



cAMPZen and AequoZen Frozen Cells

FULLY VALIDATED FROZEN CELLS OFF-THE-SHELF OR CUSTOM MADE

PerkinElmer's convenient ready-to-use AequoZen® cells for aequorin calcium testing and cAMPZen® cells for cAMP testing make it easier for you to perform functional testing of GPCRs. Just thaw

and use. We remove the lengthy process of cell culture from your functional testing by doing the cell preparation work for you, so you can focus on results.

KEY BENEFITS

- Cost effective – available in small aliquots; no assay development
- Fully validated with detailed protocols for each product
- Reproducible results – cells from the same batch reduce assay variability
- Ideal for most targets including endogenous and stably expressed receptors
- Easily scalable for your needs – compound, secondary screening and HTS profiling
- Available off-the-shelf or customized for your needs

Optimized and standardized culture conditions, even for particularly sensitive GPCRs, eliminate variability in sensitivity and size of response between different batches of cells. Figure 1 shows cAMP response using cAMPZen frozen cells.

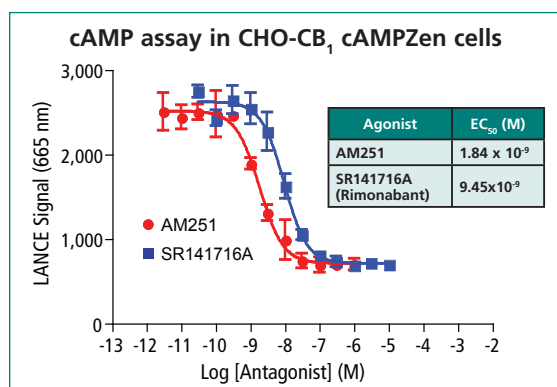


Figure 1. Antagonist-induced cAMP response in the G α_i -coupled cannabinoid CB₁ receptor. cAMPZen CHO-CB₁ frozen cells (2,500 cells/384-well format) were measured using the LANCE Ultra cAMP kit.

PerkinElmer provides homogeneous, robust platforms and kits for the detection of most $G\alpha_i$ -, $G\alpha_s$ - and $G\alpha_q$ - coupled GPCRs and second messengers, including:

- LANCE® *Ultra* cAMP (Figure 1)
- AequoScreen® – enables use of flash luminescence technology for calcium testing (Figure 2)
- ERK, MEK and Akt AlphaScreen® *SureFire*® technology to assay stimulation of the MAP kinase and PI 3-Kinase pathways (Figure 3)
- FlashPlate® and SPA technology for GTP γ S
- Luminescence-based britelite™ plus, steadylite plus® and neolite™ kits for gene reporter assays

In addition, frozen cells can be used in label-free assays on the EnSpire Multimode Plate Reader and Corning's Epic® system, as well as with other label-free instruments. This allows non-invasive measurement of the morphological responses of the entire cell in response to receptor activation or deactivation (Figure 4). Many of our AequoZen frozen cells have also been used in calcium flux fluorescence assays on the FLIPR® instrument.

Each batch of frozen cells is validated so you can obtain consistent results every time.

Why use frozen cells?

Validated Performance

- Validated for assay protocol performance, frozen storage, and stability at -80 °C for safe shipment worldwide
- Step-by-step one day protocol for most targets
- Strict quality control criteria (both on EC₅₀ and assay window) for the same reliable results with every purchase

Convenience

- You only pay for the cells you need (available per unit pricing)
- Avoid plate artifacts after overnight incubation
- Hassle-free growth-arrested irradiation enables well to well consistency
- No traces of hazardous chemicals in the cell media

Flexibility

- Perform smaller selectivity studies rapidly and cost effectively with validated families of GPCRs
- Perform cellular GPCR tests on multiple receptors at a time
 - profiling
 - lead optimization
 - screening campaigns
- Available in off-the-shelf aliquots of 2.5 (cAMPZen) and 10 (AequoZen) million cells per vial

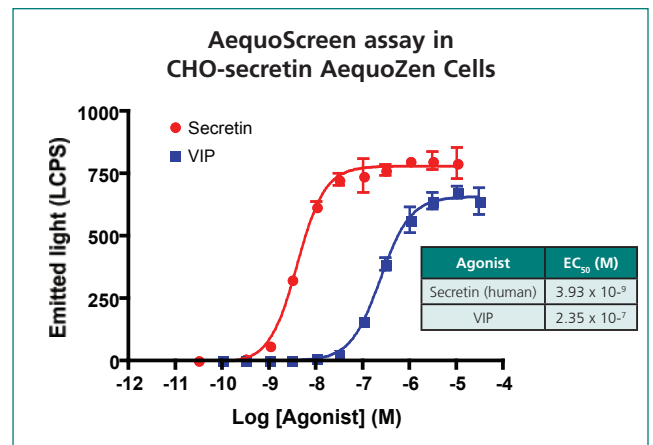


Figure 2. Secretin agonist response in AequoScreen assay. 5,000cells/well, 384-well format. Luminescence was measured with the MicroBeta detection platform with on board injectors.

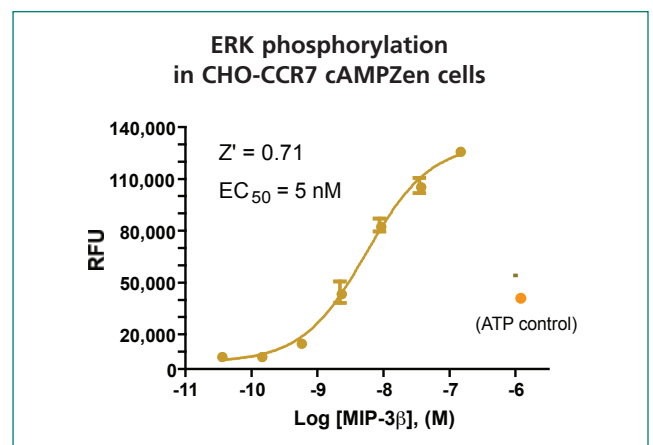


Figure 3. Frozen cells were thawed, seeded at 40,000 cells/well, 384-well format, and the next day were stimulated with a dose-response of MIP-3β. A single concentration of ATP, acting on an endogenous P2Y₂ receptor in CHO cells, was used as a control agonist. The cell lysate was used to assess ERK phosphorylation using the AlphaScreen® *SureFire*® kit.

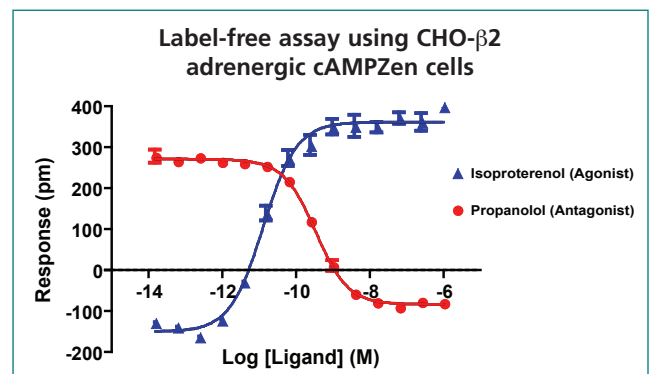


Figure 4. Frozen cells were thawed, seeded at 18K cells/well, in a 384-well format. Agonist and antagonist dose response curves were generated and measured using EnSpire with label-free technology.

ORDERING INFORMATION

cAMPZen and AequoZen Frozen Cell Lines

Receptor	Subtype	Species*	Frozen Cells (Catalog #)	
			AequoZen	cAMPZen
5-Hydroxytryptamine	5-HT _{1A}		ES-310-AF	ES-310-CF
	5-HT _{2A}		ES-313-AF	
	5-HT _{2C} edited Isoform		ES-315-AF	
	5-HT _{2C} non edited Isoform		ES-318-AF	
	5-HT _{3A}		ES-402-AF	
	5-HT _{5A}		ES-401-AF	
	5-HT ₆		ES-316-AF	ES-316-CF
Acetylcholine (Muscarinic)	M ₁		ES-210-AF	
	M ₂		ES-211-AF	
	M ₃		ES-212-AF	
	M ₄		ES-213-AF	
	M ₅		ES-214-AF	
Adenosine	A ₁		ES-010-AF	ES-010-CF
	A _{2A}		ES-011-AF	ES-011-CF
	A _{2B}			ES-013-CF
	A ₃		ES-012-AF	ES-012-CF
Adrenoceptors	α _{1A}		ES-036-AF	
	α _{2A}		ES-030-AF	ES-030-CF
	α _{2B}		ES-031-AF	
	α _{2C}			ES-032-CF
	β ₁		ES-033-AF	ES-033-CF
	β ₂			ES-034-CF
	β ₃			ES-035-CF
Anaphylatoxin	C3a			ES-730-CF
	C5a		ES-731-AF	ES-731-CF
Angiotensin	AT ₁		ES-072-AF	
Apelin	APJ			ES-460-CF
Bombesin	BB ₂		ES-582-AF	
Calcitonin	CGRP1		ES-420-AF	ES-420-CF
	AM ₂			ES-430-CF
Cannabinoid	CB ₁		ES-110-AF	ES-110-CF
	CB ₂			ES-111-CF
Chemerin	GPR1		ES-661-AF	
Chemokine	CCR1			ES-132-CF
	CCR2b		ES-133-AF	
	CCR3		ES-138-AF	
	CCR6		ES-139-AF	ES-139-CF
	CCR7		ES-140-AF	ES-140-CF
	CCR8		ES-136-AF	ES-136-CF
	CCR9a		ES-146-AF	
	CCR10		ES-143-AF	
	CX ₃ CR1		ES-137-AF	ES-137-CF
	CXCR2		ES-145-AF	ES-145-CF
	CXCR3		ES-142-AF	
	CXCR6		ES-720-AF	ES-720-CF
	XCR1		ES-148-AF	ES-148-CF

*Human, if not otherwise indicated

Receptor	Subtype	Species*	Frozen Cells (Catalog #)	
			AequoZen	cAMPZen
Cholecystokinin	CCK ₁		ES-530-AF	
	CCK ₂		ES-531-AF	
Dopamine	D ₁			ES-172-CF
	D _{2L}		ES-171-AF	
Endothelin	ET _A		ES-320-AF	
	ET _B		ES-321-AF	
Formyl Peptide	FPR2 (FPRL1)		ES-610-AF	ES-610-CF
Free Fatty Acid	FFA1 (GPR40)		ES-652-AF	
	FFA (GPR120)		ES-800-AF	
GABA _B	GABA _{B1a/B2}			ES-500-CF
Galanin	GAL ₁		ES-510-AF	ES-510-CF
	GAL ₂		ES-511-AF	
Ghrelin	ghrelin		ES-410-AF	
Glucagon	GLP-2			ES-711-CF
	Secretin		ES-712-AF	
Glutamate	MGL _{μ7}			ES-553-CF
GPR	SUCNR1 (Succinate, GPR91)		ES-744-AF	
	GPR120		ES-800-AF	
	OXGR1 (GPR99, Citric acid cycle)		ES-743-AF	
Histamine	H ₁		ES-390-AF	
	H ₂		ES-391-AF	ES-391-CF
	H ₃		ES-392-AF	ES-392-CF
	H ₄		ES-393-AF	ES-393-CF
Leukotriene	BLT ₁			ES-340-CF
Lysophospholipid	S ₁ P ₂ (EDG5)		ES-594-AF	
	S ₁ P ₄ (EDG6)		ES-592-AF	
	S ₁ P ₅ (EDG8)		ES-593-AF	
Mas related	Mrg3	rat	ES-745-F	
	MrgB3		ES-745-AF	
Melanin-Concentrating Hormone	MCH ₁		ES-370-AF	ES-370-CF
	MCH ₂		ES-371-AF	
Melanocortin	MC ₁			ES-195-CF
	MC ₃			ES-193-CF
	MC ₃	mouse		ES-190-CF
	MC ₄		ES-191-AF	ES-191-CF
	MC ₅			ES-194-CF
	MC ₅	mouse		ES-192-CF
Melatonin	MT ₁		ES-620-AF	
	MT ₂		ES-621-AF	
Neuropeptide FF	NPFF1			ES-491-CF
	NPFF2			ES-490-CF
Neuropeptide Y	Y ₁			ES-351-CF
	Y ₂		ES-352-AF	ES-352-CF
Neurotensin	NTS ₁		ES-690-AF	
Nicotinic	GPR109A (HM74A)			ES-760-CF
Opioid	mu		ES-542-AF	ES-542-CF
	NOP (ORL1)			ES-230-CF

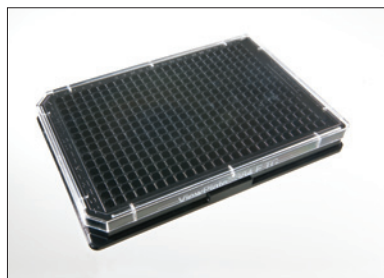
*Human, if not otherwise indicated

Receptor	Subtype	Species*	Frozen Cells (Catalog #)	
			Ready-to-use	
			AequoZen	cAMPZen
Orexin	OX ₁		ES-330-AF	
	OX ₂		ES-331-AF	
Prokineticin	PKR ₁		ES-750-AF	
	PKR ₂		ES-751-AF	ES-751-CF
Prostanoid	DP ₂ (CRTH2)			ES-561-CF
	EP ₂			ES-562-CF
Protease-activated	PAR4		ES-782-AF	
Purinergic P2Y	P2Y ₁₁		ES-293-AF	
Relaxin	RXFP3			ES-656-CF
Somatostatin	sst _{2a}		ES-521-AF	ES-521-CF
	sst ₃			ES-523-CF
	sst ₄		ES-524-AF	ES-524-CF
	sst ₅		ES-522-AF	ES-522-CF
Thyrotropin Releasing Hormone	TRH ₁		ES-700-AF	
Urotensin	UT (Uro II, GPR14)	rat	ES-441-AF	
Vasopressin	V _{1A}		ES-361-AF	
	V _{1B}		ES-362-AF	
	V ₂			ES-363-CF

AequoZen Parental Frozen Cells

	CHO-K1 (+Gα ₁₆ , medium level)	hamster	ES-000-A2F	
	CHO-K1	hamster	ES-000-A12F	
	CHO-K1 (+Gα _{q/15})	hamster	ES-000-A21F	
	CHO-K1 (+Gα ₁₆)	hamster	ES-000-A24F	
	HEK293		ES-000-A26F	
	1321N1		ES-000-A27F	
	1321N1 (+Gα ₁₆)		ES-000-A28F	
	HEK293 (+Gα ₁₆)		ES-000-A30F	

*Human if not otherwise indicated



Choose from a wide selection of high performance microplates. Shown is ViewPlate®-384 well format.

Better microplates yield better results.

Pair your frozen cell experiment with high performance microplates from PerkinElmer. Designed with both the assay and the instrument in mind, each offers superior, consistent screening performance. Miniaturization has never been easier with our patented 1536-well plate. It's the same size as 96- and 384-well plates, so no instrument or software automation adjustments are necessary.

See more with LANCE *Ultra* cAMP TR-FRET technology

Now you can increase your range of GPCR targets while getting more robust and confident data in a shorter run time from the widest assay window available. PerkinElmer's LANCE *Ultra* cAMP assay offers unmatched sensitivity using a simple TR-FRET protocol all in a single kit – ideal for any application. Use with PerkinElmer's validated Total GPCR Solution including validated cell lines, frozen cells, microplates and instrumentation (EnVision® or VICTOR X plate readers or the ViewLux™ uHTS imaging system).

LANCE *Ultra* cAMP offers:

- Unmatched assay sensitivity and signal stability – even with overnight incubation
- Optimized screening of difficult targets and $G\alpha_i$ antagonists
- Easier detection of cAMP response of endogenous receptors – use fewer cells per well
- Robust sensitivity when miniaturized to 1536-well format for uHTS
- Trusted results: stable pharmacology over time with consistent rank order potencies
- Reproducible results with highest Z' values

For more information on LANCE *Ultra* cAMP, visit www.perkinelmer.com/openthewindow.

Why go anywhere else?

With the most extensive line of GPCR assay technologies and reagents – even for your most difficult GPCR screens – and high performance instrumentation and consumables, PerkinElmer has everything you need for your GPCR research:

- **AequoScreen cell lines:** propagatable cell lines expressing mitochondrially-targeted apoaequorin with/without the promiscuous G-protein $G\alpha_{16}$
- **GPCR cell lines and membranes:** largest selection of functional and binding assays
- **LANCE *Ultra* cAMP assay:** 3X sensitivity with 80% fewer cells in any plate format
- **AlphaScreen® Surefire®:** cellular phospho detection assay for generic analysis of GPCR targets (ideal for $G\alpha_q$ and $G\alpha_i$ targets); use with EnVision® Multilabel Plate Reader or EnSpire® Multimode Plate Reader with Alpha technology module
- **Luminescence reporter gene assays: britelite plus, neolite and steadylite plus** – use with ultra-sensitive luminescence detection mode available on the EnVision Multilabel Plate Reader or EnSpire® Multimode Plate Reader with Alpha technology module; also with MicroBeta² or TopCount scintillation and luminescence counters
- **NEN® Radioligands:** the largest portfolio of tritiated and iodinated ligands available
- **OnPoint™ Reagent Services:** Looking for a large batch of frozen cells? Contact us today for custom frozen cell production details

For more information on how you can optimize your next GPCR research project, visit www.perkinelmer.com/GPCR.

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