



Text

ASSAY KIT RECOMMENDATION REFERENCE GUIDE

TABLE OF CONTENTS



1 CELL BIOLOGY

[Pg. 1] Assessing Cell Health
[Pg. 3] cAMP & cGMP Measurement



10 METABOLISM

[Pg. 10] Bioenergetics
[Pg. 12] Nutrient Metabolism &
Cellular Metabolic Pathways
[Pg. 16] Steroid Hormones



4 IMMUNOLOGY

[Pg. 4] Neutrophil Biology
[Pg. 5] PADs & Citrullination



18 OXIDATIVE INJURY

[Pg. 18] Lipid Peroxidation
[Pg. 19] Antioxidant Detection/Activity
[Pg. 20] Oxidative DNA/RNA Damage
[Pg. 21] Nitric Oxide Analysis
[Pg. 22] Ox-PTMs of Cysteine



6 INFLAMMATION

[Pg. 6] COX Activity & Inhibition
[Pg. 7] Prostaglandin D₂
[Pg. 8] Prostaglandin E₂
[Pg. 8] Prostaglandin F_{2α}
[Pg. 9] Prostacyclin
[Pg. 9] Thromboxane B₂

CELL BIOLOGY

Assay Kits to Assess Cell Health

Cayman offers a group of related assays that can be used to assess proliferative activity, cell viability, metabolic activity, cell cycle phase, drug toxicity, and apoptosis. Together, the information derived from these assays can indicate whether a cell population that has been exposed to an experimental stimulus is healthy or dying, actively dividing or in stasis, or has committed to an apoptotic pathway.

Item No.	Product	Measure	Readout	Methodology	Time to Results
600300	Annexin V FITC Assay Kit	Apoptosis / Necrosis	Flow cytometer Fluorescence plate reader Fluorescence microscope	Uses Annexin V and propidium iodide staining to differentiate apoptosis and necrosis	30 minute staining protocol
10009135	Caspase-3 Fluorescence Assay Kit	Apoptosis	Fluorescence plate reader	Uses N-Ac-DEVD-N'-MC-R110 as substrate, which upon cleavage by active caspase-3, generates a highly fluorescent product	2 hours
600330	Multi-Parameter Apoptosis Assay Kit	Apoptosis	Flow cytometer Fluorescence plate reader Fluorescence microscope	Uses Annexin V FITC and a viability dye to differentiate apoptosis while using TMRE to indicate mitochondrial membrane potential	1 hour staining protocol
10009172	JC-1 Mitochondrial Membrane Potential Assay Kit	Apoptosis / Mitochondrial Health	Flow cytometer Fluorescence plate reader Fluorescence microscope	Uses JC-1 dye to detect changes in mitochondrial membrane potential	<1 hour staining protocol
701310	TMRE Mitochondrial Membrane Potential Assay Kit	Mitochondrial membrane potential	Fluorescence Plate Reader	Utilizes tetramethylrhodamine ethyl ester (TMRE), a cell-permeable, cationic dye which accumulates in the mitochondrial matrix based on mitochondrial membrane potential ($\Delta\psi_m$)	2-4 hours
601170	LDH Cytotoxicity Assay Kit	Cytotoxicity and non-apoptotic cell death	Colorimetric plate reader	Reduces tetrazolium salt (INT) as an indicator of the amount of LDH released into supernatant by dying cells; detects 10,000-200,000 cells per well	30 minute reaction
600140	Autophagy/Cytotoxicity Dual Staining Kit	Cytotoxicity and Autophagy	Fluorescence plate reader Fluorescence microscope	Employs monodansylcadaverine (MDC) as a probe for detection of autophagic vacuoles in cultured cells; Propidium iodide as a dead cell counterstain	<30 minutes staining protocol
600120	7-AAD/CFSE Cell-Mediated Cytotoxicity Assay Kit	Cytotoxicity	Flow cytometer	Uses CFSE label to identify target cells and 7-AAD to quantify effector cell-induced cytotoxicity	6-7 hours total, including a 4 hour incubation
10009853	CFSE Cell Division Assay Kit	Cell proliferation	Flow cytometer	Uses CFSE dilution to detect up to eight cell divisions in activated lymphocytes	<1 hour to label, variable incubation, <1 hour to prep samples for flow cytometry
10009365	MTT Cell Proliferation Assay Kit	Cell Proliferation / Viability	Colorimetric plate reader	Reduces MTT to insoluble, purple formazan by NAD(P)H-oxidoreductases in living cells; detects 10,000-250,000 cells per well	8-22 hours



Assay Kits to Assess Cell Health (continued)

Item No.	Product	Measure	Readout	Methodology	Time to Results
10010200	XTT Cell Proliferation Assay Kit	Cell Proliferation / Viability	Colorimetric plate reader	Reduces XTT to purple formazan by <i>trans</i> -plasma membrane electron transport from NADH <i>via</i> an electron mediator; detects 500-100,000 cells per well	~4 hours
10008883	WST-1 Cell Proliferation Assay Kit	Cell Proliferation / Viability	Colorimetric plate reader	Reduces WST-1 to soluble purple formazan by <i>trans</i> -plasma membrane electron transport from NADH <i>via</i> an electron mediator; detects 1,000-200,000 cells per well	2-4 hours
10010199	WST-8 Cell Proliferation Assay Kit	Cell Proliferation / Viability	Colorimetric plate reader	Reduces WST-8 to soluble purple formazan by <i>trans</i> -plasma membrane electron transport from NADH <i>via</i> an electron mediator; detects 2,000-500,000 cells per well	2-4 hours
10009349	Cell Cycle Phase Determination Kit	Cell Viability / Cell Cycle Progression	Flow cytometer	Uses propidium iodide to stain DNA and quantify cell division phases G ₀ /G ₁ , G ₂ , or S phase	2 hours staining protocol
700410	ATP Detection Assay Kit - Luminescence	Total ATP levels	Luminescence Plate Reader	Uses firefly luciferase to convert ATP and luciferin to oxyluciferin and light	<1 hour



Kit Recommendations for Cyclic AMP and Cyclic GMP Measurement

Cyclic AMP (cAMP) and cyclic GMP (cGMP) are crucial second messengers involved in numerous signal transduction pathways. They are linked to various G protein-coupled receptors, cyclic nucleotide-gated channels, or certain protein kinases and promote the phosphorylation or dephosphorylation of various downstream enzymes or cascade of enzymes, activating or inhibiting the targeted activity. The concentration of cAMP or cGMP in a cell can serve as a marker for the functionality of certain receptors or kinase activity. Cayman offers a panel of cyclic nucleotide kits tailored to provide highly sensitive results for accurate determination of cAMP/cGMP levels.

Item No.	Product	Sample Types	Features
581001	Cyclic AMP ELISA Kit	Cell Lysates Tissue Homogenates Plasma Urine	<ul style="list-style-type: none"> Assay 24 samples in triplicate or 36 samples in duplicate Measure cAMP levels down to 0.1 pmol/ml Incubation: 18 hours Development: 60-90 minutes Read: Colorimetric at 405-420 nm Contains acetic anhydride NOTE: Also available without acetic anhydride - Item No. 581002
501040	Cyclic AMP Select ELISA Kit	Cell Media Tissue Homogenates Plasma Urine	<ul style="list-style-type: none"> A sensitive assay for cAMP in multiple sample matrices without the need for acetylation Assay 24 samples in triplicate or 36 samples in duplicate Measure cAMP levels down to 0.6 pmol/ml Incubation: 18 hours Development: 90-120 minutes Read: Colorimetric at 405-420 nm
581021	Cyclic GMP ELISA Kit	Cell Lysates Tissue Homogenates Plasma Urine	<ul style="list-style-type: none"> Measure non-acetylated cGMP levels down to 1 pmol/ml or acetylated cGMP levels down to 0.1 pmol/ml Assay 24 samples in triplicate or 36 samples in duplicate Contains acetic anhydride Incubation: 18 hours Development: 60-90 minutes Read: Colorimetric at 405-420 nm NOTE: Also available without acetic anhydride - Item No. 581022



Kit Recommendations for Innate Immune Responses: Neutrophil Biology

The first line of defense in the innate immune response to many pathogenic organisms involves the actions of short-lived neutrophils, inflammatory cells that are highly adept at ingesting and destroying bacteria. They produce antimicrobial proteins and peptides including myeloperoxidase and neutrophil elastase, which are released along with DNA and histones to form extracellular traps, web-like structures that ensnare and kill extracellular pathogens. Cayman's assay kits provide a convenient means to isolate neutrophils and measure the production of antimicrobial products.

Item No.	Product	Sample Type(s)	Use To	Features
600610	Neutrophil Elastase Activity Assay Kit	Neutrophils isolated from whole blood	Measure neutrophil elastase released by neutrophils after various experimental conditions	<ul style="list-style-type: none"> Employ the specific elastase substrate (Z-Ala-Ala-Ala-Ala)2Rh110 Includes reagents to isolate neutrophils from whole blood and PMA to stimulate elastase release Assay performed in provided black 96-well plates
601010	NETosis Assay Kit	NET-forming cells (e.g., human peripheral blood neutrophils)	Induce and detect NET formation <i>in vitro</i>	<ul style="list-style-type: none"> Elastase-based readout Non-dsDNA readout eliminates false positives from DNA Adaptable to multiple species
601070	Neutrophil (mouse) Isolation Kit	Bone marrow Peritoneal exudate cells	Isolate mouse neutrophils from peritoneal lavage or bone marrow	<ul style="list-style-type: none"> Circumvents issues commonplace to isolating neutrophils from mouse blood Includes a Percoll® density separation gradient Analyze purified neutrophils by flow cytometry
601130	Neutrophil/Monocyte Respiratory Burst Assay Kit	Whole blood Isolated neutrophils or monocytes	Induce and quantify a respiratory burst response	<ul style="list-style-type: none"> Analyze by flow cytometry Samples include whole blood from any species or cells of any type that are capable of producing a NADPH oxidase-dependent respiratory burst
600620	Neutrophil Myeloperoxidase Activity Assay Kit	Neutrophils isolated from whole blood	Assay the release of enzymatically-active MPO from activated phagocytes	<ul style="list-style-type: none"> Utilize TMB as a chromogenic substrate for MPO Includes a specific inhibitor of MPO function to verify specificity Includes reagents needed to isolate neutrophils from human whole blood
10006438	Myeloperoxidase Chlorination Fluorometric Assay Kit	Cell lysates Purified preparations	Measure MPO chlorination activity	<ul style="list-style-type: none"> Assay 37 samples in duplicate Plate-based fluorometric measurement (ex 480-495 nm, em 515-525 nm)
700160	Myeloperoxidase Peroxidation Fluorometric Assay Kit	Cell lysates Purified preparations	Measure MPO peroxidase activity	<ul style="list-style-type: none"> Assay 37 samples in duplicate Plate-based, fluorometric measurement (ex 530-540 nm, em 585-595 nm)
700170	Myeloperoxidase Inhibitor Screening Assay Kit	Small molecules	Screen inhibitors of MPO	<ul style="list-style-type: none"> Includes reagents to measure both the chlorination and peroxidation activities Assay 45 samples in duplicate Plate-based, fluorometric measurement (ex 480-495 nm, em 515-525 nm, ex 530-540 nm, em 585-595 nm)



Kit Recommendations for Innate Immune Responses: PADs & Citrullination

Peptidylarginine Deiminases (Protein Arginine Deiminases; PADs) are guanidino-modifying enzymes that catalyze the conversion of specific arginine residues to citrulline. Multiple PAD substrates have been identified, including histones, fibrinogen, vimentin, and others. PAD4 itself can undergo autocitrullination at several sites, which inhibits its enzymatic activity and may play an important role in regulating citrullination in cells. PAD activity is increased in rheumatoid arthritis, producing an abundance of citrulline-containing proteins that can be recognized by autoantibodies that cause the immune system to attack its own tissues. PADs have also been implicated in several other diseases including multiple sclerosis, Alzheimer's disease, glaucoma, and cancer.

Item No.	Product	Sample Type(s)	Use To	Feature(s)
501270	Anti-Citrullinated Human Fibrinogen Assay Kit (mouse)	Mouse plasma and serum	Measure antibodies specific for citrullinated human fibrinogen	<ul style="list-style-type: none"> • Assay Range: 0.15-10 µg/ml with an LLOQ of 0.15 µg/ml • Human fibrinogen affinity sorbent included for removal of any antibodies capable of reacting with non-citrullinated (unmodified) fibrinogen prior to analysis
500930	PAD4 Autoantibody ELISA Kit	Human plasma and serum	Measure anti-PAD4 autoantibodies of any isotype (IgM, IgG, IgA)	<ul style="list-style-type: none"> • Assay Range: 15.6-1,000 U/ml with an LLOQ of 31.3 U/ml
700560	PAD4 Inhibitor Screening Assay Kit (Ammonia)	Small molecules	Screen inhibitors of PAD4	<ul style="list-style-type: none"> • Assay 45 samples in duplicate • Plate-based, fluorometric measurement (ex 405-415 nm, em 470-480 nm) • Orthogonal assay to Cayman's PAD4 Inhibitor Screening Assay Kit (AMC) (Item No. 701320)
701320	PAD4 Inhibitor Screening Assay Kit (AMC)	Small molecules	Screen inhibitors of PAD4	<ul style="list-style-type: none"> • Assay 45 samples in duplicate • Plate-based, fluorometric measurement (ex 355-365 nm, em 445-455 nm) • Low background, high sensitivity • Orthogonal assay to Cayman's PAD4 Inhibitor Screening Assay Kit (Ammonia) (Item No. 700560)
701390	PAD2 Inhibitor Screening Assay Kit (AMC)	Small molecules	Screen inhibitors of PAD2	<ul style="list-style-type: none"> • Assay 45 samples in duplicate • Plate-based, fluorometric measurement (ex 355-365 nm, em 445-455 nm) • Low background, high sensitivity

INFLAMMATION

Kit Recommendations for Cyclooxygenase Activity and Inhibition

Cayman Chemical offers several options for measuring cyclooxygenase (COX) activity. A variety of assay kits are available to either directly measure prostaglandin $F_{2\alpha}$ ($PGF_{2\alpha}$) produced in the COX reaction or to monitor the peroxidase component of the reaction. Peroxidase activity can be measured fluorometrically or colorimetrically. Both purified human and ovine COX-1 and COX-2 enzymes are available.

	Item No.	Product	Enzyme(s) Included in Kit				Kit Measures		Feature
			COX-1 (human)	COX-1 (ovine)	COX-2 (human)	COX-2 (ovine)	Peroxidase Activity	$PGF_{2\alpha}$	
Activity Assays	760151	COX Activity Assay Kit		✓			✓		Assay 36 samples in duplicate
	700200	COX Fluorescent Activity Assay Kit		✓			✓		Assay 70 samples in duplicate
Inhibitor Screening Assays	701050	COX Colorimetric Inhibitor Screening Assay Kit		✓	✓		✓		Assay 41 samples for COX-1 and 41 samples for COX-2 in duplicate
	700100	COX Fluorescent Inhibitor Screening Assay Kit		✓	✓		✓		Assay 46 samples for COX-1 and 46 samples for COX-2 in duplicate
	760111	COX (ovine) Colorimetric Inhibitor Screening Assay Kit		✓		✓	✓		Assay 41 samples for COX-1 and 41 samples for COX-2 in duplicate
	560101	COX (ovine) Inhibitor Screening Assay Kit		✓		✓		✓	Assay 15 samples for COX-1 or COX-2 in duplicate
	701230	COX (human) Inhibitor Screening Assay Kit	✓		✓			✓	Assay 15 samples for COX-1 or COX-2 in duplicate
	560131	COX (ovine/human) Inhibitor Screening Assay Kit		✓	✓			✓	Assay 15 samples for COX-1 or COX-2 in duplicate
	701070	COX-1 (human) Inhibitor Screening Assay Kit	✓					✓	Assay 16 samples in duplicate
	701080	COX-2 (human) Inhibitor Screening Assay Kit			✓			✓	Assay 16 samples in duplicate
	702000	COX-2 (ovine) Inhibitor Screening Assay Kit				✓		✓	Assay 16 samples in duplicate

INFLAMMATION

Kit Recommendations for Prostaglandin D₂

Prostaglandin D₂ (PGD₂) is very unstable in the presence of serum proteins. 11β-PGF_{2α}, the primary plasma metabolite of PGD₂, has historically been measured as a urinary marker of PGD₂. However, recent studies suggest that measurement of the predominant urinary metabolite, tetranor-PGDM, may provide a more accurate index of systemic PGD₂ formation.

Item No.	Product	Cell Lysates	Culture Medium	Plasma	Urine	Features
512031	Prostaglandin D ₂ ELISA Kit	✓	✓			<ul style="list-style-type: none"> Measure PGD₂ levels down to 55 pg/ml Incubation: 18 hours Development: 90-120 minutes Read: Colorimetric at 405-420 nm Assay 24 samples in triplicate or 36 samples in duplicate
512041	Prostaglandin D ₂ Express ELISA Kit	✓	✓			<ul style="list-style-type: none"> Measure PGD₂ levels down to 350 pg/ml Rapid assay; get results in under 4 hours Assay 24 samples in triplicate or 36 samples in duplicate
512011	Prostaglandin D ₂ -MOX ELISA Kit		✓			<ul style="list-style-type: none"> Measure PGD₂-MOX levels down to 3.1 pg/ml Incubation: 18 hours Development: 90-120 minutes Read: Colorimetric at 405-420 nm Treatment of samples with MOX hydrochloride converts unstable PGD₂ to stable PGD₂-MOX Highly sensitive
500151	Prostaglandin D ₂ -MOX Express ELISA Kit		✓			<ul style="list-style-type: none"> Measure PGD₂-MOX levels down to 16 pg/ml Rapid assay; get results in under 4 hours Assay 24 samples in triplicate or 36 samples in duplicate Treatment of samples with MOX hydrochloride converts unstable PGD₂ to stable PGD₂-MOX; MOX derivatization reagent included with assay
516521	11β-Prostaglandin F _{2α} ELISA Kit			✓	✓	<ul style="list-style-type: none"> Measure 11β-PGF_{2α} levels down to 5 pg/ml Incubation: 18 hours Development: 60-90 minutes Read: Colorimetric at 405-420 nm Assay 24 samples in triplicate or 36 samples in duplicate NOTE: 11β-PGF_{2α} may not be present in mouse urine
501001	tetranor-PGDM ELISA Kit				✓	<ul style="list-style-type: none"> Measure tetranor-PGDM levels down to 40 pg/ml Incubation: 18 hours Development: 60-90 minutes Read: Colorimetric at 405-420 nm Assay 24 samples in triplicate or 36 samples in duplicate

Sample types not listed or checked may still be assayed but have not been validated by Cayman Scientists

INFLAMMATION

Kit Recommendations for Prostaglandin E₂

Prostaglandin E₂ (PGE₂) is rapidly metabolized in plasma with a half-life of less than thirty seconds. It is quickly converted *in vivo* to the inactive metabolite 13,14-dihydro-15-keto PGE₂ and other downstream metabolites.

Item No.	Product	Cell Lysates	Culture Medium	Plasma	Urine	Features
514010	Prostaglandin E ₂ ELISA Kit - Monoclonal	✓	✓		✓	<ul style="list-style-type: none"> Measure PGE₂ levels down to 15 pg/ml Incubation: 18 hours Development: 60-90 minutes Read: Colorimetric at 405-420 nm Assay 24 samples in triplicate or 36 samples in duplicate NOTE: PGE₂ is found in urine, but it is of mixed systemic and renal origin
500141	Prostaglandin E ₂ Express ELISA Kit	✓	✓		✓	<ul style="list-style-type: none"> Measure PGE₂ levels down to 36 pg/ml Rapid assay; get results in under 4 hours Assay 24 samples in triplicate or 36 samples in duplicate NOTE: PGE₂ is found in urine, but it is of mixed systemic and renal origin
514531	Prostaglandin E Metabolite ELISA Kit			✓	✓	<ul style="list-style-type: none"> Measure PGEM levels down to 2 pg/ml Incubation: 18 hours Development: 60-90 minutes Read: Colorimetric at 405-420 nm Assay 24 samples in triplicate or 36 samples in duplicate

Sample types not checked may still be assayed but have not been validated by Cayman Scientists

Kit Recommendations for Prostaglandin F_{2α}

Prostaglandin F_{2α} (PGF_{2α}) is rapidly metabolized in plasma to the inactive metabolite 13,14-dihydro-15-keto PGF_{2α} and other downstream metabolites.

Item No.	Product	Cell Lysates	Culture Medium	Plasma	Urine	Features
516011	Prostaglandin F _{2α} ELISA Kit	✓	✓	✓	✓	<ul style="list-style-type: none"> Measure PGF_{2α} levels down to 10 pg/ml Incubation: 18 hours Development: 90-120 minutes Read: Colorimetric at 405-420 nm Assay 24 samples in triplicate or 36 samples in duplicate NOTE: PGF_{2α} has a short half-life in circulation - it is quickly metabolized into 13,14-dihydro-15-keto PGF_{2α}
516671	13,14-dihydro-15-keto Prostaglandin F _{2α} ELISA Kit	✓	✓	✓	✓	<ul style="list-style-type: none"> Measure 13,14-dihydro-15-keto PGF_{2α} levels down to 15 pg/ml Incubation: 18 hours Development: 90-120 minutes Read: Colorimetric at 405-420 nm Assay 24 samples in triplicate or 36 samples in duplicate Detect 13,14-dihydro-15-keto PGF_{2α}, a stable metabolite of PGF_{2α}

Sample types not checked may still be assayed but have not been validated by Cayman Scientists

INFLAMMATION

Kit Recommendations for Prostacyclin

Prostacyclin is rapidly metabolized in plasma to the inactive metabolite 6-keto prostaglandin $F_{1\alpha}$ (6-keto $PGF_{1\alpha}$) and other downstream metabolites.

Item No.	Product	Culture Medium	Plasma	Urine	Features
515211	6-keto Prostaglandin $F_{1\alpha}$ ELISA Kit	✓	✓		<ul style="list-style-type: none"> Measure 6-keto $PGF_{1\alpha}$ levels down to 6 pg/ml Incubation: 18 hours Development: 90-120 minutes Read: Colorimetric at 405-420 nm Assay 24 samples in triplicate or 36 samples in duplicate NOTE: A portion of urinary 6-keto $PGF_{1\alpha}$ is of renal origin
501100	Prostaglandin I Metabolite ELISA Kit			✓	<ul style="list-style-type: none"> Measure PGIM levels down to 120 pg/ml Convenient overnight format NOTE: A minimum of a 1:10 dilution is recommended when assaying urine samples

Sample types not checked may still be assayed but have not been validated by Cayman Scientists

Kit Recommendations for Thromboxane B_2

A portion of thromboxane B_2 (TXB_2) measured in urine is of renal origin and does not represent systemic TXB_2 formation. Thus, selecting an appropriate assay for urinary TXB_2 is dependent on the application. The TX metabolite 11-dehydro TXB_2 is better suited for measurement of systemically produced TXB_2 in urine samples.

Item No.	Product	Cell Lysates	Plasma	Urine	Features
501020	Thromboxane B_2 ELISA Kit	✓	✓	✓	<ul style="list-style-type: none"> Measure TXB_2 levels down to 5 pg/ml Incubation: 18 hours Development: 90-120 minutes Read: Colorimetric at 405-420 nm Assay 24 samples in triplicate or 36 samples in duplicate
10004023	Thromboxane B_2 Express ELISA Kit - Monoclonal	✓	✓	✓	<ul style="list-style-type: none"> Measure TXB_2 levels down to 45 pg/ml Rapid assay; get results in under 4 hours Assay 24 samples in triplicate or 36 samples in duplicate
519510	11-dehydro Thromboxane B_2 ELISA Kit - Monoclonal			✓	<ul style="list-style-type: none"> Measure 11-dehydro TXB_2 levels down to 34 pg/ml Incubation: 18 hours Development: 60-90 minutes Read: Colorimetric at 405-420 nm Assay 24 samples in triplicate or 36 samples in duplicate Detect 11-dehydro TXB_2, a stable urinary metabolite of TXA_2 and TXB_2

Sample types not listed or checked may still be assayed but have not been validated by Cayman Scientists

METABOLISM

Kit Recommendations for Bioenergetics

Cayman offers a group of related assays that can be easily used to study cellular bioenergetics. Designed as a set of tools to evaluate mitochondrial toxicity, the kits can function together or as stand-alone assays. Assays are available to screen potential inhibitors of the electron transport chain, assess mitochondrial function in cells by detecting the rate of oxygen consumption, determine citrate synthase activity, and measure mitochondrial membrane potential.

Item No.	Product	Compatible with Cells	Compatible with Tissue*	Compatible with Isolated Mitochondria	Adaptable to HTS	Features
10009172	JC-1 Mitochondrial Membrane Potential Assay Kit	✓				<ul style="list-style-type: none"> Measure mitochondrial membrane potential as an indicator of cell health Utilize JC-1, a fluorescent, lipophilic, cationic dye Red fluorescence indicates healthy mitochondria and green fluorescence indicates mitochondria in poor health Staining in less than 1 hour
601230	pH-Xtra™ Glycolysis Cell-Based Assay Kit	✓			✓	<ul style="list-style-type: none"> Real-time fluorometric measurement of extracellular acidification associated with glycolysis Includes control compounds to increase or decrease glycolytic rate
601060	Oxygen Consumption/ Glycolysis Dual Assay Kit	✓				<ul style="list-style-type: none"> Measure both oxygen consumption and glycolysis Utilize MitoXpress® Xtra, a phosphorescent oxygen probe Includes antimycin A, an inhibitor of oxygen consumption, as a control
600880	Oxygen Consumption/ MitoMembrane Potential Dual Assay Kit	✓			✓	<ul style="list-style-type: none"> Measure both oxygen consumption rate and mitochondrial membrane potential Utilize MitoXpress® Xtra, a phosphorescent oxygen probe Employ the cationic dye, JC-1, to determine mitochondrial membrane potential Includes antimycin A, an inhibitor of oxygen consumption, as a control Includes glucose oxidase as a reference for oxygen depletion
600800	Oxygen Consumption Rate Assay Kit (MitoXpress® Xtra HS Method)	✓			✓	<ul style="list-style-type: none"> Measure oxygen consumption rate without the need for an oxygen electrode Utilizes MitoXpress® Xtra, a phosphorescent oxygen probe Includes antimycin A, an inhibitor of oxygen consumption, as a control Includes glucose oxidase as a reference for oxygen depletion
701310	TMRE Mitochondrial Membrane Potential Assay Kit	✓		✓	✓	<ul style="list-style-type: none"> Detect mitochondrial membrane potential as an indicator of mitochondrial health Utilize TMRE, a fluorescent, lipophilic, cationic dye Staining in less than 1 hour

*Isolation of mitochondria from tissue required; can be done with the MitoCheck® Mitochondrial (Tissue) Isolation Kit (Item No. 701010)

METABOLISM

Kit Recommendations for Bioenergetics (continued)

Item No.	Product	Compatible with Cells	Compatible with Tissue*	Compatible with Isolated Mitochondria	Adaptable to HTS	Features
701040	MitoCheck® Citrate Synthase Activity Assay Kit	✓	✓	✓	✓	<ul style="list-style-type: none"> Assess mitochondrial content Measure citrate synthase activity in isolated mitochondria, tissue and cell homogenate Suitable for high-throughput screening Plate-based, colorimetric measurement (412 nm)
700930	MitoCheck® Complex I Activity Assay Kit		✓	✓	✓	<ul style="list-style-type: none"> Measure complex I activity in isolated mitochondria Useful for screening compounds for complex I inhibition Suitable for high-throughput screening Plate-based, colorimetric measurement (340 nm)
700940	MitoCheck® Complex II Activity Assay Kit		✓	✓	✓	<ul style="list-style-type: none"> Measure complex II activity in isolated mitochondria Useful for screening compounds for complex II inhibition Suitable for high-throughput screening Plate-based, colorimetric measurement (600 nm)
700950	MitoCheck® Complex II/III Activity Assay Kit		✓	✓	✓	<ul style="list-style-type: none"> Measure complex II/III activity in isolated mitochondria Useful for screening compounds for complex II/III inhibition Suitable for high-throughput screening Plate-based, colorimetric measurement (550 nm)
700990	MitoCheck® Complex IV Activity Assay Kit		✓	✓	✓	<ul style="list-style-type: none"> Measure complex IV activity in isolated mitochondria Useful for screening compounds for complex IV inhibition Suitable for high-throughput screening Plate-based, colorimetric measurement (550 nm)
701000	MitoCheck® Complex V Activity Assay Kit		✓	✓	✓	<ul style="list-style-type: none"> Measure complex V activity in isolated mitochondria Useful for screening compounds for complex V inhibition Suitable for high-throughput screening Plate-based, colorimetric measurement (340 nm)
701170	MitoCheck® Mitochondrial OCR Assay Kit		✓	✓	✓	<ul style="list-style-type: none"> Measure OCR directly in freshly isolated mitochondria Useful for screening mitochondrial inhibitors and uncouplers Suitable for high-throughput screening Plate-based, fluorometric or time-resolved, fluorometric measurement (ex 380 nm, em 650 nm)

*Isolation of mitochondria from tissue required; can be done with the MitoCheck® Mitochondrial (Tissue) Isolation Kit (Item No. 701010)

METABOLISM

Kit Recommendations for Nutrient Metabolism & Cellular Metabolic Pathways

Normal cellular function depends in part on the energy derived from glucose, which is involved in the tightly controlled metabolic processes of glycolysis, the pentose phosphate pathway, glycogenesis, glycogenolysis, and gluconeogenesis. Cellular energy is also stored as lipids, which can be metabolized to fatty acids for use as a fuel source, and proteins, which are either catabolized into amino acids for polymerization into new proteins or are oxidized to urea and CO₂ as an energy source. Energy released by the oxidation of nutrients undergoes oxidative phosphorylation in the mitochondria to generate ATP. Failure to maintain energy homeostasis leads to various metabolic disorders, the most prominent of which is diabetes mellitus, a disease characterized by persistent hyperglycemia. Cayman carries a variety of assay kits to quantify key components of these important metabolic pathways.

Item No.	Product	Sample Type(s)	Measure	Features
705502	Aconitase Assay Kit	Cell lysates Tissue homogenates	Aconitase activity	<ul style="list-style-type: none"> Assay 23 samples in duplicate Measure aconitase activity down to 1.7 U/ml Plate-based, colorimetric measurement (340 nm)
10009381	Adipolysis Assay Kit	Preadipocytes (e.g., differentiated 3T3-L1 cells)	Adipolysis of triglycerides	<ul style="list-style-type: none"> Screen compounds involved in lipid storage and metabolism Contains the reagents needed for induction of adipogenesis <i>in vitro</i>, to release glycerol from stored lipid droplets, and to accurately measure the released glycerol Also Available: Adipogenesis Assay Kit (Item No. 10006908), which includes Oil Red O as a stain for lipid droplets
700410	ATP Detection Assay Kit - Luminescence	Various sample types	Total ATP levels	<ul style="list-style-type: none"> Measure ATP in a variety of sample types Assay 120 samples in duplicate Assay Range: 12 fmol to 10 pmol Plate-based, luminescence measurement
10009779	Cholesterol Cell-Based Detection Assay Kit	Cultured cells	Cholesterol uptake and localization	<ul style="list-style-type: none"> Employ filipin III, a probe that fluoresces in the presence of cholesterol An inhibitor of cholesterol trafficking is included as a positive control
10007640	Cholesterol Fluorometric Assay Kit	Plasma Serum	Total cholesterol	<ul style="list-style-type: none"> Assay 40 samples in duplicate Assay Range: 2-20 μM Plate-based, fluorometric measurement (ex 530-540 nm, em 585-595 nm)
600440	Cholesterol Uptake Cell-Based Assay Kit	Cultured cells	Cholesterol uptake	<ul style="list-style-type: none"> Detect cholesterol uptake within cultured cells by flow cytometry or plate reader Employ NBD cholesterol, a fluorescently-tagged cholesterol An inhibitor of cholesterol trafficking is included as a positive control The kit provides enough NBD cholesterol to test 250 samples

METABOLISM

Kit Recommendations for Nutrient Metabolism & Cellular Metabolic Pathways (continued)

Item No.	Product	Sample Type(s)	Measure	Features
701040	MitoCheck® Citrate Synthase Activity Assay Kit	Cell homogenates Isolated mitochondria Tissue homogenates	Citrate synthase activity	<ul style="list-style-type: none"> Assess mitochondrial content Suitable for high-throughput screening Plate-based, colorimetric measurement (412 nm) Also Available: MitoCheck® Mitochondrial (Tissue) Isolation Kit (Item No. 701010) to aid in mitochondrial tissue isolation
700310	Free Fatty Acid Fluorometric Assay Kit	Plasma Serum Urine	Free fatty acids	<ul style="list-style-type: none"> Assay 20 samples in duplicate Measure free fatty acids from 25 to 250 µM Plate-based, fluorometric measurement (ex 530-540 nm, em 585-595 nm)
500001	Lipid Droplets Fluorescence Assay Kit	Various cell types	Lipid droplets	<ul style="list-style-type: none"> Utilize Nile Red, a green fluorescent probe specific for lipid droplets Assess by fluorescence microscopy, flow cytometry, or plate reader Includes oleic acid as a positive control
10012643	Steatosis Colorimetric Assay Kit	Cultured cells	Excessive lipid accumulation in cells	<ul style="list-style-type: none"> Assess by microscopy or plate reader An inducer of lipid accumulation is included as a positive control
10009582	Glucose Colorimetric Assay Kit	Plasma Serum Urine	Glucose	<ul style="list-style-type: none"> Assay 40 samples in duplicate Assay Range: 2.5-25 mg/dl Plate-based, colorimetric measurement (500-520 nm)
600470	Glucose Uptake Cell-Based Assay Kit	Cultured cells	Glucose uptake	<ul style="list-style-type: none"> Employ 2-NBDG, a fluorescent deoxyglucose analog An inhibitor of glucose transport is included as a control Convenient tool for studying modulators of glucose uptake
700480	Glycogen Assay Kit	Tissue homogenates	Glycogen	<ul style="list-style-type: none"> Assay 20 samples in duplicate Assay Range: 2.5-40 µg/ml Plate-based, fluorometric measurement (ex 530-540 nm, em 585-595 nm)
700300	Glucose-6-Phosphate Dehydrogenase Activity Assay Kit	Cell lysates Tissue homogenates	G6PDH activity	<ul style="list-style-type: none"> Assay 20 samples in duplicate Measure G6PDH activity down to 5 U/ml Plate-based, fluorometric measurement (ex 530-540 nm, em 585-595 nm)
700750	Glucose-6-Phosphate Fluorometric Assay Kit	Cell lysates Tissue homogenates	G6P	<ul style="list-style-type: none"> Assay 20 samples in duplicate Assay Range: 5-200 µM Plate-based, fluorometric measurement (ex 530-540 nm, em 585-595 nm)
10011725	Glycerol Cell-Based Assay Kit	Cultured cells	Extracellular glycerol	<ul style="list-style-type: none"> Detect extracellular glycerol as a measure of the triglyceride/fatty acid cycling rate Measure glycerol by a coupled enzymatic reaction system that produces a brilliant purple product Includes a standard curve for accurate quantification of extracellular glycerol

METABOLISM

Kit Recommendations for Nutrient Metabolism & Cellular Metabolic Pathways (continued)

Item No.	Product	Sample Type(s)	Measure	Features
700190	β -Hydroxybutyrate (Ketone Body) Colorimetric Assay Kit	Cell lysates Plasma Serum Tissue homogenates Urine	β -HB	<ul style="list-style-type: none"> Assay 40 samples in duplicate Assay Range: 25-500 μM Plate-based, colorimetric measurement (445-455 nm)
700740	β -Hydroxybutyrate (Ketone Body) Fluorometric Assay Kit	Cell lysates Plasma Serum Tissue homogenates Urine	β -HB	<ul style="list-style-type: none"> Assay 20 samples in duplicate Assay Range: 2.5-50 μM Plate-based, fluorometric measurement (ex 530-540 nm, em 585-595 nm)
700520	D-Lactate Assay Kit	Cultured cells Plasma Saliva Serum Urine Whole blood	D-Lactate	<ul style="list-style-type: none"> Assay 40 samples in duplicate Assay Range: 25 μM-1 mM Plate-based, fluorometric measurement (ex 530-540 nm, em 585-595 nm)
700510	L-Lactate Assay Kit	Cultured cells Plasma Saliva Serum Urine Whole blood	L-Lactate	<ul style="list-style-type: none"> Assay 40 samples in duplicate Assay Range: 25 μM-1 mM Plate-based, fluorometric measurement (ex 530-540 nm, em 585-595 nm)
600450	Glycolysis Cell-Based Assay Kit	Cultured cells	Extracellular L-lactate	<ul style="list-style-type: none"> Detect L-lactate, the end product of glycolysis Can be adapted to high-throughput screening Measure L-lactate in cell culture supernatant down to 156 μM
600480	NAD/NADH Cell-Based Assay Kit	Cultured cells	Total cellular NAD	<ul style="list-style-type: none"> Assay 38 samples in duplicate Assay Range: 15.6 nM to 1 μM Plate-based, colorimetric measurement (450 nm)

METABOLISM

Kit Recommendations for Nutrient Metabolism & Cellular Metabolic Pathways (continued)

Item No.	Product	Sample Type(s)	Measure	Features
700470	Pyruvate Assay Kit	Cultured cells Plasma Saliva Serum Urine Whole blood	Pyruvate	<ul style="list-style-type: none"> Assay 40 samples in duplicate Assay range: 3-70 μM Plate-based, fluorometric measurement (ex 530-540 nm, em 585-595 nm)
10010303	Triglyceride Colorimetric Assay Kit	Plasma Serum Tissue homogenates	Triglyceride levels	<ul style="list-style-type: none"> Assay 26 samples in triplicate and 40 samples in duplicate Assay Range: 3.125 to 200 mg/dl Incubation: 15 minutes Read: Colorimetric at 530-550 nm
700320	Uric Acid Assay Kit	Plasma Serum Urine	Uric acid	<ul style="list-style-type: none"> Assay 40 samples in duplicate Assay Range: 0.5-10 μM Plate-based, fluorometric measurement (ex 530-540 nm, em 585-595 nm)

METABOLISM

Kit Recommendations for Measuring Steroid Hormones

Steroid hormones are generally synthesized from cholesterol and, as receptor ligands, play various roles in metabolism, inflammation, immune function, osmoregulation, sexual development, and stress responses. Cayman carries a variety of assay kits to measure steroid hormones in various sample matrices.

Item No.	Product	Sample Types	Measure	Features
501090	Aldosterone ELISA Kit	Plasma Serum Urine Other sample matrices	Aldosterone	<ul style="list-style-type: none"> Assay 24 samples in triplicate or 36 samples in duplicate Measure aldosterone levels down to 30 pg/ml Incubation: 18 hours Development: 90-120 minutes Read: Colorimetric at 405-420 nm
501320	Corticosterone ELISA Kit	Rodent feces Serum	Corticosterone	<ul style="list-style-type: none"> Assay 24 samples in triplicate or 36 samples in duplicate Measure corticosterone levels down to 30 pg/ml Incubation: Overnight Development: 90-120 minutes Read: Colorimetric at 405-420 nm
500360	Cortisol ELISA Kit	Plasma Urine Other sample matrices	Cortisol	<ul style="list-style-type: none"> Assay 24 samples in triplicate or 36 samples in duplicate Measure cortisol levels down to 35 pg/ml Incubation: 18 hours Development: 90-120 minutes Read: Colorimetric at 405-420 nm
500370	Cortisol Express ELISA Kit	Plasma Urine Other sample matrices	Cortisol	<ul style="list-style-type: none"> Assay 24 samples in triplicate or 36 samples in duplicate Measure cortisol levels down to 110 pg/ml Rapid assay; get results in under 4 hours
500520	Enterolactone ELISA Kit	Plasma Urine Other sample matrices	Enterolactone	<ul style="list-style-type: none"> Assay 24 samples in triplicate or 36 samples in duplicate Measure enterolactone levels down to 70 pg/ml Incubation: 18 hours at 4°C Development: 90-120 minutes Read: Colorimetric at 405-420 nm
582251	Estradiol ELISA Kit	Cell culture medium Plasma Serum	Estradiol (17 β -estradiol)	<ul style="list-style-type: none"> Assay 24 samples in triplicate or 36 samples in duplicate Measure estradiol levels down to 15 pg/ml Incubation: 1 hour Development: 60-90 minutes Read: Colorimetric at 405-420 nm
582281	Estriol ELISA Kit	Plasma Other sample matrices	Estriol	<ul style="list-style-type: none"> Assay 24 samples in triplicate or 36 samples in duplicate Measure estriol levels down to 4 pg/ml Incubation: 18 hours Development: 90-120 minutes Read: Colorimetric at 405-420 nm
582261	2-Methoxyestradiol ELISA Kit	Plasma Urine Other sample matrices	2-Methoxyestradiol (2-ME2)	<ul style="list-style-type: none"> Assay 24 samples in triplicate or 36 samples in duplicate Measure 2-ME2 levels down to 40 pg/ml Incubation: 18 hours Development: 90-120 minutes Read: Colorimetric at 405-420 nm

METABOLISM

Kit Recommendations for Measuring Steroid Hormones (continued)

Item No.	Product	Sample Types	Measure	Features
582601	Progesterone ELISA Kit	Plasma Other sample matrices	Progesterone	<ul style="list-style-type: none"> Assay 24 samples in triplicate or 36 samples in duplicate Measure progesterone levels down to 10 pg/ml Rapid assay; get results in under 4 hours
582701	Testosterone ELISA Kit	Multiple sample types	Testosterone	<ul style="list-style-type: none"> Assay 24 samples in triplicate or 36 samples in duplicate Measure testosterone levels down to 6 pg/ml Incubation: 2 hours Development: 60-90 minutes Read: Colorimetric at 405-420 nm
582751	11-keto Testosterone ELISA Kit	Fish plasma Other sample matrices	11-keto Testosterone (11-KT)	<ul style="list-style-type: none"> Detect the primary androgenic steroid in fish Assay 24 samples in triplicate or 36 samples in duplicate Measure 11-KT levels down to 1.3 pg/ml Incubation: 18 hours Development: 90-120 minutes Read: Colorimetric at 405-420 nm
501050	Vitamin D ELISA Kit	Plasma Serum	25(OH)D ₃ and 25(OH)D ₂	<ul style="list-style-type: none"> Assay 24 samples in triplicate or 36 samples in duplicate Measure vitamin D levels down to 0.5 ng/ml Incubation: 18 hours Development: 60-90 minutes Read: Colorimetric at 405-420 nm

Sample types not listed may still be assayed but have not been validated by Cayman Scientists

OXIDATIVE INJURY

Kit Recommendations for Lipid Peroxidation

Polyunsaturated fatty acids (PUFAs), either free or membrane-associated, are easily oxidized by reactive oxygen species (ROS). As a result, the quantification of products of PUFA oxidation provides a measure of ROS generation. Thiobarbituric acid reactive substances (TBARS) assay measures malondialdehyde (MDA), a naturally-occurring product of lipid peroxidation. The Lipid Hydroperoxide (LPO) Assay Kit measures hydroperoxides directly through a redox reaction with ferrous ions. Assays for 8-isoprostane and 4-hydroxy nonenal (4-HNE), oxidized forms of free PUFAs, are particularly useful for evaluating oxidative stress *in vivo*.

Item No.	Product	Sample Types	Measure	Features
10009055	TBARS Assay Kit	Cell lysates Tissue homogenates Plasma Serum Urine	TBARS	<ul style="list-style-type: none"> • Plate-based, colorimetric measurement (530-540 nm) or fluorometric measurement (ex 530 nm, em 550 nm) • Assay 40 samples in duplicate • Assay Range: 0.0625-50 μM • NOTE: Assay is available with TCA Method using smaller working volumes – Item No. 700870
705002	Lipid Hydroperoxide (LPO) Assay Kit	Cell lysates Tissue homogenates Plasma Serum	LPO	<ul style="list-style-type: none"> • Plate-based, colorimetric measurement (500 nm) • Assay 40 samples in duplicate • Assay Range: 0.25-5 nmol • NOTE: Assay is available with glass plate included – Item No. 705003
516351	8-Isoprostane ELISA Kit	Tissue culture supernatants Plasma Serum Whole blood Urine	8-isoprostane, a biomarker of oxidative stress and antioxidant deficiency	<ul style="list-style-type: none"> • Assay 24 samples in triplicate or 36 samples in duplicate • Measure 8-isoprostane levels down to 3 pg/ml • Incubation: 18 hours Development: 90-120 minutes Read: Colorimetric at 405-420 nm
516360	8-Isoprostane Express ELISA Kit	Tissue culture supernatants Plasma Serum Urine Whole blood	8-isoprostane, a biomarker of oxidative stress and antioxidant deficiency	<ul style="list-style-type: none"> • Assay 24 samples in triplicate or 36 samples in duplicate • Measure 8-isoprostane levels down to 10 pg/ml • Rapid assay; get results in under 4 hours

OXIDATIVE INJURY

Kit Recommendations for Antioxidant Detection/Activity

Reactive oxygen species (ROS) are produced during normal cellular metabolism and can result in oxidative stress. Cells have both enzymatic and non-enzymatic mechanisms to reduce ROS. Cayman's assay kits evaluate many of the primary antioxidants.

Item No.	Product	Sample Type(s)	Measure	Features
709001	Antioxidant Assay Kit	Cell lysates Plasma Saliva Serum Urine	Total antioxidant capacity	<ul style="list-style-type: none"> Measure antioxidant capacity in Trolox equivalents as low as 44 μM Plate-based colorimetric measurement (750 or 405 nm) Assay 41 samples in duplicate
700420	Ascorbate Assay Kit	Fruit juices Plasma Serum Urine	Ascorbate	<ul style="list-style-type: none"> Assay Range: 5-150 μM Plate-based fluorometric measurement (ex 340-350 nm, em 420-430 nm) Assay 40 samples in duplicate
707002	Catalase Assay Kit	Cell lysates Erythrocyte lysates Tissue homogenates Plasma Serum	Catalase activity	<ul style="list-style-type: none"> Measure catalase activity down to 2 U/ml Plate-based, colorimetric measurement (540 nm) Assay 40 samples in duplicate Also Available: Catalase Assay Kit (without Hydrogen Peroxide), Item No. 700910
703002	Glutathione Assay Kit	Cell lysates Erythrocyte lysates Tissue homogenates Plasma lysates Serum	Oxidized (GSSG), and/or reduced (GSH) glutathione	<ul style="list-style-type: none"> Assay Range: 0.25-8 μM (GSSG) or 0.5-16 μM (GSH) Assay 40 samples in duplicate
600360	Glutathione Cell-Based Detection Kit (Blue Fluorescence)	Cell lysates	Intracellular levels of GSH	<ul style="list-style-type: none"> Utilize monochlorobimane (MCB), a highly fluorescent GSH probe Rapid assay; get results in 2 hours Includes a standard curve for accurate quantification of GSH from cell lysates
703102	Glutathione Peroxidase Assay Kit	Cell lysates Erythrocyte lysates Tissue homogenates Plasma	Glutathione peroxidase activity	<ul style="list-style-type: none"> Measure GPx activity down to 50 U/ml Assay 45 samples in duplicate

OXIDATIVE INJURY

Kit Recommendations for Antioxidant Detection/Activity (continued)

Item No.	Product	Sample Types	Measure	Features
703202	Glutathione Reductase Assay Kit	Cell lysates Tissue homogenates Plasma	GR activity	<ul style="list-style-type: none"> • Plate-based colorimetric measurement (340 nm) • Measure GR activity down to 20 U/ml • Assay 45 samples in duplicate
703302	Glutathione S-Transferase Assay Kit	Cell lysates Tissue homogenates Plasma	GST activity	<ul style="list-style-type: none"> • Plate-based, colorimetric measurement (340 nm) • Measure GST activity down to 24 U/ml • Assay 22 samples in duplicate
706002	Superoxide Dismutase Assay Kit	Cell lysates Tissues Plasma Serum	Total SOD	<ul style="list-style-type: none"> • Measure copper/zinc, manganese, and iron SOD • Measure SOD activity down to 0.005 U/ml • Assay 41 samples in duplicate
700340	Thiol Detection Assay Kit	Cell lysates Tissue homogenates Plasma Serum Urine	Free thiol content	<ul style="list-style-type: none"> • Plate-based fluorometric measurement (ex 380-390 nm, em 510-520 nm) • Assay 40 samples in duplicate • Assay Range: 15 nm to 1 μM • Includes both a glutathione and cysteine standard

Kit Recommendations for Oxidative DNA/RNA Damage

Oxidative DNA/RNA damage is associated with certain disease states. Cayman's kits provide customers with options for measuring oxidative DNA damage for a wide range of sample types.

Item No.	Product	Sample Types*	Measure	Features
589320	DNA/RNA Oxidative Damage ELISA Kit	Cell lysates Cell culture medium Tissues Plasma/Serum Saliva Urine	<ul style="list-style-type: none"> • 8-hydroxy 2'-deoxyguanosine • 8-hydroxyguanosine • 8-hydroxyguanine 	<ul style="list-style-type: none"> • Assay Range: 10.3-3,000 pg/ml • Incubation: 18 hours Development: 90-120 minutes Read: Colorimetric at 405-420 nm • Assay 24 samples in triplicate or 36 samples in duplicate
501130	DNA/RNA Oxidative Damage (Clone 7E6.9) ELISA Kit	Urine Other sample matrices	<ul style="list-style-type: none"> • 8-hydroxy 2'-deoxyguanosine • 8-hydroxyguanosine 	<ul style="list-style-type: none"> • Cross reactivity of clone 7E6.9 validated by mass spectrometry • Measure 8-hydroxyguanosine levels down to 0.45 ng/ml • Incubation: 18 hours Development: 90-120 minutes Read: Colorimetric at 405-420 nm • Assay 24 samples in triplicate or 36 samples in duplicate

*Sample types not listed may still be assayed but have not been validated by Cayman Scientists

OXIDATIVE INJURY

Kit Recommendations for Nitric Oxide Analysis

Relative proportions of nitrate and nitrite within a sample are variable. The best index of total nitric oxide (NO) production is the sum of both of these products.

Item No.	Product	Sample Types	Measure	Features
780001	Nitrate/Nitrite Colorimetric Assay Kit	Tissue culture media Tissue homogenates Plasma/Serum Urine	Nitrate, nitrite, and/or total nitrate/nitrites	<ul style="list-style-type: none"> • Plate-based, colorimetric measurement (540-550 nm) • Assay Range: 5-35 μM • Assay 40 samples in duplicate/96-well plate
760871	Nitrate/Nitrite Colorimetric Assay Kit (LDH method)	Tissue homogenates Plasma Serum Urine	Measure NOS activity <i>in vitro</i>	<ul style="list-style-type: none"> • Plate-based, colorimetric measurement (530-550 nm) • Assay Range: 5-25 μM (nitrate and/or nitrite) • Assay 41 samples in duplicate • Can also be used to measure nitrate and nitrite
780051	Nitrate/Nitrite Fluorometric Assay Kit	Tissue culture media Tissue homogenates Plasma Serum	Nitrate, nitrite, and/or total nitrate/nitrites	<ul style="list-style-type: none"> • Plate-based, fluorometric measurement (ex 360-365 nm, em 430 nm) • Assay Range: 60 nM-3.85 μM (nitrate and/or nitrite) • Assay 40 samples in duplicate/96-well plate
781001	NOS Activity Assay Kit	Cell lysates Purified preparations	Measure NOS activity	<ul style="list-style-type: none"> • Material for 50 reactions • Radioactive substrate not supplied

OXIDATIVE INJURY

Kit Recommendations for Oxidative Post-Translational Modifications (Ox-PTMs) of Cysteine

Redox signaling and oxidative stress are important for many physiological and pathological conditions. Small molecules such as reactive oxygen, nitrogen, and sulfur species work collectively to regulate redox signaling *via* PTM of cysteine residues in the active and allosteric sites of proteins. To better understand the roles of these different PTMs, Cayman has developed kits that can be used to specifically detect individual thiol modifications in living cells.

Item No.	Product	Sample Type(s)	Detection Method	Sample Size	Features
10010721	S-Glutathionylated Protein Detection Kit	Whole (permeabilized) cells	Flow cytometry Fluorescence microscopy	Whole (permeabilized) cells: 30 samples	<ul style="list-style-type: none"> • Direct visualization of S-glutathionylated proteins in whole (permeabilized) cells • Visualization using colorimetric or fluorescence detection
10006518	S-Nitrosylated Protein Detection Kit (Biotin Switch)	Tissues Whole cells	Fluorescence microscopy Immunohistochemistry (IHC) Western blot/avidin overlay	Tissue sections: 3 sets of 25 samples Whole cells: 3 sets of 20 samples from adherent cells, suspension culture, or tissues	<ul style="list-style-type: none"> • A modified 'Biotin-switch' assay • Direct visualization of S-NO proteins • Visualization using colorimetric or fluorescence detection
601210	S-Nitrosothiol Assay Kit (Thiosulfonate Switch)	Cell lysates Tissue lysates	SDS-PAGE and fluorescence imaging Mass spectrometry	Lysates: 18 reactions	<ul style="list-style-type: none"> • Sample preparation for SDS-PAGE in under four hours • Detect endogenous or NO donor generated protein S-nitrosothiols • Identify proteins with S-nitrosothiols by fluorescence immediately after electrophoresis • Generate an in-gel standard curve for relative quantitation • Test a known peptide, protein or protein mixture by TST, and proceed directly to proteomic analysis
600320	Sulfenylated Protein Cell-Based Detection Kit	Cultured cells	Flow cytometry Fluorescence microscopy Plate reader	Cultured cells: In a 6-, 12-, 24-, or 96-well plate	<ul style="list-style-type: none"> • Contains the cell-permeable probe DAz-2 to detect sulfenic acid-modified proteins in cells • Includes EGCG as a positive control

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