

# Merck Millipore

Bioscience Newsletter 2012 Vol. 1



Life, death,  
and everything  
in between.

## From Cell Health to Drug Development

### Cover Story ~

Comprehensive solutions  
for studying cell health (p2-8).

New Drug Development  
and Transcriptomic 詳情請見內頁 p10-13

感受輕巧、簡約、優雅的 ~  
新一代 Muse™ Cell Analyzer

詳情請見封底 p20





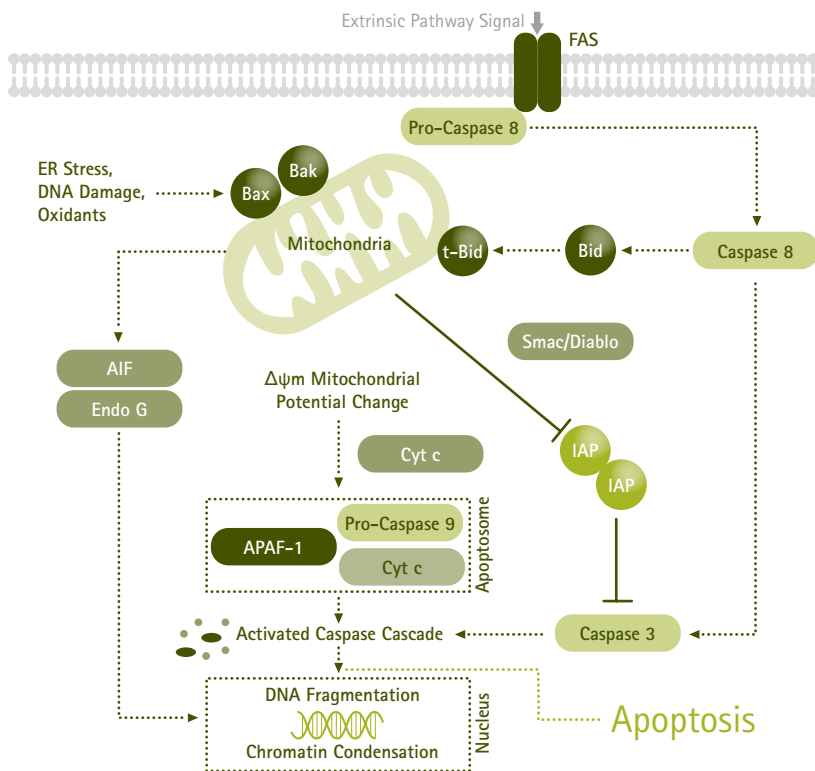
# Apoptosis



細胞凋亡或有計畫性的細胞死亡，是一種管理限制生長的機制。因為反應外在信號的刺激產生的老化或不可挽回的細胞或 DNA 損傷，細胞可以觸發自己的滅亡。

內在的細胞凋亡機制，凋亡前驅信號引起粒線體膜的去極化。而外在的細胞凋亡機制，則是由細胞外的信號通過細胞膜受體直接激活與 caspase 相關的死亡連鎖反應。不經由 Caspase 的凋亡機制可以通過凋亡誘導因子 Apoptosis-Inducing Factor (AIF) 途徑發生。

細胞凋亡在發育機制中也扮演很重要的角色，例如在發育中的大腦，一些特定的神經細胞會被防止過度生長，及肢體發育時，指(趾)間間距也必須倚靠細胞凋亡來調節。



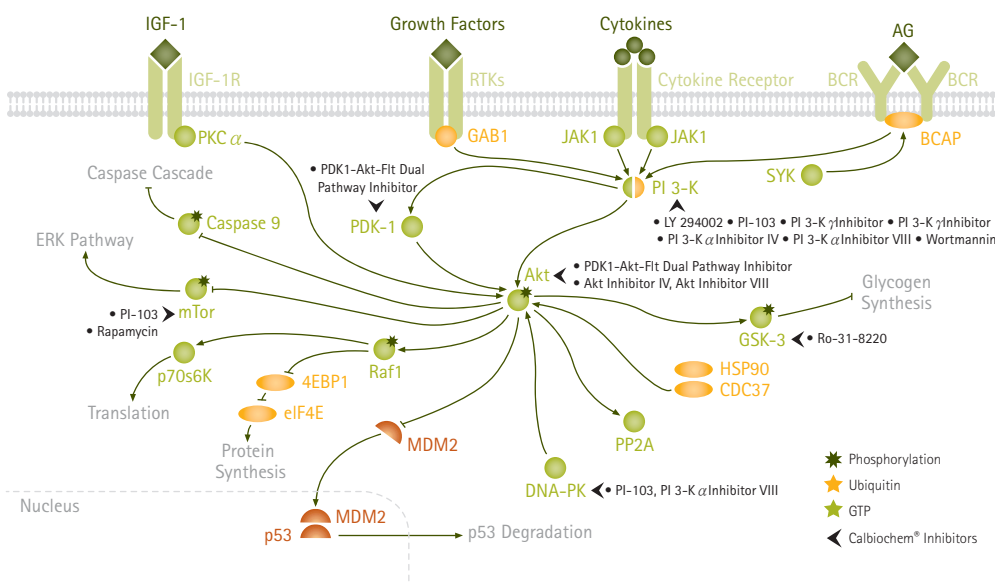
Mitochondrial signaling and apoptosis. Adapted from Bayir and Kagan, Critical Care (2008) 12:206.

## Family of TUNEL Assay Products for Apoptosis Detection 最多文獻引用的方法!

細胞凋亡時，細胞結構的劇烈變化通常可連結到 DNA 的片段化現象。ApopTag™ family kits 藉由 TUNEL assay 來檢測細胞凋亡時 DNA 的片段化現象。

The DNA strand breaks are detected by enzymatically labeling the free 3'-OH termini with modified nucleotides. These new DNA ends that are generated upon DNA fragmentation are typically localized in morphologically identifiable nuclei and apoptotic bodies. In contrast, normal or proliferative nuclei, which have relatively insignificant numbers of DNA 3'-OH ends, usually do not stain with the kit. ApopTag™ Kits detect single-stranded and double-stranded breaks associated with apoptosis. Drug-induced DNA damage is not identified by the TUNEL assay unless it is coupled to the apoptotic response.

Description	Catalogue No.
ApopTag™ Red <i>In Situ</i> Apoptosis Detection Kit	S7165
ApopTag™ Fluorescein Direct <i>In Situ</i> Apoptosis Detection Kit	S7160
ApopTag™ Plus Peroxidase <i>In Situ</i> Apoptosis Kit	S7101
ApopTag™ Fluorescein <i>In Situ</i> Apoptosis Detection Kit	S7110
ApopTag™ Plus <i>In Situ</i> Apoptosis Fluorescein Detection Kit	S7111
ApopTag™ Peroxidase <i>In Situ</i> Apoptosis Detection Kit	S7100
ApopTag™ Peroxidase <i>In Situ</i> Oligo Ligation (ISOL) Kit	S7200
CaspaTag™ <i>In Situ</i> Apoptosis Detection Kits	APT400
CaspaTag™ Caspase 3,7 <i>In Situ</i> Assay Kit, Fluorescein	APT403
CaspaTag™ Pan-Caspase <i>In Situ</i> Assay Kit, Fluorescein	APT420
CaspaTag™ Caspase 8 <i>In Situ</i> Assay Kit, Fluorescein	APT408
CaspaTag™ Caspase 9 <i>In Situ</i> Assay Kit, Fluorescein	APT409
CaspaTag™ Caspase 3,7 <i>In Situ</i> Assay Kit, Fluorescein	APT423
CaspaTag™ Caspase 8 <i>In Situ</i> Assay Kit 25, Fluorescein	APT428
CaspaTag™ Caspase 9 <i>In Situ</i> Assay Kit, Fluorescein	APT429
CaspaTag™ Pan-Caspase <i>In Situ</i> Assay Kit, Sulforhodamine	APT500
CaspaTag™ Pan-Caspase <i>In Situ</i> Assay Kit, Sulforhodamine	APT520
CaspaTag™ Caspase 3,7 <i>In Situ</i> Assay Kit, Sulforhodamine	APT523

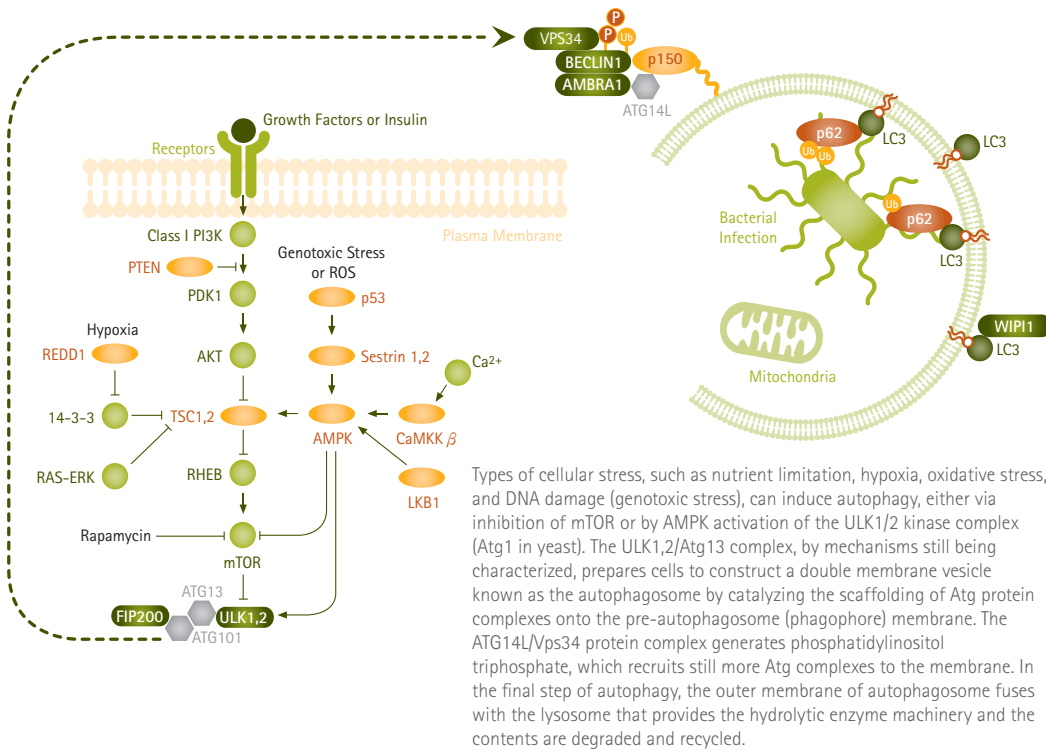


## Calbiochem® InhibitorSelect™ Akt/PI 3-K/mTOR Signaling Pathway Inhibitor Panel (Catalogue No. 124031)

Akt pathway 參與調控細胞凋亡，其中主要是由於 Akt 同時具有抑制 pro-apoptotic factors 及活化存活基因的轉錄功能。

This panel of 12 highly potent, selective, and cell-permeable Calbiochem® kinase inhibitors (shown below in black) and a negative control are useful for studying the Akt pathway in one convenient package to help elucidate specific steps in apoptosis.

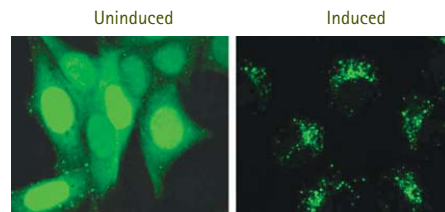
# Autophagy & Protein Recycling



Autophagy 是一種高度調控的體內平衡降解過程，其中細胞藉由溶酶體機械破壞並回收自己的元件。這個過程跟很多疾病相關，包含 Alzheimer's disease, Crohn's disease，老化及癌症。在飢餓的極端條件下，細胞利用這個過程，從較不重要進程重新分配營養到生存所需的基本進程，以利生存。但是，如果細胞損傷成為無法彌補的，細胞可以藉由自噬完全摧毀自己。通過廣泛的自噬機制與細胞凋亡信號通路的串聯，自噬機制會導致細胞死亡，同時也會極大地影響一般細胞的健康。自噬機制不正常運作時，會影響細胞的壽命和生產力，進而導致細胞功能異常。自噬和細胞凋亡之間的關係已成為研究上一個很大的重點，尤其是在腫瘤生物學。自噬作用一方面藉由降解生存所需的元件而誘發細胞死亡；另一方面，它可能協助癌細胞在不利的代謝條件下存活。

## LentiBrite™ GFP-LC3 & GFP-LC3 Mutant Lentiviral Biosensors

(Catalogue Nos. 17-10193 & 17-10189)



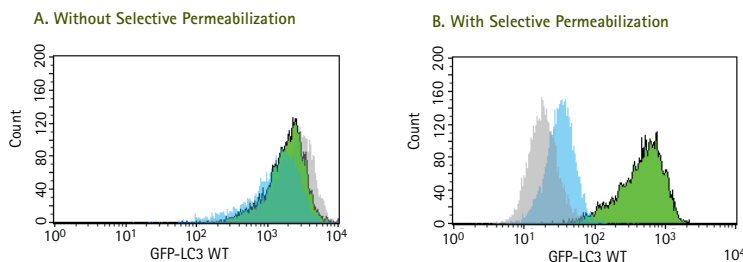
### 在活細胞內即時觀察自噬作用!

pre-packed lentiviral 病毒顆粒，可將 GFP-LC3 直接送入要研究的細胞，讓您可以即時觀察 LC3 的位置，即使是 difficult-to-transfect 細胞 (如 stem cell 及 primary neuron) 也送得進去！在活細胞中即時觀察自噬現象。眼見為憑就在影片中～

[www.millipore.com/autophagyvideo](http://www.millipore.com/autophagyvideo)

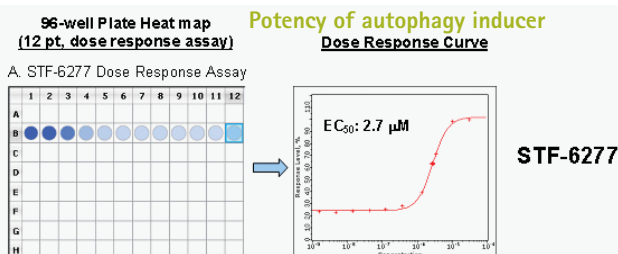
## FlowCollect™ LC3-GFP Reporter Autophagy Assay Kits

(Catalogue Nos. FCCH100170 and FCCH100181) 讓流式細胞儀幫助您觀察及定量自噬!



Flow cytometry detection of LC3 translocation via autophagosomes by addition of a lysosome inhibitor. Green: when starved in the presence of lysosome inhibitor; Blue: when starved without the inhibitor; Gray: All the cytosolic LC3-GFP is washed away if no autophagy is induced by starvation.

使用流式細胞觀察及定量 autophagy，測量 autophagy inducer 的效價。帶有 monomeric GFP reporter 的細胞株，可用顯微鏡或流式細胞儀觀察。Monomeric GFP-LC3 不會造成 aggregate，測量更精確。Selective permeabilization solution 可區分 LC3-I/LC3-II，Autophagy Detection reagent 溶酶體抑制劑降解，定量 autophagy。



## Antibodies

Description	Catalogue No.
Anti-MAP1LC3B2	AB2970
Anti-MAP1LC3A	AB15412
Anti-MAP1LC3C	AB15414
Anti-UVRAG	AB2960
Anti-SOGA	ABS91
Anti-Becn-1, clone EPR1733Y	MABN16
Anti-ATG3	AB2953
Anti-ATG4C	ABC21
Anti-ATG5	ABC14
Anti-ATG7	AB10511
Anti-ATG9 L2	AB15407
Anti-ATG10	AB15408
Anti-ATG12	AB15410
Anti-ATG16L1	ABC25
Anti-Akt1/PKB α clone AW24	04-796
Anti-PKC (α, β, γ), clone M110	05-983
Anti-PI3 Kinase, p110 γ, clone 17D7.2	05-1559
Anti-p70 S6 Kinase, clone 20-10C-6	05-781R
Anti-ROCK1	07-1458
Anti-phospho-VEGFR2/Flk-1/KDR (Tyr1223)	07-1294

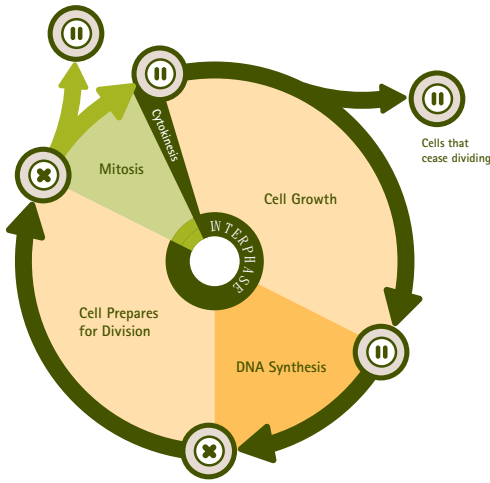
## Assays

Description	Catalogue No.
MILLIPLEx® Human Akt/mTOR-11plex Panel	48-611

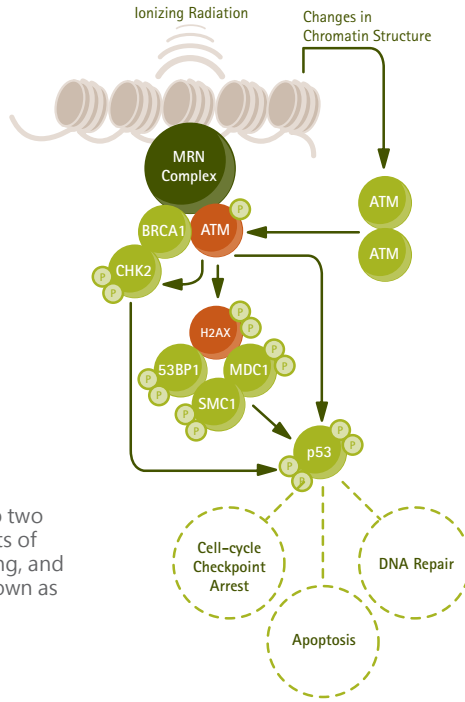
## Inhibitors

Description	Catalogue No.
Autophagy Inhibitor, 3-MA	189490
Rapamycin	553210
SMER28	573121
mTOR Inhibitor III, PP242	475988

# Cell Cycle & DNA Damage



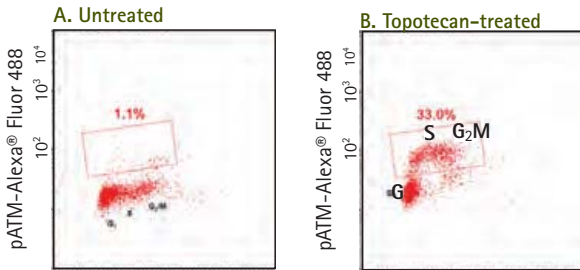
Phases of the cell cycle. The cell cycle can be divided into two distinct stages. The first stage is interphase which consists of the G1, S, and G2 phases, in which cells are active, growing, and DNA is being replicated. The second is M phase, also known as the "mitotic phase," in which cell division takes place.



細胞週期的分佈狀況可用於評估細胞的健康·增殖·以及細胞毒性藥物的潛在機制。例如·測量分佈在S期的細胞·能反映新合成的DNA量。此外·從M期中區分出在G2期的細胞·可以幫助確定細胞發生有絲分裂。當細胞感應到壓力信號時·細胞利用細胞週期檢查點來調控生長·也因此細胞週期與壓力途徑(Stress Pathway·如DNA損傷)有了串聯關係。

DNA damage signaling pathways. ATM, or Ataxia telangiectasia mutated kinase, is activated in response to double-strand breaks. Once activated, ATM phosphorylates

## FlowCollect™ Cell Cycle Checkpoint ATM Kit (Catalogue No. FCCH025143) 讓您可以簡單辨別細胞週期位置並定量!

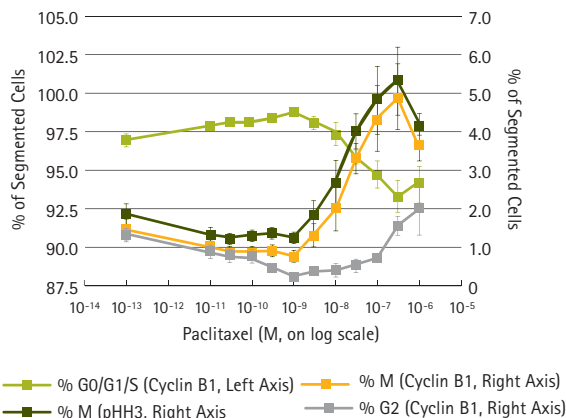


This kit includes a directly conjugated Anti-phospho-ATM (Ser1981) Alexa Fluor® 488 conjugate plus a DNA dye (Propidium Iodide) to identify where DNA damage takes place within the cell cycle.

Bivariate analysis detecting DNA damage induced by Topotecan in relation to cell cycle positioning: Topotecan is a topoisomerase1 inhibitor which causes DSBs in the late G1 to early S phases in the cell cycle, maximal at mid S phase. Treated HeLa cells show a marked increase in ATM phosphorylation, indicating DNA damage (B), when compared to the untreated sample (A), 33% versus 1%, respectively.

## Phospho-Histone H3 Ser10 and Cyclin B1 Assay (Catalogue No. HCS211)

Histone H3 plays an important regulatory role in cell proliferation while cyclin B1 is a key protein in triggering mitosis. High Content Screening (HCS) of histone H3 and cyclin B1 enable distinction among G2, M, and G0/G1/S phases of the cell cycle and has been used as a readout in cell cycle inhibitor profiling studies.



Cell cycle phase analysis of HeLa cells treated for 4 hours with serial dilutions of paclitaxel. Cell handling, fixation and immunostaining were performed according to the protocol for HCS211.

## Antibodies and Proteins

Description	Catalogue No.
Cell Cycle-G2/M Phase Pathway Explorer Antibody Minipack	15-120
Anti-Wee1	06-972
Anti-Cdk5, clone DC17	05-364
Anti-Cdc42-interacting protein 4	ABS69
TGFBR-1, active	14-912

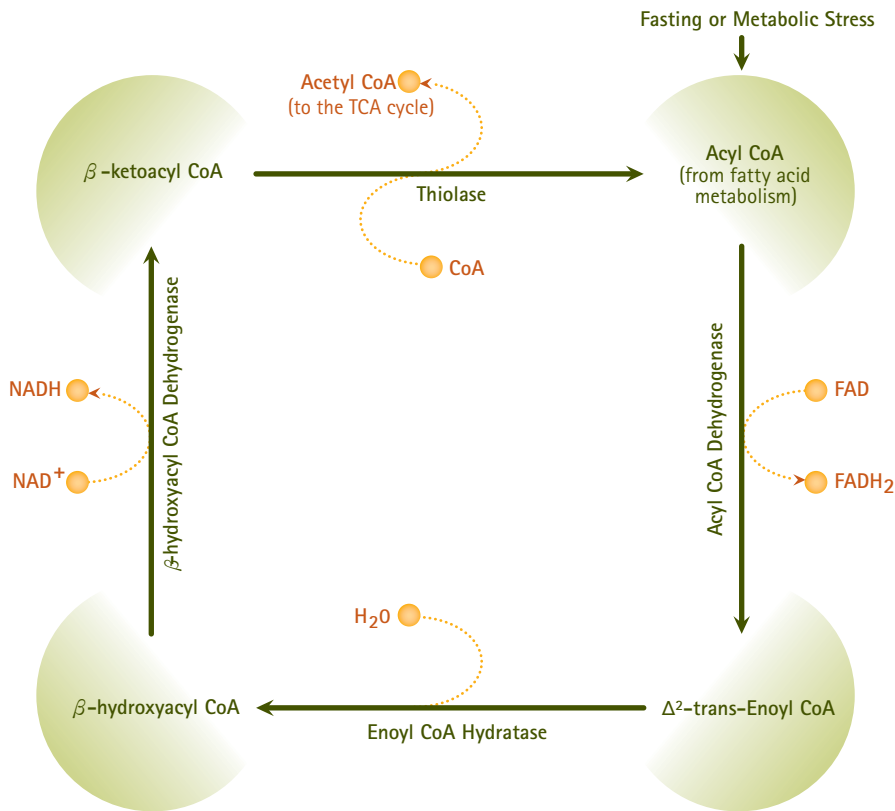
## Assays

Description	Catalogue No.
Cyclin B1 and Ki-67 QCI/HCA Assay Kit	HCS210
FlowCollect™ Bivariate Cell Cycle Kit for DNA Replication Analysis	FCCH025102
FlowCollect™ Bivariate Cell Cycle Kit for G2/M Analysis	FCCH025103
FlowCollect™ DNA Damage (H2A.X) and Cell Cycle Analysis Kit	FCCH025142
FlowCollect™ Multicolor DNA Damage Response Kit	FCCH025104
FlowCollect™ H2A.X DNA Damage Dual Detection Kit	FCCS025153
FlowCollect™ Histone H2A.X Phosphorylation Assay Kit	FCCS100182
guava® Cell Cycle Reagent Propidium Iodide Solution	4500-0220
MILLIPLEX® Human Multi-Pathway Signaling Kit, Phosphoprotein	48-680
MILLIPLEX® TGF β3-Plex	TGFB-64K-03

## Inhibitors

Description	Catalogue No.
ATM Kinase Inhibitor	118500
ATM/ATR Kinase Inhibitor	118501

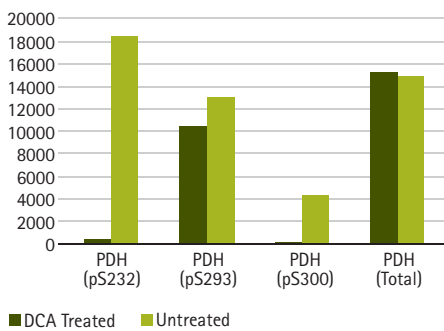
# Metabolic and Endoplasmic Reticulum (ER) Stress



細胞的新陳代謝是由一連串途徑所組成，其中包含細胞從有機物質產生能量的途徑。當這些途徑不平衡時，會產生新陳代謝壓力，進而導致細胞壓力反應的形成。其中一個新陳代謝壓力是內質網壓力 (ER stress)，是由於內質網中長期未折疊蛋白反應 (unfolded protein response (UPR)) 所造成的。內質網需要高度氧化的環境將蛋白質正確摺疊後以分泌到膜外，不利的氧化還原條件會導致未折疊的蛋白質積累在內質網ER中，產生UPR。UPR會幫助內質網適應其改變的環境，並通過上調基因，增強蛋白質折疊能力的ER，促進蛋白質的降解以去除錯誤折疊的蛋白質。內質網ER長期處於壓力下會導致細胞凋亡。研究新陳代謝和內質網壓力需要倚靠監測細胞粒線體 (能源工廠) 內的關鍵生物標的，以及ER和UPR的信息途徑中的蛋白。

Key steps of the  $\beta$ -oxidation pathway used to metabolize fatty acids in order to generate energy during periods of fasting and metabolic stress. Long-chain, medium-chain or short chain fatty acids enter the pathway as acyl CoA. Each  $\beta$ -oxidation cycle yields one molecule of acetyl CoA which enters the TCA energy production cycle.

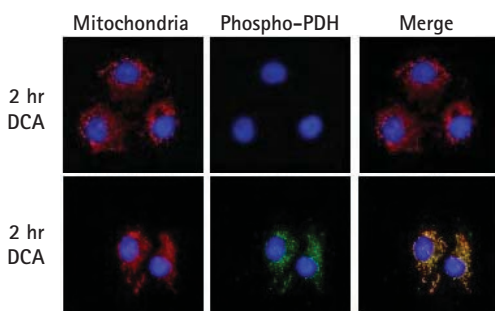
## MILLIPLEX® Multispecies Pyruvate Dehydrogenase (PDH) Complex Magnetic Bead Panel (Catalogue No. PDHMAG-13K)



PDH activity influences the shift between glycolytic energy production and the Krebs cycle and subsequent oxidative phosphorylation, and thereby reverses the aerobic glycolysis (also known as the Warburg effect) that is a feature of many cancers.

HepG2 cells treated with DCA (dichloroacetic acid), a PDK inhibitor, show physiologically relevant reduction in PDH phosphorylation at Serines 232, 293 and 300, while the total level of PDH complex remained relatively unchanged.

## Calbiochem® PhosphoDetect™ Anti-PDH-E1 $\alpha$ (pSer293) R abbit pAb (Catalogue No. AP1062-50UG)



The activity of PDC is mainly regulated by the phosphorylation state of Ser293, Ser232, and Ser300 on the E1 $\alpha$  subunit. This antibody is thoroughly validated for Western blot, immunocytochemistry and immunoprecipitation.

Figure (right): Detection of phospho-PDH-E1 $\alpha$  (Ser293) by immunocytochemistry. COS7 cells were incubated in dichloroacetate (DCA), an inhibitor of PDH kinase. All samples were incubated with mitochondrial stain (red), fixed and permeabilized. Primary antibodies: PhosphoDetect™ Anti-PDHE1 $\alpha$  (pSer293) Rabbit pAb (Cat. No. AP1062, green, top) or anti-PDH-E1 $\alpha$  antibody (green, bottom). Detection: fluorescence (Alexa Fluor 488 secondary antibody) with DAPI (blue). Data courtesy of Sandra Wiley and Matthew Rardin, University of California, San Diego.

## Antibodies and Proteins

Description	Catalogue No.
Anti-ATF6	09-069
Anti-SYVN1	ST1623-100UG
Anti-AMPK $\alpha$ 1	07-350
PERK, GST-Fusion, Human, Recombinant, <i>E. coli</i>	324881-5UG

## Assays

Description	Catalogue No.
MILLIPLEX® Phospho GSK3 $\beta$ (Ser9) MAPmate	46-690
MILLIPLEX® Total GSK3 $\beta$ MAPmate	46-689
GSK-3 $\beta$ ELISA Kit	CBA068 <a href="#">n</a>
Mitochondrial Complex I Activity Assay Kit	AAMT001-1KIT <a href="#">n</a>
Mitochondrial Complex II Activity Assay Kit	AAMT002-1KIT <a href="#">n</a>
Mitochondrial Complex IV (Human) Activity Assay Kit	AAMT004-1KIT <a href="#">n</a>
Mitochondrial Complex V (ATP synthase) Activity Assay Kit	AAMT005-1KIT <a href="#">n</a>
Mitochondrial Complex IV (Mouse) Activity Assay Kit	AAMT006-1KIT <a href="#">n</a>
PDH Activity Assay Kit	AAMT008-1KIT <a href="#">n</a>
Aconitase Activity Assay Kit	AAMT009-1KIT <a href="#">n</a>
Cytochrome C ELISA kit	EAMT001-1KIT <a href="#">n</a>
Fraixin ELISA Kit	EAMT002-1KIT <a href="#">n</a>
PDH ELISA Kit	EAMT003-1KIT <a href="#">n</a>

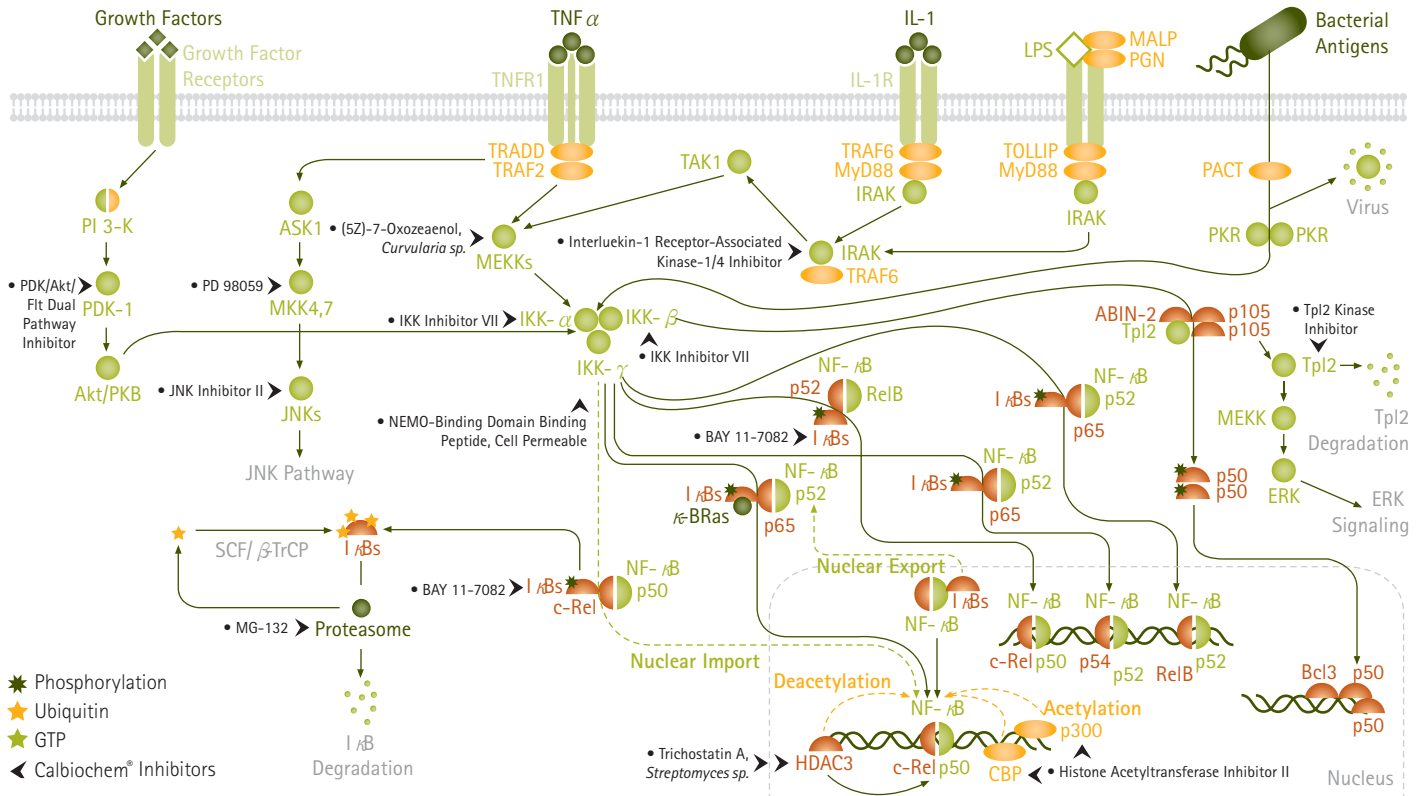
## Inhibitors

Description	Catalogue No.
Hexokinase II Inhibitor II, 3-BP	376817-100MG
Glycogen Synthase Kinase (GSK)3 $\beta$ Inhibitor I	361540
Insolution™ GSK-3 Inhibitor IX	361552

# Inflammation & Tissue Damage

透過細胞因子/趨化因子信號 (cytokine/chemokine signaling)，細胞對急性和長期的炎症和組織損傷的反應與免疫反應是密不可分的。炎症反應也與易感性糖尿病，自身免疫性疾病，神經退化性疾病相關，讓炎症和組織損傷研究越來越受到重視。

## Calbiochem® InhibitorSelect™ NF-κB Signaling Pathway Inhibitor Panel (Catalogue No. 481487)

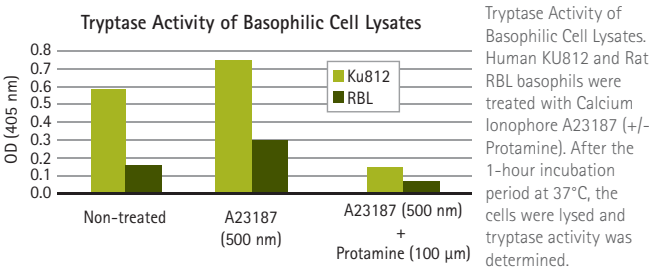


NF-κB plays an important role in inflammation, autoimmune response, cell proliferation, and apoptosis by regulating the expression of genes involved in these processes. This panel of 14 highly potent, selective, and cell-permeable inhibitors (shown above in black) and a negative control.

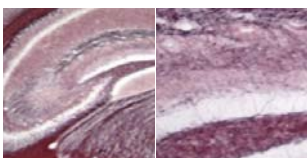
## Mast Cell Degranulation Assay Kit

(Catalogue No. IMM001)

肥大細胞聚集在炎症部位，如哮喘，過敏性鼻炎，類風濕關節炎。在炎症反應時，肥大細胞分泌含有胰蛋白酶的生物標的。可做為肥大細胞活化及發炎反應的生物標的。



## BLACK-GOLD® II Stain (Catalogue No. AG400)



適合用於研究神經系統的組織損傷，例如多發性硬化症，是由於自體免疫破壞髓鞘，當修補損傷而形成的結痂會擾亂神經的傳導。BLACK-GOLD® II 會將髓鞘染成暗紅色，髓纖維則呈現黑色。

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## Antibodies

Description	Catalogue No.
Anti-IL-6, clone 1G3	MABF41
Anti-Mast Cell Tryptase	444905
Anti-phospho-STAT1	07-714
Anti-JAK2	06-255

## Assays

Description	Catalogue No.
MILLIPLEX® Human Cytokine/Chemokine Magnetic Bead Panel II	HCYP2MAG-62K
MILLIPLEX® Mouse Cytokine/Chemokine Magnetic Bead Panel I	MCYTOMAG-70K
MILLIPLEX® Non-Human Primate Cytokine Magnetic Bead Panel	PRCYTOMAG-40K
MILLIPLEX® Human Cytokine/Chemokine Magnetic Bead Panel III	HCYP3MAG-63K
MILLIPLEX® Mouse Cytokine/Chemokine Magnetic Bead Panel II	MCYP2MAG-73K
MILLIPLEX® Mouse Cytokine/Chemokine Magnetic Bead Panel III	MCYP3MAG-74K
MILLIPLEX® Rat Cytokine/Chemokine Magnetic Bead Panel	RCYTOMAG-80K
MILLIPLEX® Canine Cytokine/Chemokine Magnetic Bead Panel	CCYTOMAG-90K
MILLIPLEX® Mouse Acute Phase Magnetic Bead Panel 1	MAP1MAG-76K
MILLIPLEX® Mouse Acute Phase Magnetic Bead Panel 2	MAP2MAG-76K
Phosphorylated Neurofilament (pNF-H) Sandwich ELISA Kit	NS170
GFAP ELISA Kit	NS830

## Inhibitors

Description	Catalogue No.
Ibuprofen (+/-)	401003
Indomethacin	405268
Celastrol	219465

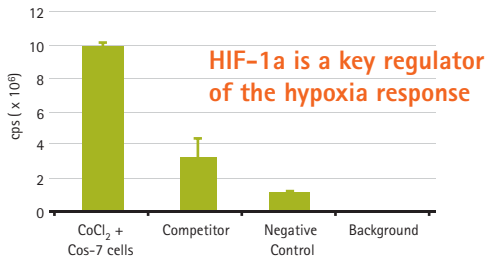
# Oxidative Stress & Hypoxia

氧化壓力來自於過多的自由基群體，它會形成一個不穩定的細胞環境，與組織損傷，加速衰老和退化性疾病息息相關。氧化壓力來自於多種因素，包括暴露於酒精，藥物，營養不良，創傷，寒冷，缺氧/復氧 (hypoxia / reoxygenation)，毒素和過度運動。線粒體會製造 reactive oxygen species (ROS) 來反應缺氧/復氧

環境的變化。同時會導致氧化壓力的產生，而造成細胞損害和細胞凋亡或使細胞活力下降。因疾病或藥物治療引起的粒線體功能障礙，可能導致細胞死亡的嚴重後果。因此，監測粒線體的變化及相關的細胞健康指標，對研究氧化壓力和缺氧反應途徑及細胞凋亡是非常重要的。

## HIF-1 $\alpha$ EZ-TFA Transcription Factor Assays

(Catalogue Nos. 70-670, 70-570, 70-500)

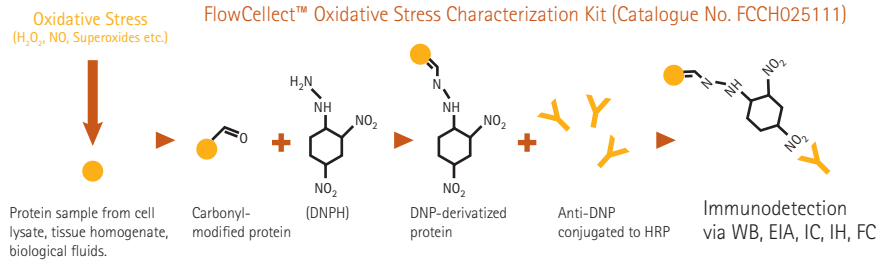


Nuclear extract from CoCl<sub>2</sub>-treated Cos-7 cells were assayed with the EZ-TFA HIF-1 $\alpha$  assay kit and showed robust binding to the DNA capture probe, which is complementary to the endogenous HIF-1 $\alpha$  DNA-binding sequence, the hypoxia response element (HRE). Specific binding was confirmed, as addition of specific competitor oligonucleotide reduced the observed signal. Signal was further diminished in the absence of DNA capture probe ("Negative Control").

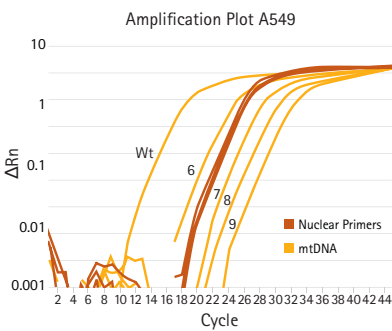
## Oxidative Stress Detection with OxyBlot™, ELISA, IC, IH, & flow cytometry

在生理和病理過程，當蛋白質被氧自由基或其他活性物質氧化時，羰基 (carbonyl groups) 會被導入到蛋白質側鏈。OxyBlot™ 可以簡便，靈敏偵測到這些羰基的免疫檢測。

- OxyBlot™ Protein Oxidation Detection Kit (Catalogue No. S7150)
- OxylCC™ Oxidized Protein Detection Kit (Catalogue No. S7350)
- FlowCollect™ Oxidative Stress Characterization Kit (Catalogue No. FCCH025111)



## NovaQUANT™ Human and Mouse Mitochondrial to Nuclear DNA Ratio Assay (Catalogue Nos. 72620 and 72621)



### 粒線體研究的第一步!

粒線體與核內DNA的比例可用於評估細胞的健康狀況，影響的因素包含細胞分化，壓力，疾病，運動，熱量的攝入和毒性。

Ethidium Bromide (EtBr)-treated A549 Human Lung Epithelial Carcinoma Cells were cultured in 50 ng/mL EtBr (passage numbers shown next to curves, in black). EtBr is concentrated differentially in the mitochondria due to higher mitochondrial membrane potential and subsequent DNA binding. Cells were directly lysed in PCR reactions, total DNA normalized to 1 ng/mL and targets amplified using paired mitochondrial (mtDNA) or nuclear primers in a NovaQUANT™ qPCR assay with SYBR® Green technology. Higher passage numbers lead to a greater depletion of mtDNA as cells transition to a glycolytic energy state. Dark lines show no change in nuclear DNA. Wt equals wildtype.

## NovaQUANT™ Mitochondrial Biogenesis qPCR Assay

(Catalogue Nos. 72625 and 72626)

利用定量PCR方法快速分析下述基因 mRNA 表現量 complex subunits I, II, III, IV, V ; three house-keeping control genes ; a master regulator of oxidative phosphorylation, PGC-1 $\alpha$  .

## NovaQUANT™ Mitochondrial Oxidative Stress qPCR Assay (Catalogue Nos. 72627 and 72628)

利用定量PCR方法快速分析下述基因 mRNA 表現量 21 transcriptionally-regulated analytes associated with oxidative stress responses ; three house-keeping control genes used as controls.

## Antibodies

Description	Catalogue No.
Anti-Degraded Myelin Basic Protein (MBP)	AB5864
Anti-8-Hydroxydeoxyguanosine	AB5830
Anti-Nitrotyrosine	06-284
Anti-TRX	AB9328
Anti-SOD	AB5482
Anti-RAGE	AB5484
Anti-Neuroketal	AB5611
Anti-4HNE	AB5605
Anti-Malonidialdehyde ALDH	AB5524

## Assays

Description	Catalogue No.
OxylCC™ Oxidized Protein Detection Kit	S7350
OxyELISA™ Oxidized Protein Quantitation Kit	S7250
Nitrotyrosine ELISA	17-10006
OxylH Oxidized Protein Detection Kit	S7450

## Mitochondrial Function Inhibitors

Description	Catalogue No.
Bongkreikic Acid, Triammonium Salt	203671
Carbonyl Cyanide m-Chlorophenylhydrazone	215911
Carboxyatractyloside, Potassium Salt, <i>Xanthium sibiricum</i>	216201
CGP-37157	220005
(-)-Deguelin, <i>Mundulea sericea</i>	252740
Erastin	329600
Hexokinase II Inhibitor II, 3-BP	376817
m-Iodobenzylguanidine, Hemisulfate	407721
Mitochondrial Division Inhibitor, mdivi-1	475856
Oligomycin	495455
Rotenone	557368
Ru360	557440

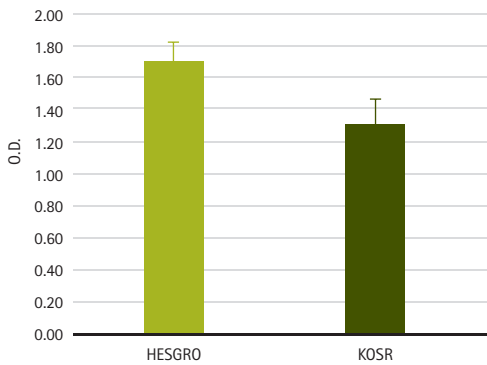
# Proliferation & Viability

檢測細胞增殖狀況，對大多數研究生物進程及細胞為主的實驗非常重要。傳統檢測細胞增殖的方式，是量測當細胞進入 S 期的 [3H] thymidine incorporation。定量 [3H] 胸腺嘧啶時需要使用 scintillation 來測量其自體放射性。這個方法耗時又勞力密集，而且需要小心操作及處置放射性同位素和購買昂貴的設備。Merck Millipore 已開發了多種技術，可以快速、精確和準確地定量細胞增殖現象。

## BrdU Cell Proliferation Kit (Catalogue No. 2750)

### 簡單非放射性方法定量 [3H] thymidine!

After exposure to UV light, DNA strands break at sites adjacent to incorporated BrdU. These sites are then labeled with TdT and Br-dUTP, and BrdU is detected with anti-BrdU, HRP conjugated secondary antibody, and colorimetric detection.



The BrdU cell proliferation kit (Catalogue No. 2750) was used to measure proliferation of H9 human embryonic stem cells in HEScGRO and KOSR medium, after cells were enzymatically expanded for 12 passages. Increased BrdU incorporation indicated faster cell proliferation in HEScGRO medium.

## TRAPeZe® XL Telomerase Detection Kit

(Catalogue No. S7707)

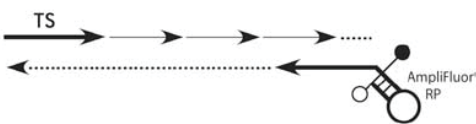
端粒酶 (telomerase) 可維持染色體末端的 DNA 序列 (端粒, telomeres)，以維持細胞活力、防止細胞衰老。

Merck Millipore 提供多種可快速定量端粒酶活性的試劑組。

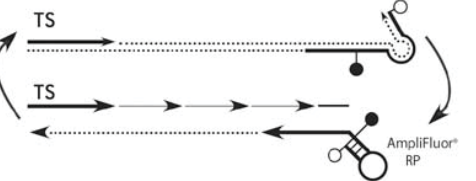
### A. Addition of Telomeric Repeats to Telomerase Substrate (TS)



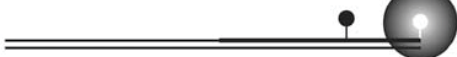
### B. Synthesis of Complimentary Strand/1st Cycle of PCR



### C. PCR Amplification (25-35 cycles)



### D. Accumulation of Fluorescent TRAP Product



1 2 3



Image demonstrates the direct fluorescence imaging of the TRAPeZe® XL reaction of three specimens – telomerase positive lanes 1 and 2, and telomerase negative lane 3.

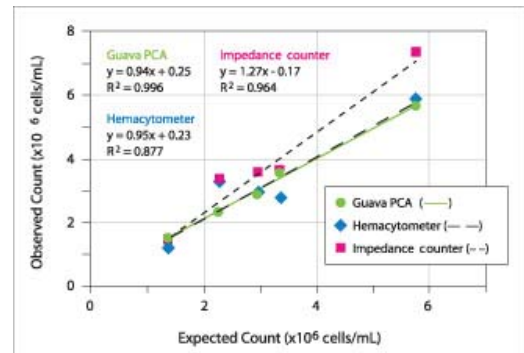
## Guava ViaCount® Reagent (Catalogue No. 4000-0040)

搭配毛細管流式細胞儀，提供更準確的絕對細胞計數、細胞生存力檢測、細胞凋亡百分比檢測。只需 20 µl 樣品，操作步驟簡單，**no-wash, mix-and-read procedure!**



	Debris	Viable Cells	Apoptotic	Dead Cells
Forward Scatter	Low	High	High	High
Nuclear Stain	Neg	High	High	High
Viability Stain	Neg	Neg	Med	High

Guava ViaCount® uses two DNA binding dyes to identify viable, dead, and apoptotic cells.



Guava ViaCount provides accurate cell counts. Comparisons with an impedance counter and manual trypan blue hemocytometer counting indicated greater linearity and accuracy over a range of cell concentrations. Expected cell counts were determined using an FDA-cleared reference counting bead method.

## Antibodies

Description	Catalogue No.
Anti-TRF1, clone BED5 57-6	04-638
Anti-TRF2, clone 4A794	05-521

## Assays

Description	Catalogue No.
Cell Proliferation Assay Kit, WST dye; ELISA based	2210
Cyclin B1 and Ki-67 Assay	HCS210
BrdU and Phospho-Histone H3 (Ser10) Assay	HCS212
guava® Nexin Assay	4500-0450
BrdU and Ki-67 Assay	HCS213
TRAPeZe® Telomerase Detection Kit	S7700
TRAPeZe® ELISA Telomerase Detection Kit, strip well plates	S7750
TRAPeZe® RT Telomerase Detection Kit	S7710
TRAPeZe® Telomerase Positive Control Cell Pellet	S7701

## Inhibitors

Description	Catalogue No.
Actinomycin D, 7-Amino	129935
Aphidicolin	178273
HSV Replication Inhibitor, BP5	385883
Novobiocin, Sodium Salt	491207
RNA Polymerase III Inhibitor	557403

Ab / Inhibitor 滿 NT\$20,000

送高雅4G皮革隨身碟

數量有限，送完為止

