

Toxicology

Cayman offers a wide range of tools to help study the chemical and biological aspects of the toxic response and the mechanisms involved in carcinogenicity, organ toxicity, clinical drug metabolism, environmental toxicity, and food contamination.

- Assays and probes to assess mitochondrial function and profile for compound toxicity
- Assays, inhibitors, and fluorogenic probes to study CYP450 catalytic activity
- Nuclear receptor cell-based reporter assays, agonists, and antagonists to study xenobiotic sensing and detoxification
- Validated human therapeutic IgG ELISAs for preclinical toxicology assessment of candidate pharmaceuticals
- Assays, analytical standards, and research tools to measure endocrine disruption and environmental toxins
- Assays to monitor cell viability, proliferation, apoptosis, and cytotoxicity



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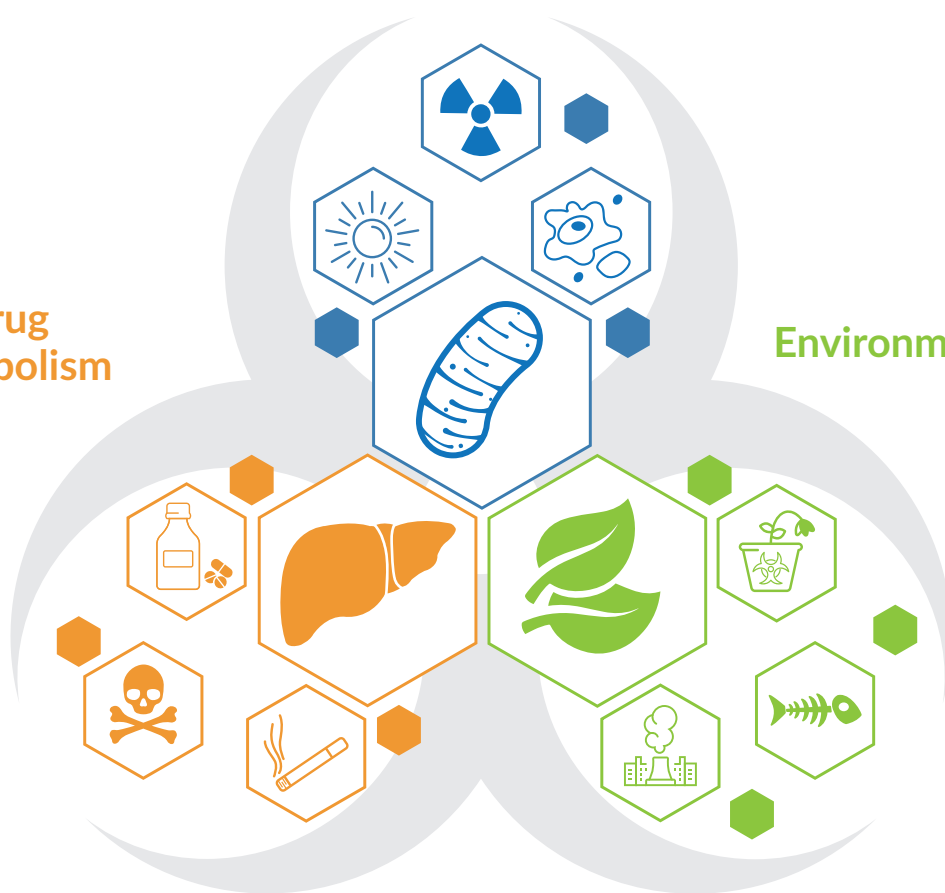
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Drug Metabolism

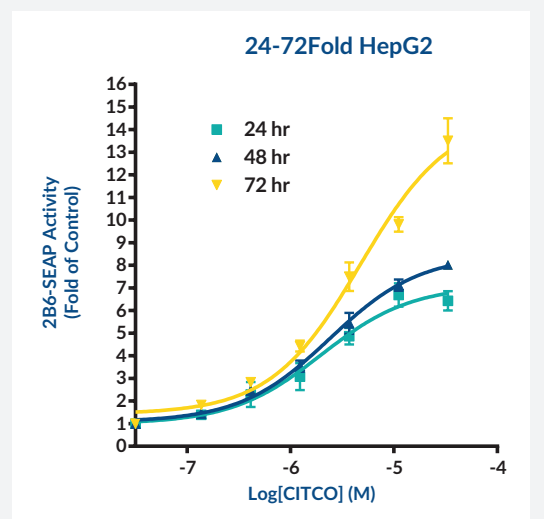
Cayman offers assays, inhibitors, and fluorogenic probes to study changes in cytochrome P450 (CYP450) catalytic activity caused by xenobiotics or disease. Our scientists have designed a unique set of reporter assays to enable early screening during the drug development process to help determine a drug candidate's potential to induce or inhibit critical CYP450 isoforms.



CYP2B6 Induction Reporter Assay Kit - Item No. 600680

- A 96-well plate coated with DNA encoding a CYP2B6 promoter-regulated reporter enzyme (SEAP) and two nuclear receptors, hCAR3 and HNF4 α
- Cells grown on the complex will express the two nuclear receptors and the CYP2B6 promoter-regulated SEAP
- CAR-mediated CYP2B6 inducers will activate SEAP expression
- SEAP secreted into the supernatant cleaves a luminescence-based substrate

More CYP450 Induction Assays available online



CYP450 Inhibitors and Reagents

Item No.	Product Name
26254	Bergapten
10018	DDMS
16808	Dibenzylfluorescein
19760	6',7'-Epoxybergamottin
16122	7-Ethoxyresorufin
31570	12(S)-hydroxy-16-Heptadecyonic Acid
75780	HET0016
19851	Isoimperatorin
27479	Linderane

Item No.	Product Name
75770	MS-PPOH
90270	17-Octadecyonic Acid
15019	PF-04981517
75760	PPOH
27475	Schisandrin C
15040	SKF 525A (hydrochloride)
10011055	4-phenyl-1,2,3-Thiadiazole
10008517	Tienilic Acid
10038	TMS

More than 100 CYP450 inhibitors available online

CYP450 Fluorescent Probes

Item No.	Product Name	Substrate	Excitation Maximum (nm)	Emission Maximum (nm)
25441	3-Cyano-7-ethoxycoumarin	CYP1A1 and CYP1A2	408	450
16808	Dibenzylfluorescein	CYP3A4, CYP2C8, CYP2C9, CYP2C19, and aromatase (CYP19)	485	538
19586	7-ethoxy-4-Methylcoumarin	CYP1A1, CYP2B4, and CYP2B6	318 (methanol) 360 (dealkylase)	377 (methanol) 449 (dealkylase)
16122	7-Ethoxyresorufin	CYP1A1	535	590
18077	Resorufin benzyl ether	CYP3A4	571	585

Xenobiotic Sensing



Cayman's line of agonists and antagonists can be used to study the nuclear receptors involved in xenobiotic sensing and detoxification. This includes tools to examine signaling at the aryl hydrocarbon receptor (AhR), whose ligands include some of the most infamous xenobiotics, as well as the pregnane X receptor (PXR) and constitutive androstane receptor (CAR), which each play a major role in regulating the gene expression of phase I, II, and III drug-metabolizing enzymes.

AhR Agonists and Antagonists

Item No.	Product Name
10006545	CAY10464
10006546	CAY10465
16154	CH 223191
18649	Diosmetin
17677	5-fluoro 203
15948	Galangin
11305	Kynurenine
16924	α -Naphthoflavone
10006342	PDM 2
10006341	PDM 11
15342	Phortress
24051	Prochloraz
70675	<i>trans</i> -Resveratrol
10188	<i>trans</i> -trismethoxy Resveratrol


PXR and CAR Agonists and Antagonists

Item No.	Product Name
16027	CITCO
15728	Dehydroepiandrosterone
15212	Ketoconazole
16343	Pregnenolone Carbonitrile
14423	Rifampicin
18115	SR-12813
14140	TCPOBOP

Nuclear Receptor Cell-Based Assay Kits

Item No.	Product Name
16523	AhR (human) Assay Kit
15748	CAR1 (human) Reporter Assay Kit
15747	CAR3 (human) Reporter Assay Kit Also Available: Human and Mouse Constitutive Androstane Receptor Reporter Assay Systems
17528	Pregnane X (human) Receptor Assay Kit

More than 50 nuclear receptor cell-based assay kits available online

Manufactured by  **INDIGO**
BIOSCIENCES
The Nuclear Receptor Experts™

Validated ELISAs for pharmacokinetic analysis of therapeutic human antibodies

- Accurately measure human IgG1, IgG2, or IgG4 in monkey or rat serum
- Will not detect monkey or rat IgGs
- No purification required
- Low intra- and inter-assay variability
- Low ng/ml sensitivity

Human Therapeutic IgG1 ELISA Kit - Item No. 500910
Assay Range: 3.13-200 ng/ml LLOQ = 3.13 ng/ml

Human Therapeutic IgG2 ELISA Kit - Item No. 500960
Assay Range: 3.13-200 ng/ml LLOQ = 3.13 ng/ml

Human Therapeutic IgG4 ELISA Kit - Item No. 500920
Assay Range: 7.8-500 ng/ml LLOQ = 7.8 ng/ml

Mitochondrial (Dys)Function



Monitor mitochondrial function and profile for compound toxicity using Cayman's unique series of MitoCheck® assays. These kits are designed as a series of functional assays to measure electron transport chain (ETC) activity in isolated mitochondria and screen compounds for potential ETC inhibition. A series of screens are also available that focus on mitochondrial function at the level of the isolated organelle to determine mitochondrial membrane potential and inner mitochondrial membrane integrity. Mitochondria-targeted probes and assays are also available to assess reactive oxygen species (ROS) accumulation and detoxification.

MitoCheck® Activity Assay Kits

- Tailored specifically to each complex in the ETC
- No expensive equipment or lengthy incubations
- Adapted for use with microplate readers
- Amenable to high-throughput screening

Item No.	Product Name
701040	MitoCheck® Citrate Synthase Activity Assay Kit*
700930	MitoCheck® Complex I Activity Assay Kit*
700940	MitoCheck® Complex II Activity Assay Kit*

Item No.	Product Name
700950	MitoCheck® Complex II/III Activity Assay Kit*
700990	MitoCheck® Complex IV Activity Assay Kit*
701000	MitoCheck® Complex V Activity Assay Kit*

*MitoCheck® Mitochondrial (Tissue) Isolation Kit (Item No. 701010) available to aid in mitochondrial tissue isolation

Mitochondrial Inner Membrane Permeability Assay

Measure inner mitochondrial membrane integrity and mitochondrial membrane potential by multiplexing a calcein/cobalt technique with TMRE

Item No.	Product Name
601430	Mitochondrial PT Pore Assay Kit

Mitochondria-Targeted Probes

Each compound contains the lipophilic triphenylphosphonium cation component, which enables passage through lipid bilayers and accumulation in mitochondria

Item No.	Product Name
22702	MitoA
17116	MitoB*
17117	MitoP*
18798	MitoPerOx
18808	MitoPQ
16621	MitoTEMPO (hydrate)
18796	MitoTEMPOL

*Stable isotope-labeled ratiometric probes are also available

Reactive Oxygen Species (ROS) Detection Assays

Measure superoxide and hydrogen peroxide levels in living cells

Item No.	Product Name
701600	Mitochondrial ROS Detection Assay Kit
601520	ROS Detection Cell-Based Assay Kit (DCFDA)
601290	ROS Detection Cell-Based Assay Kit (DHE)

ETC Inhibitors

Item No.	Product Name
22415	Annonacin
19433	Antimycin A ₁
15159	HQNO
15379	Piericidin A
16980	UK 5099

Mitotoxicity Testing Services

Assess cellular metabolism and bioenergetic responses with our own MitoCheck® Complex Assays and Seahorse XFe96 technology.

Learn more at

www.caymanchem.com/services

Cell Health

The range of cell-based assays available from Cayman is designed to give you the flexibility and efficiency needed to monitor cell viability, proliferation, oxidative damage, apoptosis, and/or cytotoxicity. Performed in a biologically relevant context, these cell-based assays offer the ability to detect perturbations in cellular function following treatment with a compound of interest.



Cell Death or Proliferation Assays

Item No.	Product Name	Measure	Readout	Methodology	Time to Results
601170	LDH Cytotoxicity Assay Kit	Non-apoptotic cell ceath	Colorimetric plate reader	Reduces INT as an indicator of the amount of LDH released into supernatant by dying cells; detects 10,000-200,000 cells per well	1.5 hours
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	3-4 hours
601280	Multi-Parameter Apoptosis Assay Kit	Apoptosis	Flow cytometer Fluorescence plate reader Fluorescence microscope	Uses Annexin V FITC and 7-AAD staining to differentiate apoptosis and necrosis while using TMRE to indicate mitochondrial membrane potential	1 hour staining protocol
10008883	WST-1 Cell Proliferation Assay Kit	Cell proliferation / Viability	Colorimetric plate reader	Reduces WST-1 to soluble, purple formazan by extracellular NADH from living cells; 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 extracellular NADH from living cells; detects 2,000-500,000 cells per well	2-4 hours

DNA Damage and Repair

Item No.	Product Name	Description
501130	DNA/RNA Oxidative Damage (Clone 7E6.9) ELISA Kit	For the measurement of 8-hydroxy-2'-deoxyguanosine and 8-hydroxyguanosine
589320	DNA/RNA Oxidative Damage (High Sensitivity) ELISA Kit	A competitive ELISA for the detection of oxidized guanine species resulting from DNA/RNA oxidative damage
25781	H2AX Phospho-Ser139 (1H2) Monoclonal Antibody	Measures γ -H2AX phosphorylation — a gold standard for marking DNA damage and repair for double strand break events

Glyco-SPOT DNA Repair Assay Kit - Item No. 501280

- Profile glycosylase/AP endonuclease activities
- HTS friendly, fluorescent microarray
- **Sample Types:** Pure Enzyme | Cell Nuclear Extracts | Whole Cell Extracts | Tissue Extracts
- **Species Compatibility:** Human | Mouse | Rat | Fish | Bacteria

This assay can be used to screen for DNA repair inhibitors, characterize DNA repair enzymatic signatures from samples, check DNA glycosylase specificity, and characterize DNA repair inhibitory properties of chemicals (i.e., heavy metals).

Manufactured by



Learn more about how to choose the right apoptosis assay for your research in our **Apoptosis Assays Guide**. Available online at www.caymanchem.com/literature

Environmental Toxicology



Cayman's collection of steroid assay kits can be used to quantify key biomarkers in plasma and other sample matrices to help identify alterations in endocrine function. Industrial pollutants with known estrogenic effects, as well as reactive metabolites of certain estrogen modulating drugs are also available.

Endocrine Disruption

Estrogenic Chemicals and other Endocrine Disruptors

Item No.	Product Name
70790	BADGE
13840	4-Methylbenzylidene camphor
18655	4- <i>tert</i> -Octylphenol diethoxylate
17204	α -hydroxy Tamoxifen
19519	4'-hydroxy Tamoxifen
23424	α -Zearalenol
16549	α -Zearalenol
19460	β -Zearalenol
11353	Zearalenone

Steroid Hormone Assays

Item No.	Product Name
501320	Corticosterone ELISA Kit
500360	Cortisol ELISA Kit
500370	Cortisol Express ELISA Kit
501890	Estradiol ELISA Kit
501290	Estrone-3-Glucuronide ELISA Kit
501390	20-Hydroxyecdysone EIA Kit
501420	11-Oxoetiocholanolone ELISA Kit
582601	Progesterone ELISA Kit
582701	Testosterone ELISA Kit

Endocrine Disruption Biomarkers in Fish Species

Cayman offers antibodies and assays to detect common biomarkers for oestrogenic, anti-androgenic, xenobiotic, or heavy metal pollutant exposure.

Semi-Quantitative Detection of Pollutant Exposure from Fish Plasma

ELISAs

Item No.	Product Name
10007680	Semi-Quantitative Biomarker ELISA Component Kit For Fish Samples (anti-mouse plate)
10008659	Semi-Quantitative Biomarker ELISA Component Kit For Fish Samples (anti-rabbit plate)
10004993	Vitellogenin (carp) ELISA Kit
10006943	Vitellogenin (fathead minnow) ELISA Kit

Item No.	Product Name
10009223	Vitellogenin (medaka) ELISA Kit
10004994	Vitellogenin (rainbow trout) ELISA Kit
10009272	Vitellogenin (salmonid) Semi-Quantitative ELISA Kit
10004995	Vitellogenin (zebrafish) ELISA Kit

Antibodies

Item No.	Product Name
170120	Vitellogenin (Arctic char) Polyclonal Antibody (PO-1)
170101	Vitellogenin (brown bullhead) Monoclonal Antibody (ND-1D12)
170115	Vitellogenin (carp) Monoclonal Antibody (ND-2D3)
170130	Vitellogenin (cod) Polyclonal Antibody (CS-1)
100012	Vitellogenin (Japanese medaka) Monoclonal Antibody (Clone CK-4B3)
170145	Vitellogenin (salmon) Monoclonal Antibody (BN-5)

Item No.	Product Name
170150	Vitellogenin (sea bream) Polyclonal Antibody (PO-2)
170100	Vitellogenin (sheepshead minnow) Monoclonal Antibody (ND-5C9)
170107	Vitellogenin (striped bass) Monoclonal Antibody (ND-3G2)
170265	Vitellogenin (sturgeon) Monoclonal Antibody (ND-1H2)
170170	Vitellogenin (turbot) Polyclonal Antibody (CS-2)
170165	Vitellogenin (zebrafish) Monoclonal Antibody (JE-2A6)

Manufactured by **biosense**
LABORATORIES

Food & Water Safety



We offer a variety of mycotoxins and microcystins (common food or water contaminants) as well as herbicides and pesticides that can be used as analytical standards to address a wide array of research questions related to cytotoxicity and xenobiotic metabolism. Ask about bulk, custom standards, and custom mixtures to assist your food and water quality testing.

Mycotoxins

Item No.	Product Name
11295	Aflatoxin G ₁
11296	Aflatoxin G ₂
11297	Aflatoxin M ₁
20437	Aflatoxin R ₀
19405	Chaetoglobosin A
17876	Fusaric Acid

Item No.	Product Name
62580	Fumonisin B ₁
13227	Fumonisin B ₂
20434	Fumonisin B ₃
20431	HT-2 Toxin
28151	Mycotoxin Mixture 5 (CRM)
11439	Ochratoxin A

More than 70 mycotoxin standards available on www.caymanchem.com

Microcystins and other Algal Bloom Toxins

Item No.	Product Name
10011498	Brevetoxin B
10007867	Cylindrospermopsin
10007187	Microcystin-LA

Item No.	Product Name
10007188	Microcystin-LR
10007868	Microcystin-RR
10007190	Nodularin

Amnesic Shellfish Poison ELISA

ASP EIA Kit - Item No. 10008673

- A specific assay for domoic acid (DA), a neurotoxin produced by produced by *Pseudo-nitzschia*
- Intended for use in routine monitoring of DA levels in bivalve molluscs to comply with the regulatory MPL
- Also applicable for DA quantification in other marine matrices

Manufactured by 

Herbicides & Pesticides

Item No.	Product Name
23379	Amiprofos-methyl
28059	Averantin
24225	Chlorotoluron
27309	Cyantraniliprole
16675	Glufosinate (ammonium salt)
23485	Herbicide A
25136	Herboxidiene

Item No.	Product Name
20341	Nitrofen
28131	Orfamide A
19457	Pyoluteorin
20392	Simetryn
26623	Spinetoram
11442	Tentoxin
15601	Thaxtomin A



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