As a consequence of PARP activation, extensive DNA damage can lead to the depletion of NAD^+ and in turn reduce the capacity of the cell to generate energy in the form of ATP resulting in cell death.

ENZYMES/ANTIBODIES

Standard and High Specific Activity PARP Enzyme

Trevigen offers a "standard" PARP purified to ~50% purity and a high specific activity (HSA) enzyme purified to greater than 95%. The standard PARP enzyme is useful as a positive control for Western blot analysis of ribosylated proteins and PARP Activity Assays. HSA PARP is recommended for detailed studies and drug discovery applications.



Description	Size	Catalog No.
Recombinant Human PARP Enzyme	50 µl	4667-50-01
Recombinant Human PARP Enzyme	250 µl	4667-250-01
High-Specific Activity Recombinant Human PARP Enzyme	1,000 Units	4668-100-01
High-Specific Activity Recombinant Human PARP Enzyme	5,000 Units	4668-500-01
High-Specific Activity Recombinant Human PARP Enzyme	20,000 Units	4668-2K-01

PARP and PAR Antibodies

The PARP monoclonal antibody can be used for analysis of PARP protein levels and cleavage of PARP in apoptotic cells. It recognizes both the full length protein (116 kDa) and an 85 kDa cleavage fragment associated with apoptosis. The PAR antibody is specific for PAR polymers synthesized by a variety of PARP isoforms (PARP 1, 2, 3, tankyrase, vPARP, and others).



Description	Size	Catalog No.
Affinity Purified Anti-PAR MAb	50 µl	4335-AMC-050
Anti-PAR MAb (Clone 10HA)	100 µl	4335-MC-100
Anti-PAR MAb (Clone 10HA)	1000 µl	4335-MC-1K
Affinity Purified Anti-PAR PAb	50 µl	4336-APC-050
Anti-PAR PAb (Rabbit)	100 µl	4336-BPC-100
Poly (ADP) Ribose (PAR) Polymer	100 µl	4336-100-01
Anti-PARP MAb (Clone C2-10)	50 µg	4338-MC-50
PARP Treated Protein Control for WB	10 µl	4500-10-P

KITS

PARP and PARG Kits



Description	Size	Detection	Sensitivity	Catalog No.
PARP in vivo Pharmacodynamic Assay Kit	96 Wells	Chemiluminescent	10 pg/ml	4510-096-K
PARP Assay Kit (2)*	96 Wells	Colorimetric	0.01 unit	4671-096-K
PARP Assay Kit (2)*	96 Wells	Chemiluminescent	0.01 unit	4675-096-K
HT PARP Assay Kit (1)*	96 Wells	Chemiluminescent	0.01 unit	4676-096-K
HT PARP Assay Kit (1)*	96 Wells	Colorimetric	0.01 unit	4677-096-K
HT PARP Apoptosis Assay Kit (1)*	96 Wells	Chemiluminescent	0.1 m unit	4685-096-K
HT PARP Apoptosis Assay Kit (1)*	96 Wells	Colorimetric	0.1 m unit	4684-096-K
PARG Assay Kit (1)*	96 Wells	Chemiluminescent	250 pg PARG	4682-096-K
PARG Assay Kit (1)*	96 Wells	Colorimetric	250 pg PARG	4683-096-K
Fluorescent Homogeneous PARP Inhibition Assay Kit	96 Wells	Fluorescent	10% inhibition	4690-096-K

* (1) With Histone Coated Strip Wells, (2) With Histone Reagent

COMING SOON – Homogeneous PARG Inhibition Assay – COMING SOON

Contact Trevigen to be on the product release notification list

KIT HIGHLIGHTS

HT Universal PARP Assay

Trevigen's Universal PARP Assay Kit measures the incorporation of biotinylated poly (ADP-ribose) onto histone proteins in a 96-strip well format. This assay is ideal for the screening of PARP inhibitors and for measuring the activity of PARP in cell extracts using either colorimetric or chemiluminescent detection.

Description	Size	Catalog No.
Colorimetric Universal PARP Assay Kit	96 Wells	4677-096-K
Chemiluminescent Universal PARP Assay Kit	96 Wells	4676-096-K

Citations

PARP 1 suppresses adiponectin expression through poly(ADP-ribosylation) of PPAR γ in cardiac fibroblasts

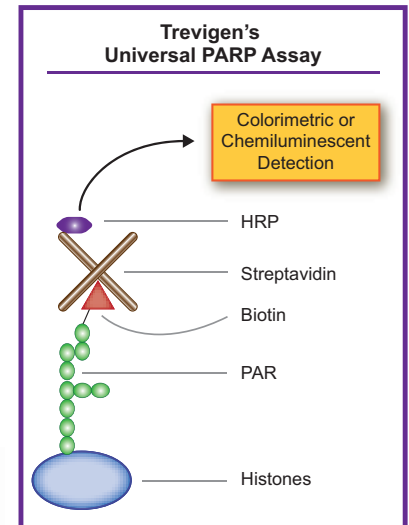
Dan Huang, Chongzhe Yang, Yan Wang, Yuhua Liao, and Kai Huang.
Cardiovasc Res., Jan 2009; 81: 98 - 107.

Kaposi's Sarcoma-Associated Herpesvirus confers a survival advantage to endothelial cells

Ling Wang and Blossom Damania.
Cancer Res., Jun 2008; 68: 4640 - 4648.

Cannabidiol attenuates cisplatin-induced nephrotoxicity by decreasing oxidative/nitrosative stress, inflammation and cell death

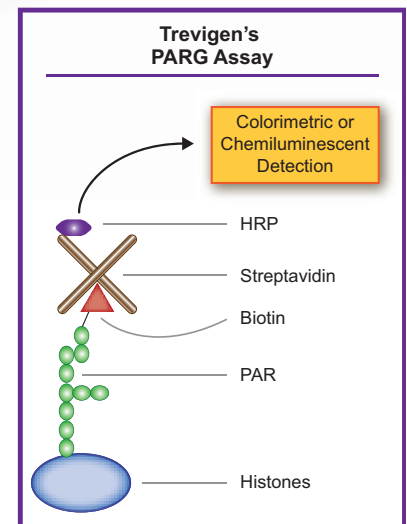
Hao Pan, Partha Mukhopadhyay, Mohanraj Rajesh, Vivek Patel, Bani Mukhopadhyay, Bin Gao, Gyorgy Hasko, and Pal Pacher.
J. Pharmacol. Exp. Ther., Dec 2008; 10.1124/jpet. 108.147181.



PARG Assay

Trevigen's PARG Assay Kit measures the loss of biotinylated PAR from histones attached to strip wells in a 96 well format. This assay is ideal for the screening of PARG inhibitors and for measuring the relative activity of PARG in cell extracts using either colorimetric or chemiluminescent detection.

Description	Size	Catalog No.
HT Chemiluminescent PARG Assay Kit	96 Wells	4682-096-K
HT Colorimetric PARG Assay Kit	96 Wells	4683-096-K



HT PARP/Apoptosis Assay

Trevigen's PARP/Apoptosis Assay is available in both colorimetric and chemiluminescent, plate-based (96-strip well) formats. The assay has a sensitivity down to 0.1 mUnits of PARP.

Application: Monitoring PARP before and during apoptosis.

Description	Size	Catalog No.
Colorimetric PARP/Apoptosis Assay	96 Wells	4684-096-K
Chemiluminescent PARP/Apoptosis Assay	96 Wells	4685-096-K

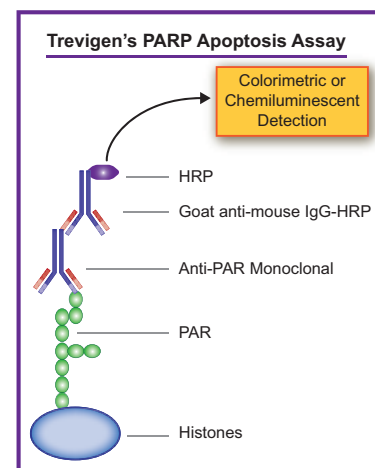
Citations

In vitro and In vivo radiosensitization of glioblastoma cells by the Poly (ADP-Ribose) Polymerase Inhibitor E7016

Andrea L. Russo, Hyuk-Chan Kwon, William E. Burgan, Donna Carter, Katie Beam, Xu Weizheng, Jie Zhang, Barbara S. Slusher, Arnab Chakravarti, Philip J. Tofilon, and Kevin Camphausen. *Clin. Cancer Res.*, Jan 2009; 15: 607 - 612.

Inhibition of PARP 1 by arsenite interferes with repair of oxidative DNA damage

Wei Ding, Wenlan liu, Karen L. Cooper, Xujun Qin, Patricia Luisa Bergo, Laurie G. Hudson, and Ke Jian Liu. *J. Biol. Chem.*, Dec 2008; 10.1074/jbc.M805566200.

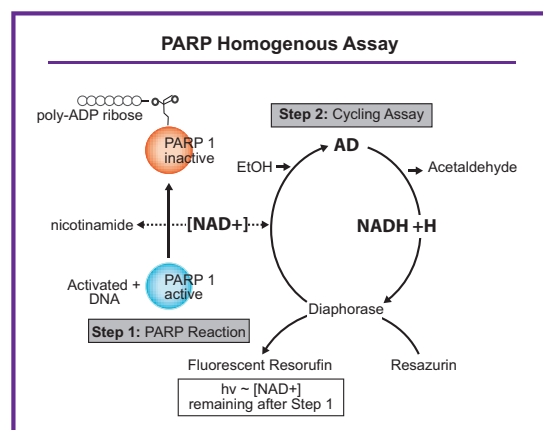


HT Homogeneous PARP Inhibition Assay

Trevigen's Homogeneous PARP Inhibition Assay is a highly sensitive fluorescent screening assay for the rapid identification of PARP 1 inhibitors in an in vitro system. This one hour endpoint assay is performed in two successive steps requiring only the consecutive addition of reaction components. The assay can be used to determine relative IC50 values for PARP inhibitors and is capable of detecting as little as 10% inhibition of PARP 1 activity.

Application: The Homogeneous PARP Inhibition Assay is designed for the screening of PARP inhibitors. Once potential inhibitors are identified, results can be confirmed using Trevigen's HT Universal PARP Assay kits (cat# 4676-096-K or 4677-096-K).

Description	Size	Catalog No.
Fluorescent Homogeneous PARP Inhibition Assay	96 Wells	4690-096-K



PARP in vivo Pharmacodynamic Assay

Trevigen's PARP in vivo Pharmacodynamic Assay is a chemiluminescent, plate-based (96-strip well) ELISA assay that has a sensitivity of 10 pg/ml PAR.

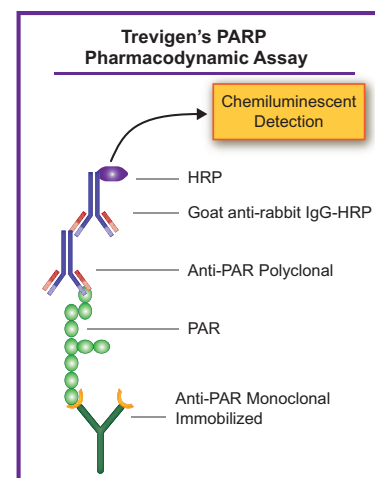
Applications:

Quantification of PAR in peripheral blood mononuclear cells and tissue culture cells.

Monitoring the efficacy of PARP inhibitors on cellular PAR formation.

Verifying observations of enhanced cancer cell cytotoxicity arising from PARP inhibitor/ anticancer drug combination therapy.

Description	Size	Catalog No.
PARP in vivo Pharmacodynamic Assay	96 Wells	4510-096-K



WHAT CUSTOMERS SAY

Aleksey Kazantsev, PhD
Harvard Medical School

"Kit was easy to handle. Enzymatic assays were robust, providing reliable and reproducible data."

Dr. Senthilkumar B. Rajamohan
University of Chicago
Dept of Cardiothoracic Surgery

"Trevigen Colorimetric PARP Assay Kit is user friendly. A non-radioactive method, to quantify the (ADP) activity in cell lines."

Dr. Peyman Kabolizadeh
Virginia Commonwealth
University

"Monoclonal antibody against poly (ADP-ribose) polymerase (PARP) worked really well in my experiments and I would recommend using it to everyone for detecting total PARP."

RELATED PRODUCTS

NAD

Biotinylated-NAD - 500 ul	Catalog Number: 4670-500-01
FITC-NAD - 250 ul	Catalog Number: 4673-500-01

Annexin V Kits

Annexin V FITC Kit - 100 Samples	Catalog Number: 4830-01-K
Annexin V FITC Kit - 250 Samples	Catalog Number: 4830-250-K
Annexin V Biotin Kit - 100 Samples	Catalog Number: 4835-01-K
Annexin V Biotin Kit - 250 Samples	Catalog Number: 4835-250-K

CometAssay® Kits

CometAssay® Kit - 50 Samples	Catalog Number: 4250-050-K
CometAssay® Silver Kit - 50 Samples	Catalog Number: 4251-050-K
CometAssay® HT Sample Kit	Catalog Number: 4252-040-K
CometAssay® Kit 96 wells	Catalog Number: 4253-096-K

CometSlides™

25 slides	Catalog Number: 4250-050-03
100 slides	Catalog Number: 4250-200-03
25 HT slides	Catalog Number: 4252-500-01
100 HT slides	Catalog Number: 4252-02K-01

ABOUT US

Trevigen, Inc. is a rapidly growing biotechnology company focused on the development of products and technology for cancer research, emphasizing apoptosis, DNA damage and repair, and cancer cell function and behavior. Trevigen has been a long-standing provider of quality reagents and kits for researchers investigating programmed cell death and DNA damage and repair. A logical extension of our focus on cancer research has been the recent development of assays for cancer cell function and behavior including angiogenesis, cell invasion and tumor formation. Currently, our product portfolio contains over 500 products categorized into four processes – **Apoptosis, DNA Damage and Repair, Cancer Cell Behavior, and Oxidative Stress.**

1.800.873.8443 **TREVIGEN®** www.trevigen.com

© 2009 Trevigen, Inc. Trevigen and CometAssay are registered trademarks. CometSlide is a trademark of Trevigen.