

## Relaxin insulin-like family peptide Receptor 3

### Description:

Recent findings suggest that the relaxin-3 neural network may represent a new ascending arousal pathway able to modulate a range of neural circuits including those affecting circadian rhythm and sleep/wake states, spatial and emotional memory, motivation and reward, the response to stress and feeding and metabolism. Therefore, the relaxin-3 receptor (RX3) is a potential therapeutic target for the treatment of various CNS diseases.

### Ordering info:

Cat No.	Size
G0609	15 µg
G0609-Plus	15 µg + 0.2 mL

### Specifications:

**Plasmid size:** 7415 bp

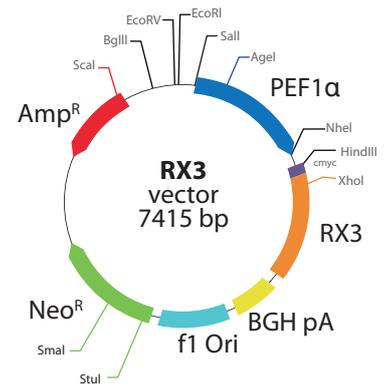
**Promoter:** PEF1α

**ORF Sequence:** NM\_016568

**Protein Sequence:** Q9NSD7

### Alternative names:

RXFP3, SALPR, RLN3R1 or RXFPR3



## Relaxin-insulin-like family peptide Receptor 4

### Description:

RX4 is a member of the rhodopsin family of GPCRs. The gene was discovered by searching the Human genome database for novel G-protein-coupled peptide receptors. RX4 shows highest homology to Human SALPR, an orphan somatostatin- and angiotensin-like peptide receptor.

### Ordering info:

Cat No.	Size
G0610	15 µg
G0610-Plus	15 µg + 0.2 mL

### Specifications:

**Plasmid size:** 7098 bp

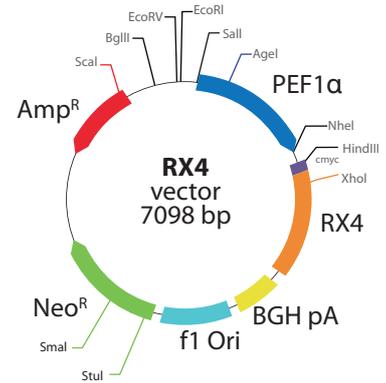
**Promoter:** PEF1α

**ORF Sequence:** NM\_181885

**Protein Sequence:** Q8TDU9

### Alternative names:

GPR100, RLN3R2, RXFPR4 or GPCR142



## Serotonin Receptor 1B

### Description:

Serotonin Receptor 1B is a member of the GPCR family, coupled to guanine nucleotide-binding proteins that inhibits adenylate cyclase activity. In Humans, it is encoded by the HTR1B gene. This is one of the different receptors for serotonin, a biogenic hormone that functions as a neurotransmitter, as hormone and as mitogen. HTR1B is located in the basal ganglia, striatum, hippocampus and vascular smooth muscle and plays a role in thermoregulation, respiration, appetite control, sexual behavior, aggression and anxiety.

### Ordering info:

Cat No.	Size
G0612	15 µg
G0612-Plus	15 µg + 0.2 mL

### Specifications:

**Plasmid size:** 7201 bp

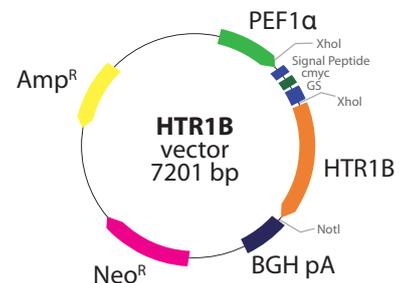
**Promoter:** PEF1α

**ORF Sequence:** NM\_000863.1

**Protein Sequence:** P28222

### Alternative names:

S12, 5-HT1B or HTR1D2



## Somatostatin Receptor 1

### Description:

Somatostatin Receptor 1 is a member of the GPCR family and acts at many sites to inhibit the release of many hormones and other secretory proteins. In Humans, it is encoded by the SSTR1 gene that is expressed in highest levels in jejunum and stomach. SSTR1 is receptor for somatostatin with higher affinity for somatostatin-14 than -28 and is coupled via pertussis toxin sensitive G proteins to inhibition of adenylyl cyclase. It stimulates phosphotyrosine phosphatase and Na(+)/H(+) exchanger via pertussis toxin insensitive G proteins.

### Ordering info:

Cat No.	Size
G0616	15 µg
G0616-Plus	15 µg + 0.2 mL

### Specifications:

**Plasmid size:** 6515 bp

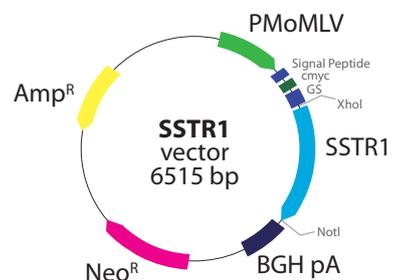
**Promoter:** PMoMLV

**ORF Sequence:** NM\_001049.2

**Protein Sequence:** P30872

### Alternative names:

SS1R, SS1-R, SRIF-2 or SS-1-R



## Somatostatin Receptor 2

### Description:

Somatostatin Receptor 2 is a member of the GPCR family and acts at many sites to inhibit the release of many hormones and other secretory proteins. In Humans, is encoded by the SSTR2 gene that is expressed in highest levels in cerebrum and kidney.

It is coupled via pertussis toxin sensitive G proteins to inhibition of adenylyl cyclase and stimulates phosphotyrosine phosphatase and PLC via pertussis toxin insensitive as well as sensitive G proteins.

### Ordering info:

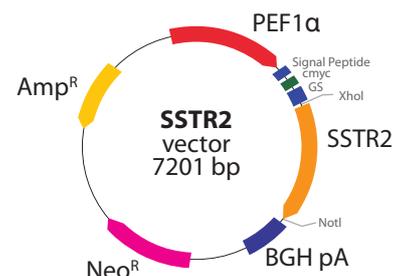
Cat No.	Size
G0617	15 µg
G0617-Plus	15 µg + 0.2 mL

### Specifications:

**Plasmid size:** 7201 bp  
**Promoter:** PEF1α  
**ORF Sequence:** NM\_001050.2  
**Protein Sequence:** P30874

### Alternative names:

SRIF-1 or SS2R



## Somatostatin Receptor 3

### Description:

Somatostatin receptor 3 is a member of the GPCR family and is encoded in Humans by SSTR3 gene, which is expressed in highest levels in brain and pancreatic islets. It acts at many sites to inhibit the release of many hormones and other secretory proteins. It binds to somatostatins-14 and 28 and is coupled via pertussis toxin sensitive G proteins to inhibition of adenylyl cyclase.

### Ordering info:

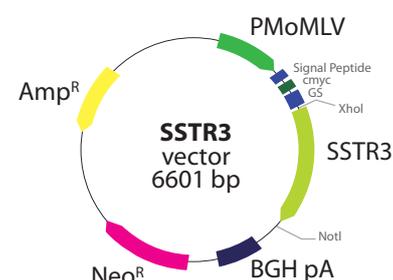
Cat No.	Size
G0618	15 µg
G0618-Plus	15 µg + 0.2 mL

### Specifications:

**Plasmid size:** 6601 bp  
**Promoter:** PMoMLV  
**ORF Sequence:** NM\_001051  
**Protein Sequence:** P32745

### Alternative names:

SS3R, SS3-R, SS-3-R or SSR-28



## Somatostatin Receptor 4

### Description:

Somatostatin acts at many sites to inhibit the release of many hormones and other secretory proteins. The biologic effects of somatostatin are probably mediated by a family of GPCRs that are expressed in a tissue-specific manner. SSTR4 is a member of the superfamily of receptors having seven transmembrane segments and is expressed in highest levels in fetal and adult brain and lung.

### Ordering info:

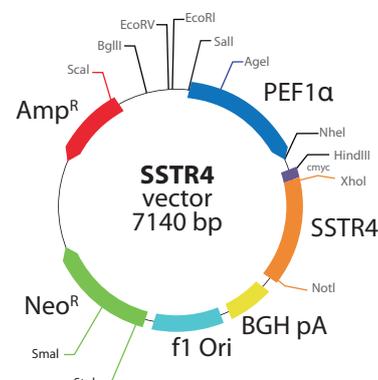
Cat No.	Size
G0619	15 µg
G0619-Plus	15 µg + 0.2 mL

### Specifications:

**Plasmid size:** 7140 bp  
**Promoter:** PEF1α  
**ORF Sequence:** NM\_001052  
**Protein Sequence:** P31391

### Alternative names:

SSTR4, SS4R or SS4-R



## Somatostatin Receptor 5

### Description:

Somatostatin and its related peptide cortistatin exert multiple biological actions on normal and tumoral tissue targets by interacting with somatostatin receptors (SSTs). It is one of the SSTs, which is a multi-pass membrane protein and belongs to the GPCR 1 family. The activity of this receptor is mediated by G proteins which inhibit adenylyl cyclase and different regions of this receptor molecule are required for the activation of different signaling pathways. A mutation in the gene results in somatostatin analog resistance. Alternatively spliced transcript variants have been identified in this gene.

### Ordering info:

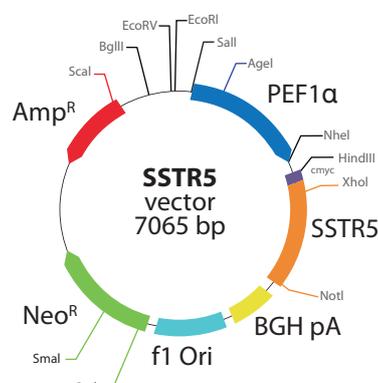
Cat No.	Size
G0620	15 µg
G0620-Plus	15 µg + 0.2 mL

### Specifications:

**Plasmid size:** 7065 bp  
**Promoter:** PEF1α  
**ORF Sequence:** NM\_001053  
**Protein Sequence:** P35346

### Alternative names:

SSTR5 or SS-5-R



## Sphingosine-1-Phosphate Receptor 1

### Description:

Sphingosine-1-phosphat Receptor 1 is encoded in Humans by the S1PR1 gene, which is highly expressed in endothelial cells. The ligand sphingosine-1-phosphate binds with high affinity. It has been suggested to be involved in the regulation and differentiation of endothelial cells. Activated S1PR1 induces cell-cell adhesion. S1PR1 has been shown to interact with 5-HT1A receptor, GNAI1 and GNAI3.

### Ordering info:

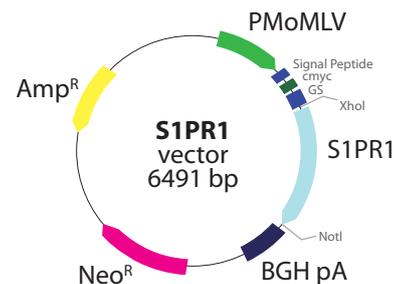
Cat No.	Size
G0571	15 µg
G0571-Plus	15 µg + 0.2 mL

### Specifications:

**Plasmid size:** 6491 bp  
**Promoter:** PMoMLV  
**ORF Sequence:** NM\_001400.4  
**Protein Sequence:** P21453

### Alternative names:

EDG1, S1P1, CD363 or ECGF1



## Sphingosine-1-phosphate Receptor 2

### Description:

EDG5 (or S1PR2) is a member of the GPCRs, as well as the EDG family of proteins. It participates in sphingosine 1-phosphate-induced cell proliferation, survival and transcriptional activation. Sphingosine-1-phosphate (S1P) is a bioactive sphospholipid with various S1P receptor (S1PR) expression profiles in cells of different origin. S1PR1, R3 and - to a lesser extent - R2 were the main receptors expressed in most of endothelial cells (ECs). The balances in the expression and activation of S1PR1, R2 and R3 help to maintain the physiological functions of ECs.

### Ordering info:

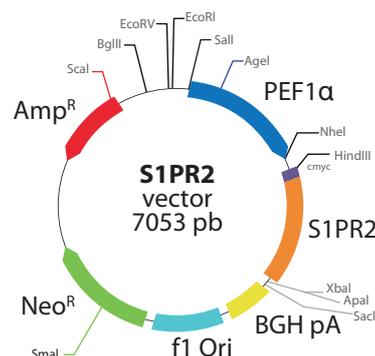
Cat No.	Size
G0572	15 µg
G0572-Plus	15 µg + 0.2 mL

### Specifications:

**Plasmid size:** 7053 bp  
**Promoter:** PEF1α  
**ORF Sequence:** NM\_004230  
**Protein Sequence:** Q95136

### Alternative names:

EDG5, H218, LPB2 or S1P2



## Sphingosine-1-phosphate Receptor 3

### Description:

S1PR3 is a member of the EDG family of receptors. It has been identified as a functional receptor for sphingosine 1-phosphate and likely contributes to the regulation of angiogenesis and vascular endothelial cell function. Sphingosine-1-phosphate (S1P) is a bioactive sphospholipid with various S1P receptor (S1PR) expression profiles in cells of different origin. S1PR1, R3 and - to a lesser extent - R2 were the main receptors expressed in most of endothelial cells (ECs).

### Ordering info:

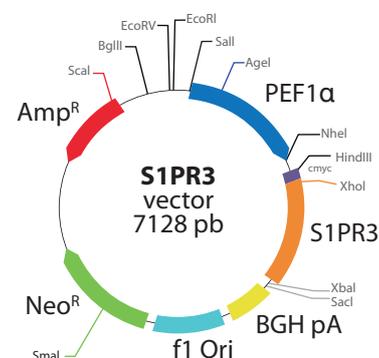
Cat No.	Size
G0574	15 µg
G0574-Plus	15 µg + 0.2 mL

### Specifications:

**Plasmid size:** 7128 bp  
**Promoter:** PEF1α  
**ORF Sequence:** NM\_005226  
**Protein Sequence:** Q99500

### Alternative names:

EDG3, LPB3 or S1P3



## Succinate Receptor 1

### Description:

It is a GPCR for succinate, an intermediate molecule of the citric acid cycle. It is involved in the promotion of hematopoietic progenitor cell development and it has a potential role in renovascular hypertension which has known correlations to renal failure, diabetes and atherosclerosis.

### Ordering info:

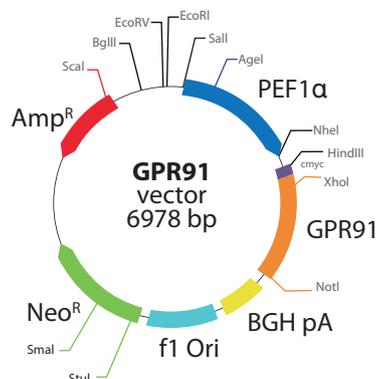
Cat No.	Size
G0625	15 µg
G0625-Plus	15 µg + 0.2 mL

### Specifications:

**Plasmid size:** 6978 bp  
**Promoter:** PEF1α  
**ORF Sequence:** NM\_033050  
**Protein Sequence:** Q9BXA5

### Alternative names:

SUCNR1



## Tachykinin Receptor 3

### Description:

Tachykinin receptor 3 is encoded in Humans by the TACR3 gene, also referred to as neurokinin B. It binds to tachykinin neuropeptide neuromedin-K and is predominantly expressed in the CNS with lited expression in the periphery. It is associated with G proteins that activate a phosphatidylinositol-calcium second messenger system and mediates afferent neuron transmission and intestinal motility and secretion.

### Ordering info:

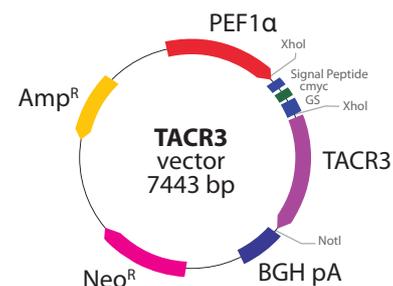
Cat No.	Size
G0626	15 µg
G0626-Plus	15 µg + 0.2 mL

### Specifications:

**Plasmid size:** 7443 bp  
**Promoter:** PEF1α  
**ORF Sequence:** NM\_001059.2  
**Protein Sequence:** P29371

### Alternative names:

NKR, HH11, NK3R or NK-3R



## Trace amine associated Receptor 1

### Description:

Trace amine-associated receptors (TAAR) belong to the family of G-protein coupled receptors (GPCR): TAAR1, the first deorphanized member, responds to biogenic trace amines like β-phenylethylamine, p-tyramine or octopamine. Human TAAR1 is expressed in a variety of tissues including brain, stomach, kidney, lung and intestine, but not in the olfactory epithelium. TAAR1 has been found recently in blood B cells, suggesting a functional role of TAAR1 in these cells.

### Ordering info:

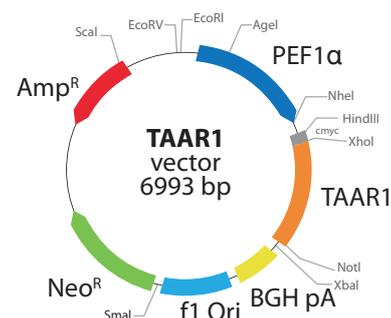
Cat No.	Size
G0627	15 µg
G0627-Plus	15 µg + 0.2 mL

### Specifications:

**Plasmid size:** 6993 bp  
**Promoter:** PEF1α  
**ORF Sequence:** NM\_138327  
**Protein Sequence:** Q96RJO

### Alternative names:

TA1, TAR1 or TRAR1



## Trace amine associated Receptor 2

### Description:

Closest related to TAAR1 GPCR, TAAR2 is most abundantly expressed in polymorphonuclear (PMN), T and B cells. PMN are a first line of defense of our innate cellular immune system at sites of inflammation or bacterial infection. Some studies indicate that TAAR2 responds to the same amines as TAAR1, or TAAR1 and TAAR2 build functional dimers.

### Ordering info:

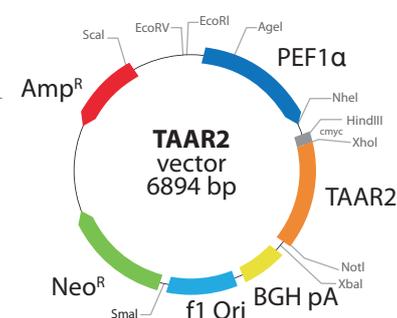
Cat No.	Size
G0628	15 µg
G0628-Plus	15 µg + 0.2 mL

### Specifications:

**Plasmid size:** 6894 bp  
**Promoter:** PEF1α  
**ORF Sequence:** NM\_001033080.1  
**Protein Sequence:** Q9P1P5

### Alternative names:

GPR58 or taR-2



## Trace amine associated Receptor 5

### Description:

Human TAAR5 is exclusively expressed in small subsets of olfactory sensory neurons in the human olfactory epithelium, where it is the most highly expressed TAAR gene. This receptor can be activated with a high specificity by the tertiary amines trimethylamine (TMA) (full agonist) and dimethylethylamine (DMEA) (partial agonist). TMA has an unpleasant odor of rotting fish, that will be released in bodily secretions like sweat, breath and urine in people with the genetic disorder trimethylaminuria disease.

### Ordering info:

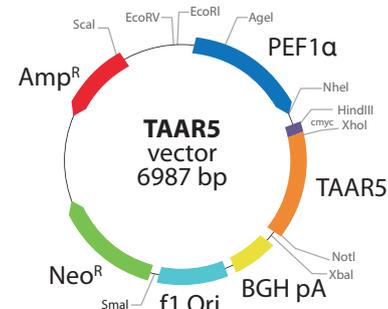
Cat No.	Size
G0629	15 µg
G0629-Plus	15 µg + 0.2 mL

### Specifications:

**Plasmid size:** 6987 bp  
**Promoter:** PEF1α  
**ORF Sequence:** NM\_003967.2  
**Protein Sequence:** O14804

### Alternative names:

TRAR5, TAR-5



## Trace amine associated Receptor 6

### Description:

It is a seven-transmembrane GPCR that likely functions as a receptor for endogenous trace amines. By screening the genomic sequence using a non-redundant set of all vertebrate GPCRs as queries, identified TAAR6. Mutations in the gene may be associated with schizophrenia.

### Ordering info:

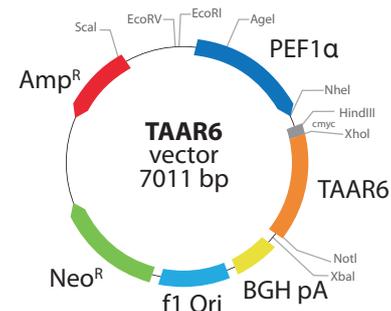
Cat No.	Size
G0630	15 µg
G0630-Plus	15 µg + 0.2 mL

### Specifications:

**Plasmid size:** 7011 bp  
**Promoter:** PEF1α  
**ORF Sequence:** BC069157  
**Protein Sequence:** Q96RI8

### Alternative names:

TA4, TAR4, TAR6 or TRAR4



## Trace amine associated Receptor 8

### Description:

The discovery of a family of GPCRs, some of which bind and are activated by biogenic trace amines, has prompted speculation as to the physiological role of these receptors. Observations associated with the distribution of these trace amine associated receptors (TAARs) suggest that it may be involved in depression, attention-deficit hyperactivity disorder, eating disorders, migraine headaches and Parkinson's disease. Preliminary *in vitro* data, obtained using cloned receptors, also suggest a role for TAARs in the function of hallucinogens.

### Ordering info:

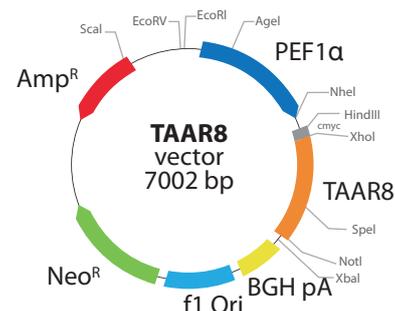
Cat No.	Size
G0631	15 µg
G0631-Plus	15 µg + 0.2 mL

### Specifications:

**Plasmid size:** 7002 bp  
**Promoter:** PEF1α  
**ORF Sequence:** NM\_053278  
**Protein Sequence:** Q969N4

### Alternative names:

TA5, TAR5, TRAR5 or TaR-5



## Trace amine associated Receptor 9

### Description:

TAAR9 is a member of a large family of rhodopsin GPCRs. It contains 7 transmembrane domains and transduces extracellular signals through heterotrimeric G proteins.

### Ordering info:

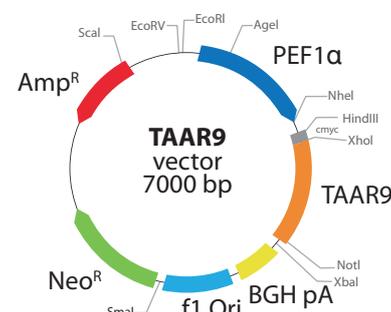
Cat No.	Size
G0632	15 µg
G0632-Plus	15 µg + 0.2 mL

### Specifications:

**Plasmid size:** 7000 bp  
**Promoter:** PEF1α  
**ORF Sequence:** NM\_175057.3  
**Protein Sequence:** Q96RI9

### Alternative names:

TA3, TAR3 or TAR9



## Urotensin 2 Receptor

### Description:

Human urotensin 2 receptor is encoded by the UTS2R gene that is greatest expression levels in the peripheral vasculature, heart and kidney. It is a member of the GPCR family and has high affinity for urotensin-2 and urotensin-2B. Its activity is mediated by a Gq/11 protein that activates a phosphatidylinositol-calcium second messenger system and mediates complex hemodynamic effects and influences neuromuscular physiology.

### Ordering info:

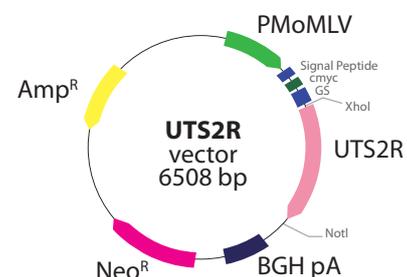
Cat No.	Size
G0633	15 µg
G0633-Plus	15 µg + 0.2 mL

### Specifications:

**Plasmid size:** 6508 bp  
**Promoter:** PMoMLV  
**ORF Sequence:** NM\_018949  
**Protein Sequence:** Q9UQP6

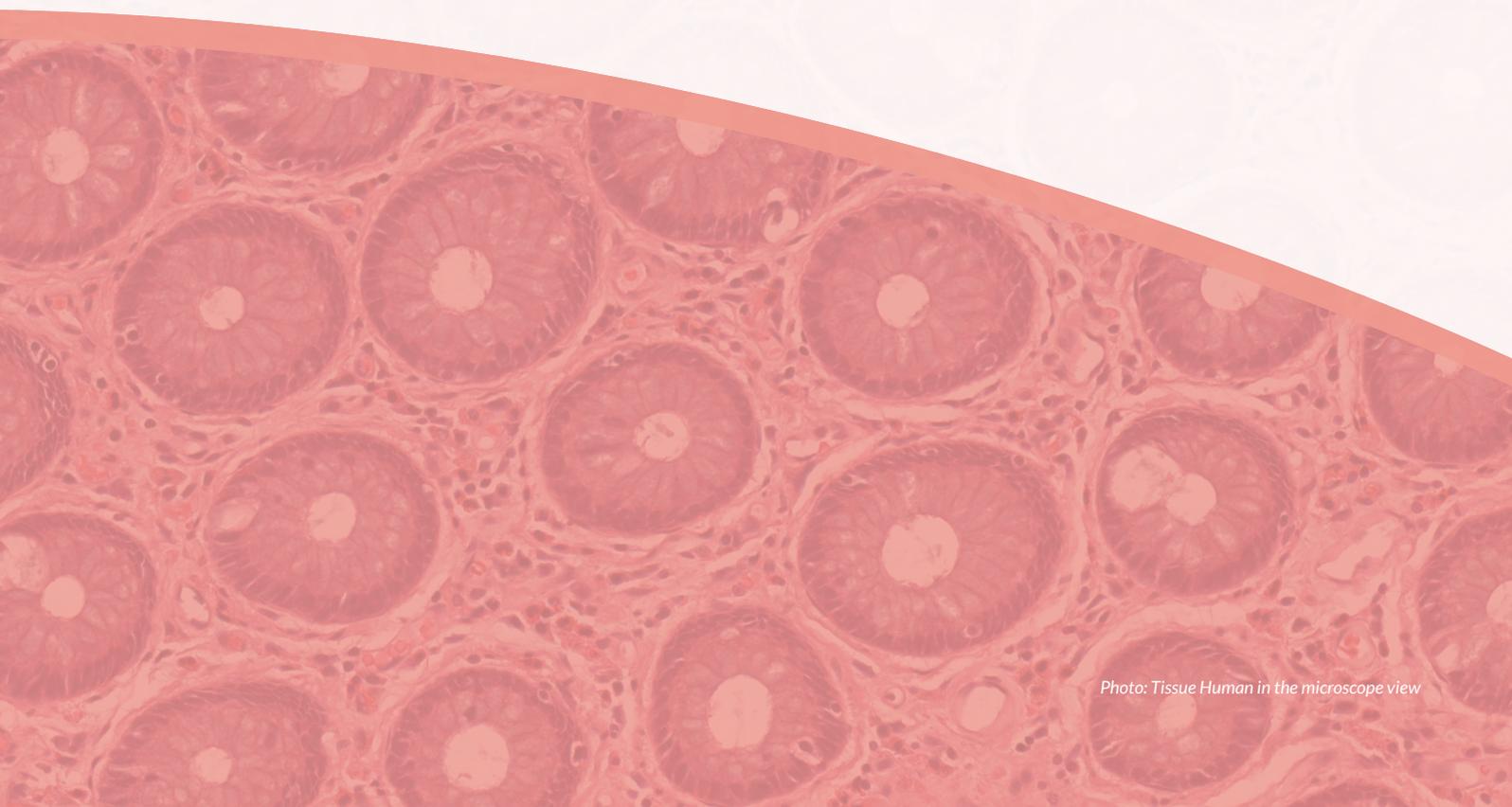
### Alternative names:

UTR, UTR2, GPR14 or UR-2-R





## 4. Cell Transfection



# CANFAST™

For a highly efficient, easy and non-toxic High-throughput transfection



## Ordering info:

Cat No.	Size
T0082-S	0.5 mL
T0082	1.5 mL
T0083	1 mL

(1.5 mL = 375-750 transfections)

## Include for 1.5 mL:

- 1.5 mL CANFAST™ Transfection Reagent (1 µg/µl)
- 15 µl GFP-Plasmid Transfection control (1 µg/µl)



## Description:

CANFAST™ is a highly efficient, ready-to-use and non-toxic new generation of cationic polymer. It has important features as DNA condensation and endosomal release, which improves gene transfection efficiency.

## Advantages & Features:

- ✓ **High transfection efficiency and reproducibility** in most common cell lines, both adherent and suspension cell lines.
- ✓ **Non-toxic:** minimal cytotoxicity with a cell survival rate >90%.
- ✓ **Serum compatible in cell cultures.**
- ✓ **Easy and time-saving protocol:** just 24 minutes to successful transfections with minimal handling.
- ✓ **Optimized:** direct application for most cell lines.
- ✓ **Proven performance:** for transient and stable transfections, adherent and suspension cells.
- ✓ **Cost effective:** minimal amount of DNA required and allows use the same medium after transfection.

## Incoming Products:

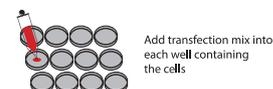
- CrispFAST™ Transfection Reagent

## Protocol:

Prepare the transfection mix



Transfect the cells



## Applications:

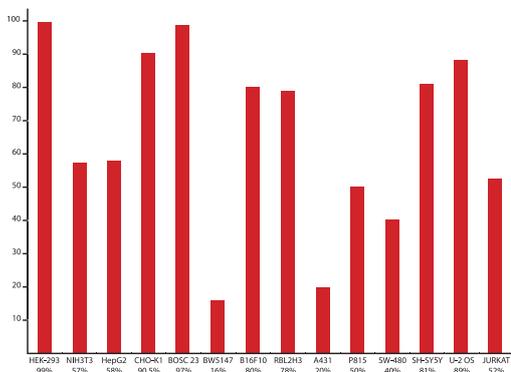
- ✓ High-throughput transfection.
- ✓ Stable and transient transfections.
- ✓ Co-transfection.
- ✓ Transfection of primary cells and cell lines.
- ✓ Transfection of adherent and suspension cells.
- ✓ All cellular analysis applications.

## Quality control:

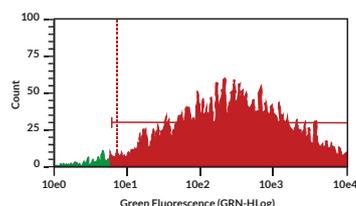
- ✓ Transfection range of Green fluorescent protein expression vector in JURKAT cell line are >50%.

## High transfection efficiency in most common cell lines:

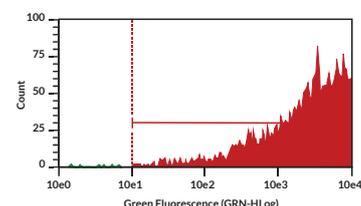
### Transfection efficiency (%)



**Figure 4.1:** Transfection efficiency in different cell lines using CANFAST™. The cells lines have been transfected with a vector expressing green fluorescent protein reporter, driven by cytomegalovirus promoter.



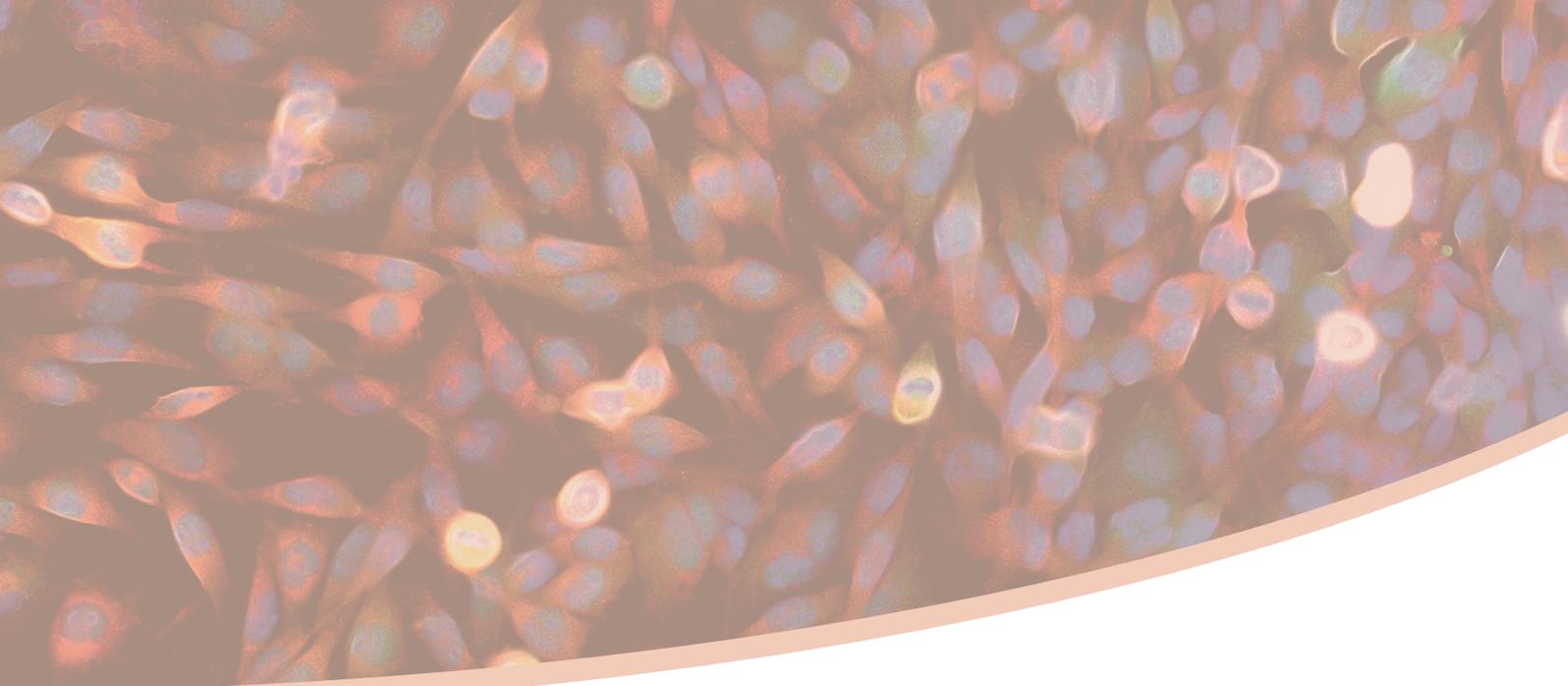
**Figure 4.2:** CHO Transfection with CANFAST™



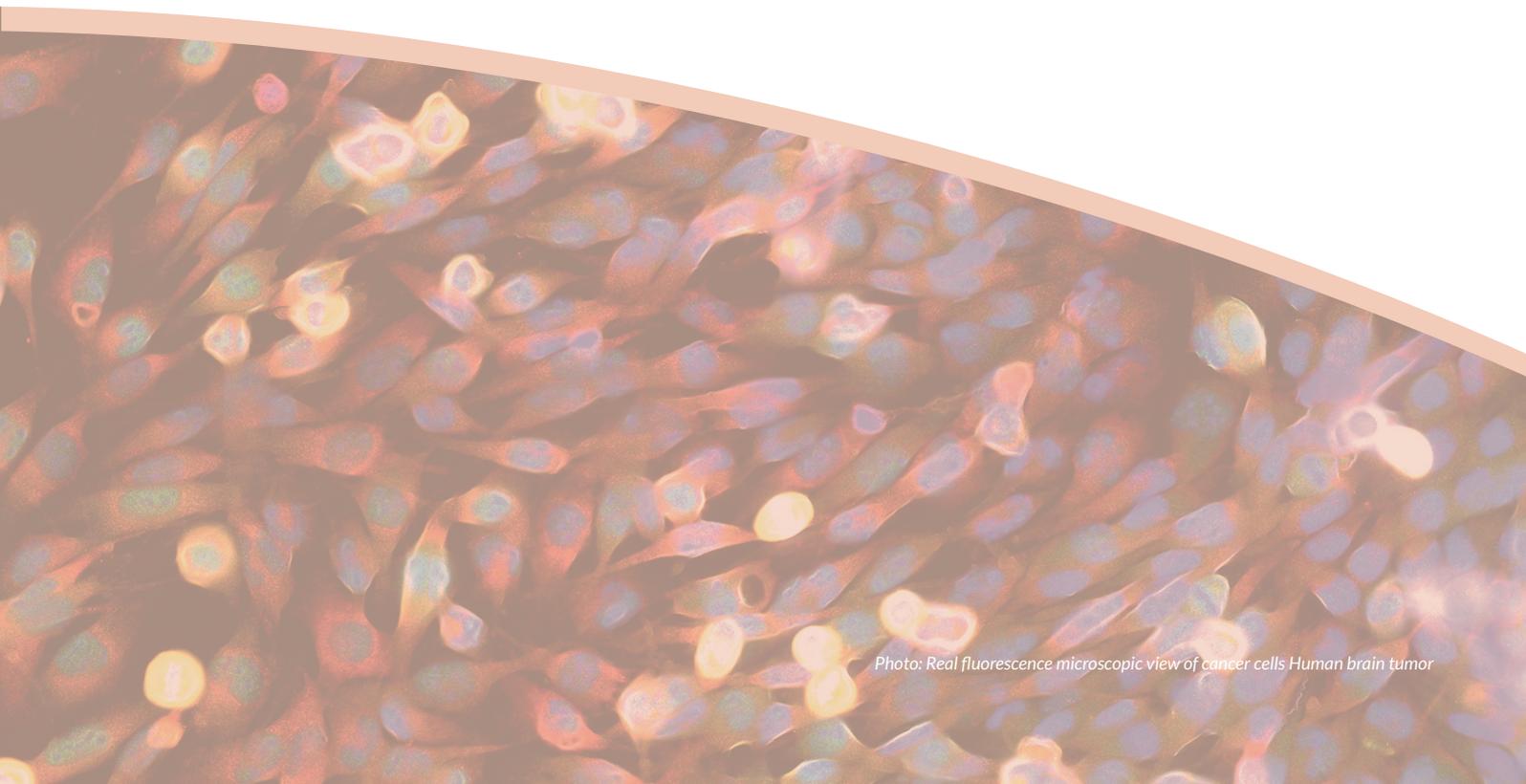
**Figure 4.3:** HEK-293 Transfection with CANFAST™

## Cells successfully transfected with CANFAST™ include:

Cells line	Origin	Cell type
CHO-K1	Hamster	Chinese ovary cells, epithelial
HEK-293	Human	Embryonic kidney fibroblast
BOSC 23	Human	Kidney: transformed with adenovirus 5 DNA
HepG2	Human	Hepatocarcinoma, epithelial
A431	Human	Squamous carcinoma
SW480	Human	Colon adenocarcinoma
56FTH 80	Human	Fetal trachea epithelium cells
6CFSMEo-	Human	Submucosal gland epithelium cells
9HTEo-	Human	Adult trachea epithelial cells
A549	Human	Type II pneumocytes
CACO-2	Human	Colorectal adenocarcinoma cells
CFNPE9o-	Human	Nasal epithelium cells
CFPEo-	Human	Trachea epithelium cells
HCS-2/8	Human	Chondrocyte-like cells
HeLa	Human	Cervix epitheloid carcinoma
Hep 2C	Human	Epidermal carcinoma cells
Jurkat	Human	T cell leukemia
KB	Human	Epithelial cells
MCF7	Human	Breast adenocarcinoma cells
Cos-7	Monkey	Kidney cells
B16F10	Mouse	Skin melanoma, epithelial
BW5147	Mouse	AKR/JT cell lymphoma
P815	Mouse	Matocytoma
NIH3T3	Mouse	Embryonic fibroblast
BNL CL.2	Mouse	Hepatocytes
C-26	Mouse	Colon carcinoma cells
C2C12	Mouse	Myoblasts
CT26	Mouse	Non-immunogenic colon carcinoma
L929	Mouse	Subcutaneous connective tissue fibroblasts
MCA-38	Mouse	Colon carcinoma cells
Neuro 2A	Mouse	Neuroblastoma cells
SH-SY5Y	Human	Neuroblastoma cells
LLC-PK1	Porcine	Kidney epithelial cells
RBL2H3	Rat	Basophilic leukemia
<b>Primary cell cultures</b>		<b>Origin</b>
Postmitotic neurons	Human	
Embryonic stem cells	Human	
Embryonic stem cells	Mouse	
Postmitotic	Rat	



## **5. Cell Based Assay and Molecule Detection Kits**



*Photo: Real fluorescence microscopic view of cancer cells Human brain tumor*

# Cell Viability, Proliferation and Cytotoxicity assays

## Annexin V Apoptosis Detection Kits



### Description:

Annexin V Apoptosis Detection Kits is a convenient, easy-to-use and safe method for Apoptosis Detection. Annexins are a family of calcium-dependent phospholipid-binding proteins, which bind to phosphatidylserine (PS).

Externalization of phosphatidylserine residues on the outer plasma membrane of apoptotic cells allows detection via Annexin V. Once the apoptotic cells are bound with labelled Annexin V, it can be visualized with fluorescent microscopy or cytometry.

Since loss of membrane integrity is a pathognomonic feature of necrotic cell death, necrotic cells will stain with specific membrane-impermeant nucleic acid dyes such as propidium iodide, the membrane integrity of apoptotic cells can be demonstrated by the exclusion of these dyes.

### Includes for 100 assays:

- 500 µl Labeled Annexin V
- 50 mL Binding Buffer (10x)
- 500 µl Propidium iodide

### Applications:

- ✓ Detect early/middle stages of apoptosis.
- ✓ Differentiate apoptosis from necrosis.

### Related Products:

- XTT Cell Proliferation Assay Kit (p.78)

### Ordering info:

Annexin V-FITC	
Cat No.	Size
CA011	100 assays
Annexin V-APC	
Cat No.	Size
CA012	100 assays
Annexin V-Biotin	
Cat No.	Size
CA013	100 assays
Annexin V-PE	
Cat No.	Size
CA014	100 assays



## XTT Cell Proliferation Assay Kit



### Description:

XTT Cell Proliferation Assay Kit is an optimized, accurate and sensitive colorimetric assay that detects the cellular metabolic activities. During the assay, the yellow tetrazolium salt XTT (sodium 2,3-bis(2-methoxy-4-nitro-5-sulfophenyl)-5-[(phenylamino)carbonyl]-2H-tetrazolium) is reduced to a highly colored formazan dye by dehydrogenase enzymes in metabolically active cells.

This conversion only occurs in viable cells and thus, the amount of the formazan produced is proportional to viable cells in the sample. The formazan dye formed in the assay is soluble in aqueous solution and quantified by measuring the absorbance at wavelength 450 nm using a spectrophotometer. An electron coupling reagent, such as PMS (N-Methylphenazonium methyl sulphate), can significantly improve the efficiency of XTT reduction in cells.

### Applications:

- ✓ Spectrophotometric quantification of cell proliferation and viability in response to pharmaceutical, chemical, nutrients and environmental compounds.
- ✓ High throughput screening.

### Ordering info:

Cat No.	Size
CA031	1,000 assays

### Includes for 1,000 assays:

- 2 x 25 mL XTT Cell Proliferation Assay Kit Reagent
- 1 mL Activation Reagent



### Related Products:

- SRB Cytotoxicity assay (p.79)
- Resazurin Cell Viability assay (p.79)

### Advantages & Features:

- ✓ **Accurate:** dye absorbance is proportional to the number of cells in each well.
- ✓ **Sensitive:** assayed even in low cell concentrations.
- ✓ **Fast protocol:** results within 2-5 hours with minimal handling steps.
- ✓ **Time-saving protocol:** avoids solubilisation step.
- ✓ **Complete solution:** includes all reagents needed for cell washing procedures.
- ✓ **Safe:** avoids radioactivity.
- ✓ **Optimized:** for high throughput assays (no requires washing or other steps that can cause cell loss and variability).
- ✓ **Cost avoidance:** allows performance directly in a microtiter plate.

## SRB Cytotoxicity Assay (Sulforhodamine B)



### Ordering info:

Cat No.	Size
CA050	1,000 assays

### Includes for 1,000 assays:

- 0.4 g SRB Dye
- 60 mL Fixative Reagent
- 100 mL Dye Wash Solution (10x)
- 200 mL SRB Solubilization Buffer



### Related Products:

- XTT Cell Proliferation Assay Kit (p.78)
- Resazurin Cell Viability assay (p.79)

### Description:

Sulforhodamine B (SRB) Cytotoxicity Assay is a sensitive, reproducible and easy-to-use assay based on the ability of SRB to bind to protein components of cells that have been fixed to tissue culture plates. SRB is a bright-pink aminoxanthene dye with two sulfonic groups that bind to basic amino acid residues under mild acidic conditions and dissociate under basic conditions. As the binding of SRB is stoichiometric, the amount of dye extracted from stained cells is directly proportional to the cell mass.

The fixed dye is solubilized and is measured photometrically at OD 540 nm with a reference filter of 690 nm. The OD values correlate with total protein content and therefore with cell number.

### Advantages & Features:

- ✓ Sensitive.
- ✓ Easy-to-use.
- ✓ Fast: avoids time-sensitive measurement.
- ✓ Reproducible.
- ✓ Great linearity.
- ✓ Good signal-to-noise ratio.
- ✓ Has a stable end-point.

### Applications:

- ✓ Detection of cell toxicity, death, viability or proliferation.
- ✓ High throughput screening.

## Resazurin Cell Viability Assay



### Ordering info:

Cat No.	Size
CA035	10,000 assays

### Includes for 10,000 assays:

- 4 x 25 mL Resazurin solution



### Related Products:

- XTT Cell Proliferation Assay Kit (p.78)
- SRB Cytotoxicity assay (p.79)

### Description:

Resazurin Cell Viability Assay is a reliable, sensitive and easy-to-use fluorescent assay that detects cellular metabolic activity. Resazurin (7-Hydroxy-3H-phenoxazin-3-one 10-oxide) is a blue dye non-fluorescent until it is irreversibly reduced to the pink colored and highly red fluorescent resorufin by dehydrogenase enzymes in metabolically active cells.

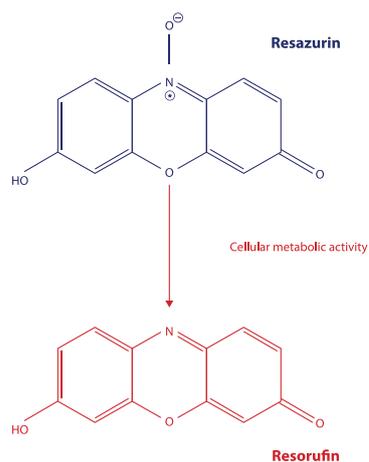
The fluorescent signal is monitored using 530-560 nm excitation wavelength and 590 nm emission wavelength. The absorbance is monitored at 570 nm and 600 nm. The fluorescent or colorimetric signal generated from the assay is proportional to the number of living cells in the sample.

### Advantages & Features:

- ✓ Easy procedure: easy to perform with minimal handling.
- ✓ Really fast: just one step to results.
- ✓ Reliable.
- ✓ Sensitive.
- ✓ Safe.
- ✓ Cost-effective.

### Applications:

- ✓ Spectrophotometric measurement of metabolic activity of living cells.



## Senescence Detection Kit (SA-β-gal Staining)

### Ordering info:

Cat No.	Size
CA090	100 assays

### Includes for 100 assays:

- 150 mg X-Gal (lyophilized)
- PBS (10x)
- Staining Solution A
- Staining Solution B
- Staining Solution C
- Fixative solution (10x)



### Related Products:

- PBS (p.133)
- X-Gal (p.19)

### Description:

Senescence detection kit is a fast, convenient and easy-to-use kit that measures activity of SA-B-Gal in cells cultures by hydrolysis of X-gal, which results in the accumulation of a distinctive blue color in senescent cells.

Senescence cells display a phenotype like increase of cell size, distinctive flat morphology, changes in gene expression and activity of senescence-associated β-galactosidase (SA-β-gal).

Senescence represent tumor suppressor mechanism for this reason cellular senescence has become an increasingly target in the development of novel therapeutics.

### Advantages & Features:

- ✓ **Fast, convenient and easy procedure:** takes 28 minutes to results with minimal handling steps.
- ✓ **The specific histochemical marker is only present in senescent cells** and is not found in pre-senescent, quiescent or immortal cells.

### Applications:

- ✓ Histochemically detect SA-β-Galactosidase activity in cultured cell and tissue sections.

## Reporter Gene Assays

### SEAP Reporter Gene Assay



### Ordering info:

Cat No.	Size
CA040	288 assays

### Includes for 288 assays:

- 3 x 96 W Solid Plate (white)
- 3 units of lid
- 50 μl Alkaline Phosphatase Standard
- 15 mL SEAP Substrate (Luminescence)



### Related Products:

- FastCONTROL™ Dual Reporter Plasmid (p.28)
- CANFAST™ Transfection Reagent (p.76)

### Description:

Secreted alkaline phosphatase (SEAP) reporter gene is an easy, sensitive and fast assay that utilizes enzyme activity of alkaline phosphatase to dephosphorylate the chemiluminescent Alkaline Phosphatase substrate into an unstable dioxetane anion which decomposes and emits light.

SEAP encodes a truncated form of the placental enzyme that lacks the membrane anchoring domain, thereby allowing the protein to secret efficiently from transfected cells.

Changes in levels of SEAP activity detected in the culture medium are directly proportional to changes in intracellular concentrations of SEAP mRNA and protein.

### Advantages & Features:

- ✓ **Convenient:** single set of cells are used for both the SEAP assay and another purpose.
- ✓ **Time-saving protocol:** results in 55 minutes due the elimination of cell lysates preparation.
- ✓ **Cost-effective:** allows performance directly in a microtiter plate.
- ✓ **Sensitive:** assayed even in low cell concentrations.
- ✓ **Secreted** from transfected cells into the culture medium.

### Applications:

- ✓ Measurement the levels of SEAP in the culture medium of transfected cells.

## MUG - Galactosidase Assay kit

### Ordering info:

Cat No.	Size
CA085	500 assays

### Includes for 500 assays:

- 20 mM  $\beta$ -galactosidase substrate 4MU
- 10 mM Reference Standard
- $\beta$ -galactosidase enzyme (0.1 mg/mL)
- Triton X-100
- 1M DTT
- Assay Buffer (2x)
- Stop solution



### Description:

The MUG  $\beta$ -Galactosidase Assay Kit is an efficient, easy and highly sensitive tool to measure levels of active  $\beta$ -galactosidase expressed in cells transfected with plasmids expressing *Lac Z*.

*Lac Z* is often used as reporter gene in Transfection experiments because the  $\beta$ -galactosidase is highly resistant to proteolytic degradation and its activity is easily measured.  $\beta$ -galactosidase performs the hydrolysis of 4-methylumbelliferyl  $\beta$ -D-galactopyranoside (MUG) to the 4-methylumbelliferone (4MU). This MUG produces as a bright blue fluorescence that are detected at excitation/emission = 360/460 nm. The concentration of  $\beta$ -galactosidase is proportional to fluorescence produced.

### Advantages & Features:

- ✓ **Fast, easy and convenient.**
- ✓ **Easy-to-use** method to quantify the enzyme expression in transfected cells.
- ✓ **Sensitive:** measure  $\beta$ -galactosidase at femtogram level.

### Applications:

- ✓ Measurement of  $\beta$ -Galactosidase activity in the lysates of transfected cell.

### Related Products:

- PBS (p.133)
- CANFAST™ Transfection Reagent (p.76)
- ONPG - Galactosidase Assay kit (p.81)
- FastCONTROL™ Dual Reporter Plasmid (p.28)

## ONPG - Galactosidase Assay kit

### Ordering info:

Cat No.	Size
CA080	500 assays

### Includes for 500 assays:

- ONPG Substrate solution
- DTT
- Buffer Lysis
- Buffer Assay
- Buffer Stop
- $\beta$ -galactosidase enzyme



### Related Products:

- pOnebyOne™ Mammalian expression vectors (p.22)
- pColiExpress™ Glue Enzyme kits (p.34)
- FastCONTROL™ Dual Reporter Plasmid (p.28)
- Custom solutions (p.147)

### Description:

The ONPG  $\beta$ -Galactosidase Assay Kit is an optimized, stable and colorimetric tool to fast measure the levels of active  $\beta$ -galactosidase expressed in cells transfected with plasmids expressing *Lac Z*.

*Lac Z* is often used reporter gene in experiments transfection because the  $\beta$ -galactosidase is very resistant to proteolytic degradation and its activity is easily measured.  $\beta$ -galactosidase performs the hydrolysis of orthonitrophenyl- $\beta$ -D-galactopyranoside (ONPG) to the ortho-nitrophenol (ONP). This ONP produces as a bright yellow colour that is detected at absorbance 420 nm. The concentration of  $\beta$ -galactosidase is proportional to colour produced.

### Advantages & Features:

- ✓ **Proven performance** to quantify high expression level of beta-Gal.
- ✓ **Very stable:** resistant to proteolytic degradation and easily assayed.
- ✓ **Convenient** for all transfection assays.
- ✓ **Versatile:** proven performance for cultured cells and tissues.
- ✓ **Rapid and easy protocol.**
- ✓ **Cost-effective.**

### Applications:

- ✓ Measurement of  $\beta$ -Galactosidase activity in the lysates of transfected cells.

## Firefly Luciferase Assay Kit



### Ordering info:

Cat No.	Size
CA130	100 assays
CA135	1,000 assays

### Includes for 100 assays:

- 10 mL Luciferase Assay Substrate
- 4 mL Cell Lysis Buffer (5x)
- 10 µg Luciferase (control)



### Related Products:

- pOnebyOne™ Mammalian expression vectors (p.22)
- Custom solutions (p.147)
- FastCONTROL™ Dual Reporter Plasmid (p.28)

### Description:

Luciferase from the firefly (*Photinus pyralis*) is an accurate, sensitive and easy **Luciferase Assay Kit** for studying gene reporter regulation and function in transformed cell lines in culture.

Firefly luciferase has an apparent molecular weight of 62 kDa, which is active as a monomer and does not require subsequent processing for its activity. The enzyme catalyzes the oxidation of reduced luciferin in the presence of ATP-Mg<sup>2+</sup> and oxygen to generate CO<sub>2</sub>, AMP, PPI, oxyluciferin and produces a flash of light that is proportional to the quantity of luciferase in the reaction mixture.

The Luciferase Assay Substrate includes coenzyme A, ATP and luciferin. Including coenzyme A in the reaction enhances the sensitivity of the assay and provides a sustained light reaction (half-life >5 minutes). This eliminates the need for automated luminometer injection of substrate and allows analysis by photographic film or scintillation counting.

### Advantages & Features:

- ✓ **Easy and Fast protocol:** results within 14 minutes.
- ✓ **Sensitive and linear:** correlation between luciferase gene expression and light output for transfection.
- ✓ **Accurate.**
- ✓ **Ideal for high throughput assays.**

### Applications:

- ✓ Detection and quantification of Firefly Luciferase.

## Stress oxidative Assay Kits

### SOD Assay Kit



### Ordering info:

Cat No.	Size
CA061	100 assays

### Includes for 100 assays:

- 1 mL WST-1 Reagent
- 20 mL SOD Assay Buffer
- 10 mL SOD Dilution Buffer
- 20 µL SOD Enzyme solution
- 50 µL SOD Standard (50 U/µL)



### Related Products:

- PBS (p.133)
- Custom solutions (p.147)

### Description:

Superoxide dismutases (SOD) catalyse the breakdown of superoxide radicals and provide the first line of defense against oxygen toxicity.

SOD Assay Kit, superoxide ions are generated from the conversion of xanthine and O<sub>2</sub> to uric acid and H<sub>2</sub>O<sub>2</sub> by Xanthine Oxidase (XO). The superoxide anion then converts the tetrazolium salt WST-1 to the colored product WST-1 formazan.

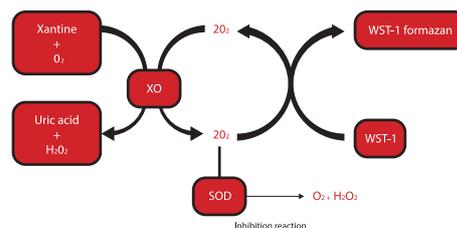
Absorbance is then measured at 450 nm using a standard microplate reader. Addition of SOD to this reaction reduces superoxide ion levels, thereby lowering the rate of WST-1 formazan formation. SOD activity in the experimental sample is measured as the percent inhibition of the rate of WST-1 formazan formation.

### Advantages & Features:

- ✓ **Easy-to-use.**
- ✓ **Fast protocol.**

### Applications:

- ✓ Quantitative determination of superoxide dismutase (SOD) enzyme activity.



## Catalase activity Assay Kit



### Ordering info:

Cat No.	Size
CA063	100 assays

### Includes for 100 assays:

- 200 µl Probe (in DMSO)
- 20 mL CAT Assay Buffer
- 50 µl H<sub>2</sub>O<sub>2</sub> (0.88 M)
- 250 µl HRP solution
- 1.5 mL Stop solution
- 5 µl Catalase Positive Control



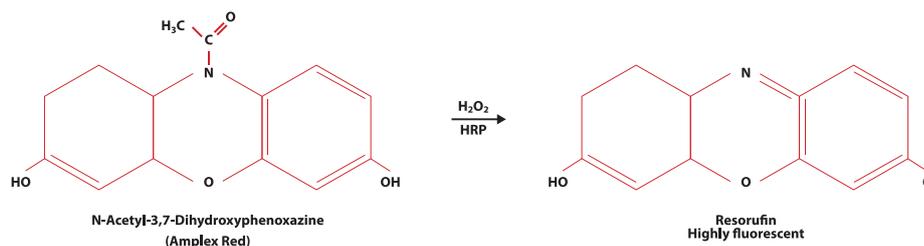
### Related Products:

- PBS (p.133)
- Custom solutions (p.147)

### Description:

Catalase Activity Assay Kit is a fast, easy and highly sensitive method for measuring catalase activity in biological samples.

In the assay, catalase first reacts with H<sub>2</sub>O<sub>2</sub> to produce water and oxygen. In the presence of horseradish peroxidase (HRP), the unconverted H<sub>2</sub>O<sub>2</sub> reacts 1:1 with the fluorogenic substrate 10-Acetyl-3,7-dihydroxyphenoxazine to produce a product highly fluorescent (resorufin), which is measured at Ex/Em=535/587nm (fluorometric method) or at 570 nm (colorimetric method).



### Applications:

- ✓ Determination of catalase activity by colorimetric or fluorometric assay.

### Advantages & Features:

- ✓ **Fast and easy protocol:** it takes 34 minutes.
- ✓ **Sensitive** assays for measuring catalase in various biological samples.

## Glutathione Assay Kit



### Ordering info:

Cat No.	Size
CA066	100 assays

### Includes for 100 assays:

- 6 mL Reagent A (R-A)
- 10 mL Reagent B (R-B)
- 2 x 50 mL Buffer Solution
- 2 mg GSH Standard
- 3 x 0.5 mg Metaphosphoric Acid



### Description:

Glutathione Assay Kit is an accurate, fast and easy-to-use assay based on a chemical reaction in two steps. The Kit makes possible the quantification of glutathione with only one sampling and one colorimetric measurement.

Glutathione (gamma-glutamyl-cysteinyl-glycine, GSH) is a cysteine-containing tripeptide, which is the most abundant nonprotein thiol in cells. GSH is composed of glutamate, cysteine, and glycine and is synthesized in both eukaryotic as well as prokaryotic cells. It is a powerful antioxidant that prevents ROS-mediated damage to essential cellular components and acts as a cofactor for enzymes in the destruction of ROS.

### Applications:

- ✓ For quantitative determination of reduced Glutathione (GSH).

### Advantages & Features:

- ✓ **Cost avoidance:** avoids the use of any enzyme as reagent.
- ✓ **Really fast and easy procedure.**
- ✓ **Accurate:** more specific than the DTNB method.

