



Precellys Evolution 教育訓練

Bertin PrecellysEvolution 系統介紹與應用
PrecellysMulti-Tissue Dissociation Kit

講者:梅駿朗(Anthony) 業務代表
日期:2026/10/15



均泰生物科技股份有限公司
Genetech Biotech Co., Ltd.

Agenda

- Introduction Of Precellys Evolution
- Application
- Introduction of Precellys Multi-Tissue Dissociation Kit
- Q&A

Bertin Technologies

- 為法國CNIM集團旗下子公司，致力於為全球市場提供創新的測量及取樣技術，主要產品包含環境輻射/氣體監控系統、樣品均質機、空氣取樣器等，合作夥伴遍佈全球。



高效研磨均質

各式動/植物軟、硬組織研磨、細胞裂解



標準化組織細胞解離

多來源組織樣品的細胞培養、單細胞分析



多元生物標記檢測

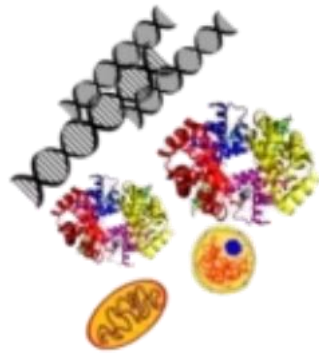
單/多株抗體、臨床樣品收集管、ELISA檢測、佐劑及抗原乳化



超輕鬆空氣微粒採樣

環境監測與下游多元分析應用(PCR、NGS、微生物培養等)

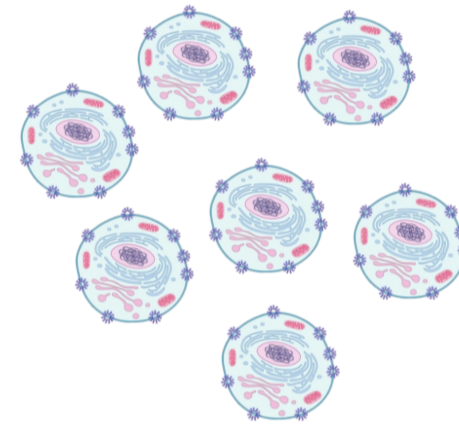
Homogenization



- **Free molecules**
(proteins, hormones, small molecules etc. ...)
- **Nucleic acids** (DNA/RNA)



Dissociation



- **Living Single Cell**

TRADITIONAL SAMPLE PREPARATION METHODS

Sonicator

- ▶ Principle: create micro-bubbles to crush samples
- ▶ Good for liquid phase samples, micro-organism
- ▶ Not good for plant, animal, human tissues, hard samples, etc.
- ▶ **Pain point: unavoidable cleaning step & poor reproducibility**



Sonicator

Mortar & Pestle

- ▶ Principle: mechanical & manual grinding
- ▶ Good for hard and frozen sample
- ▶ Not good for: large samples & multiple
- ▶ **Pain point: unavoidable cleaning step & poor reproducibility and low throughput**



Mortar & Pestle

Blade mixer

- ▶ Principle: rotated blades to cut samples
- ▶ Good for hard and tough sample
- ▶ Not good for micro-organisms
- ▶ **Pain point: unavoidable cleaning step & low throughput**



Blade mixer

BEAD-BEATING BENEFITS

- Disrupt any sample in ~30 sec
- Prepare multiple samples at once
- Standardization
- Cross-contamination Free

Precellys Workflow



Precellys Evolution

- **Super Fast**
 - 4000 - 10 000rpm for very hard samples
- **Super Strong**
 - High quality manufacturing
- **Super Flexible**
 - Sizes of tubes from 0.2ml to 50ml
- **Super Efficient**
 - Powerful 3D motion
- **Super Easy**
 - Automatic tubes locking system



❄ **Super protective:** patented cooling unit for sensitive samples



3D bead-beating movement giving the same efficiency to each tube

Precellys Evolution- Holder Pack



96 well-plate



2mL holder pack



7mL holder pack



15mL holder pack

- From 8 to 96 wells, 300μL
- From 1 to 24 tubes, 2mL/0.5mL
- From 1 to 12 tubes, 7mL
- From 1 to 6 tubes, 15mL
- From 1 to 3 tubes, 50mL
- From 1 to 6 metal tubes



50mL holder pack

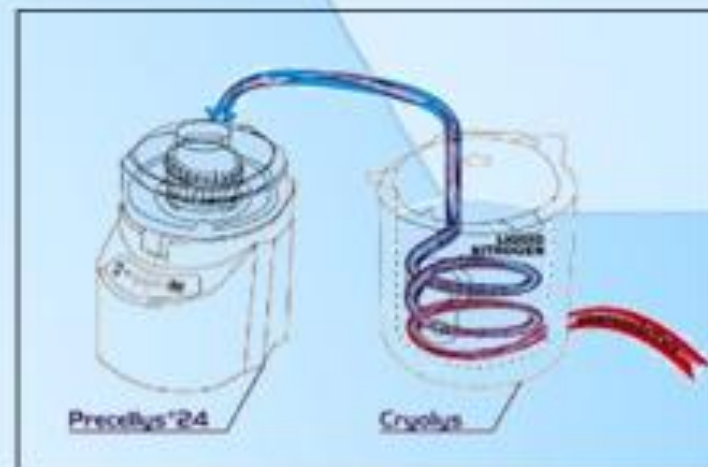


Metal holder pack



Cryolys cooling option for Evolution

- Patented technology:
 - Liquid nitrogen
 - Carbonic ice
- Cold compressed air sprayed inside the specific cover
- Samples cooled during grinding → keep optimal T



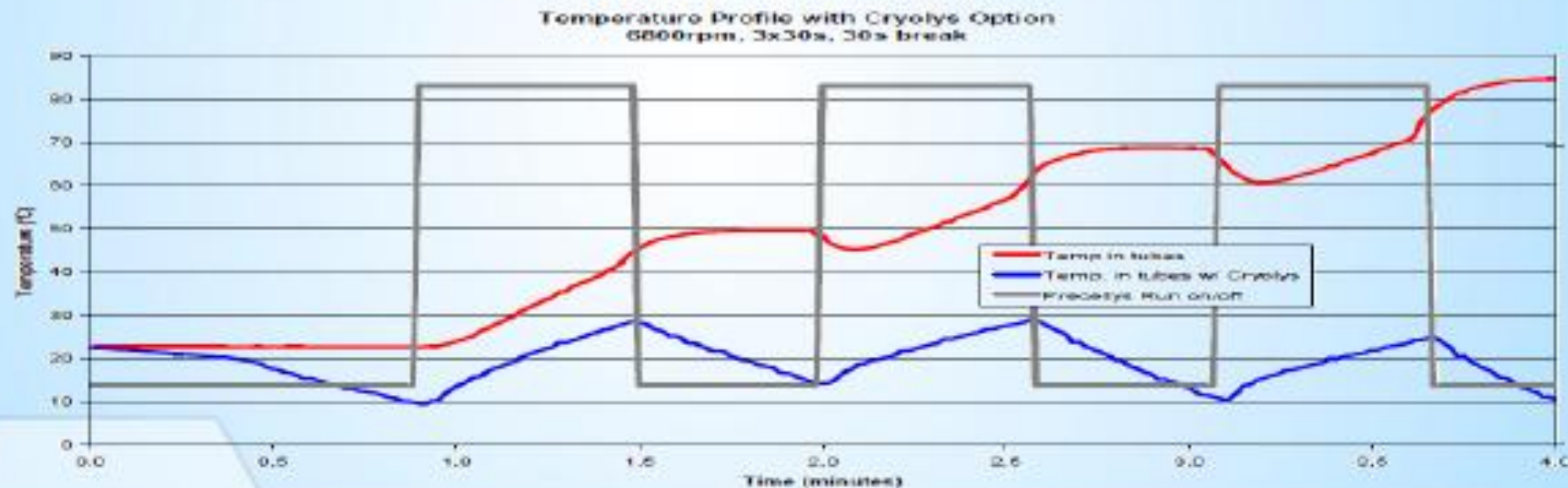
Air Flow from Cryolys to Precellys cover





Cryolys cooling option for Evolution

- Most of all Proteomic/RNA applications
- Cryolys is the only cooling option on the market for bead-beating
 - Competitors cool the sample only before the bead-beating process (red curve)
 - We are the only one to allow a cooling action during the process (blue curve)



Precellys Lysing kits



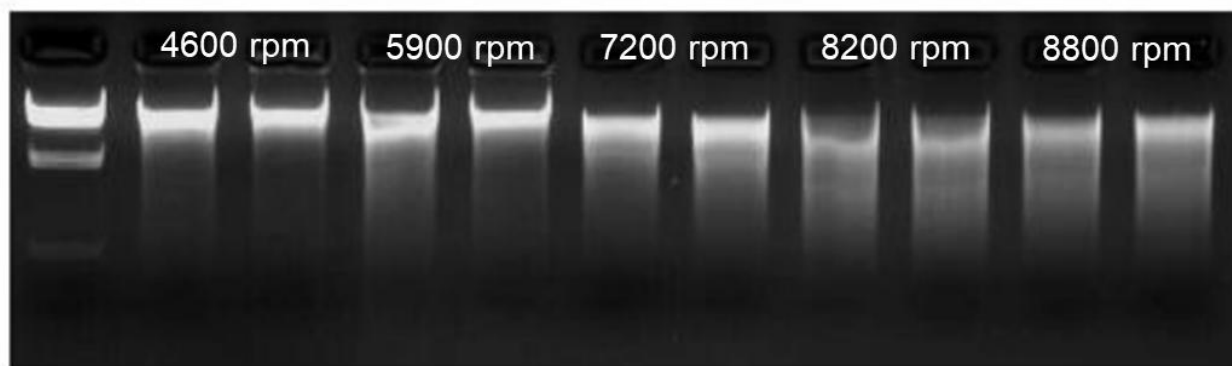
- **4 different types of beads**
 - Metal, Ceramic, Glass, Garnet flakes
- **6 different volumes**
 - 0.2mL (96WP), 0.5mL, 2mL,
 - 7mL, 15mL, 50mL
- **Quality: bead-beating proof**
 - Temperature range of use:
 - -80°C to 100°C (storage)
 - Autoclavable
 - Chemical compatibility:
 - Most of extraction buffer

NAME	APPLICATION	BEAD TYPE	AVAILABLE TUBE VOLUME						
			0.2mL (96WP)	0.5mL	2mL	2mL R*	7mL	15mL	50mL
VK01	Micro-organism lysing	0.1mm glass beads			×				×
VK05	Tough micro-organism lysing	0.5mm glass beads	×	×	×			×	
VKMix	Micro-organism lysing	0.1mm & 0.5mm glass beads					×		
SK38	Micro-organism lysing within tissue	0.1mm glass beads 1.4mm ceramic beads 1 glass bead of 4.0mm			×		×		
CK01	Bacteria lysing	0.1mm ceramic beads			×		×	×	
CKMix	Tissue homogenizing	1.4mm & 2.8mm ceramic beads			×				
CK14	Soft tissue homogenizing	1.4mm ceramic beads	×	×	×		×		
CK28	Hard tissue homogenizing	2.8 ceramic beads			×	×	×	×	×
CKMix50	Tissue grinding	2.8mm & 5.0mm ceramic beads				×	×	×	×
CK68	Dry hard tissue grinding	6.8mm ceramic beads				×		×	
MK28	Hard tissue grinding	2.8mm stainless steel beads			×	×			
Metal tubes	Bones & teeth grinding	empty tubes to fill with 6.8mm ceramic beads			×		×		

✓ Protein safe tubes available *Reinforced tubes

Nucleic Acid Extraction From Animal

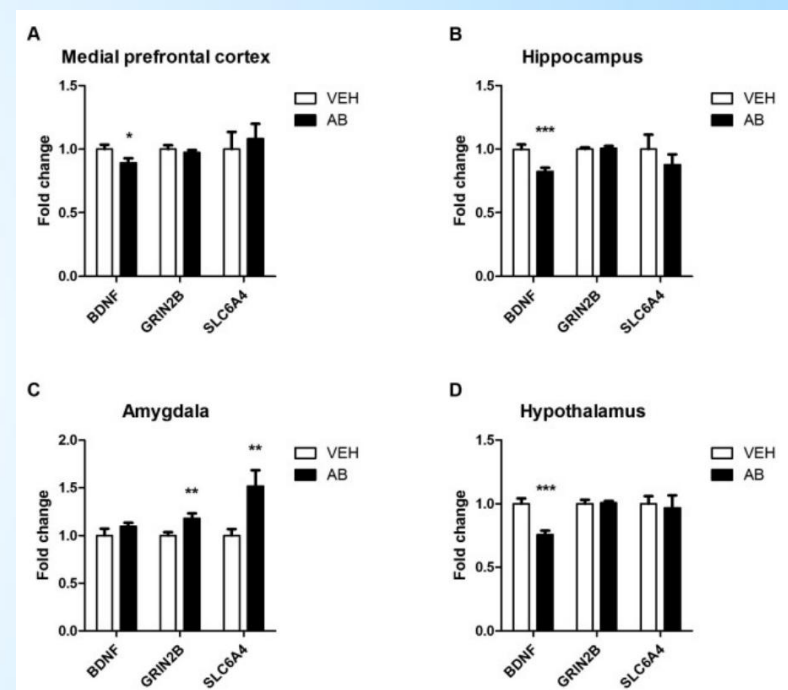
- Precellys lysing kit: CKMix_2mL
1.4 mm ceramic beads/ 2.8 mm ceramic beads
- Sample: 25 mg of **Bovine Liver** per prep.



Agarose gel (1.5%, 1xTAE) electrophoresis of DNA isolated from bovine liver homogenized with Precellys® Evolution at given rpm. M = DNA sizer II

Precellys lysing kit: Soft tissue homogenizing kit CK14 2mL
Sample :**Mice Brain Tissues**

Medial prefrontal cortex, Hypothalamus, Amygdala, Hippocampus

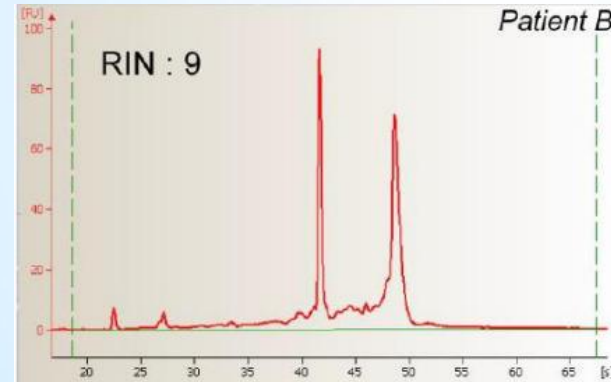
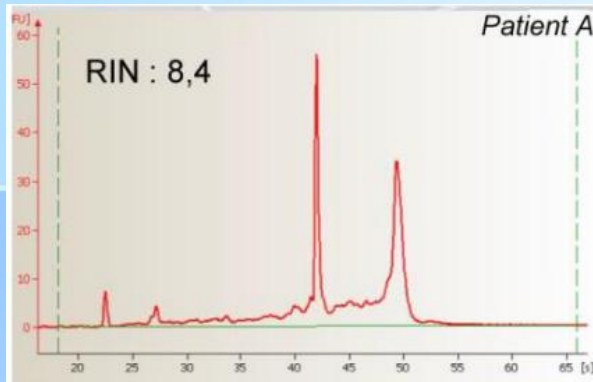


Antibiotic treatment alters the expression of neural signaling related molecules in a brain region specific manner.

Nucleic Acid Extraction From Human

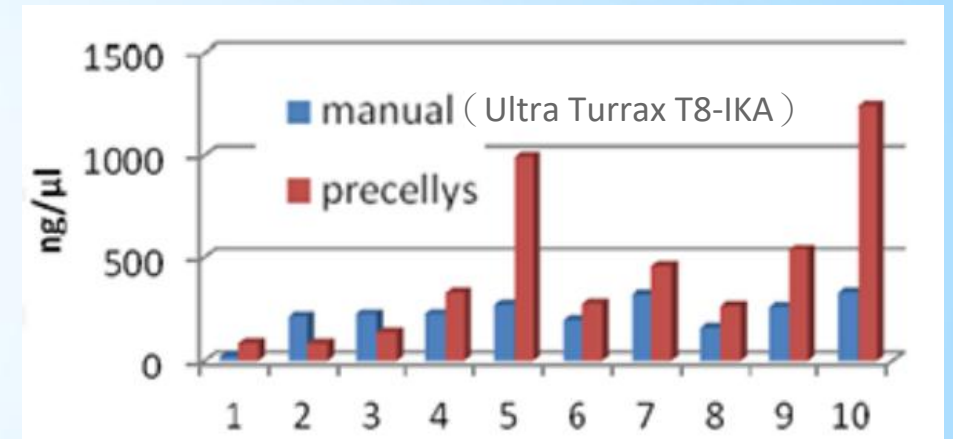
- Precellys® kit CK14 (small ceramic beads).
- Sample : **Human Skin Biopsies** (40-70mg).

	Classical Lysis	Precellys Lysis
Sample 1	124,6 ng/μl	454,0 ng/μl
Sample 2	160,0 ng/μl	638,0 ng/μl
Sample 3	198,7 ng/μl	801,1ng/μl



RNA yield increased from 2 to 4 fold (Nanodrop quatification). RNA quality was assessed using a 2100 Bioanalyser. RNA Integrity Number (RIN) is over 8, meaning good quality.

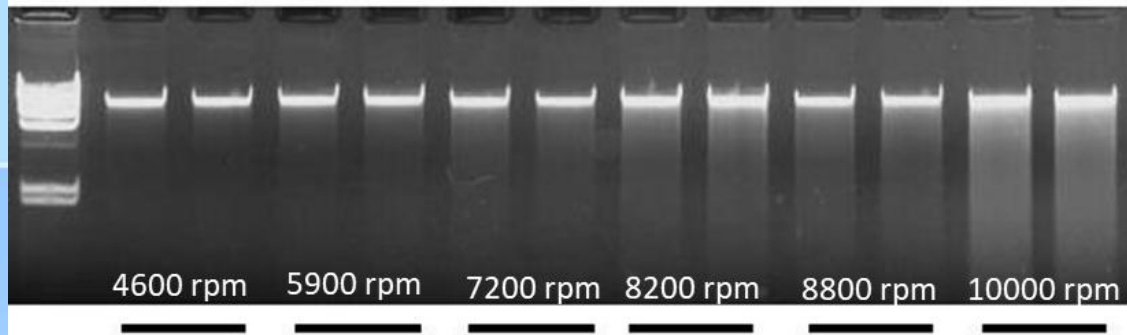
- Precellys kit: CKMix
1.4 mm ceramic beads/ 2.8 mm ceramic beads.
- Sample: 10 **Human Subcutaneous Adiposetissue (scAT)** samples (about 100 to 400 mg/sample) obtained by needle aspiration



extracted RNA yield obtained with Ultraturax and Precellys methods.

Nucleic Acid Extraction From Plant

- Precellys lysing kit: CKMix_2mL
1.4 mm ceramic beads/ 2.8 mm ceramic beads
- Sample: 100 mg of **Arabidopsis leaves** per prep.



Agarose gel (1.5%, 1xTAE) electrophoresis of DNA isolated from Arabidopsis leaves homogenized with Precellys® Evolution at given rpm.
M = DNA sizer II

Precellys® kit : SK38 (Mixed beads)

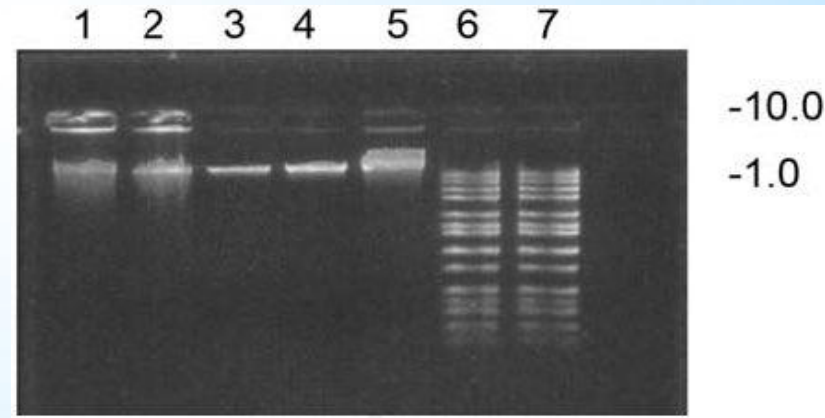
0.1 mm glass beads/ 1.4 mm ceramic beads/ 1 glass bead of 4.0 mm

Sample : 0.08g of **Rice Leaf** cut into pieces



Left: Fresh leaves

Right: Homogenized leaves



Lanes 1 & 2: Rice leaf DNA.

Lanes 3-5: λDNA standards.

Lanes 6 & 7: Marker.

Protein Fractionation from Normal and Cystic kidneys with Precellys

- Precellys Lysing Kit: CK28-R 2mL

- * Protein Safe Hard tissue homogenizing CK28-R 2mL

- Sample :**Mice Kidney tissues**

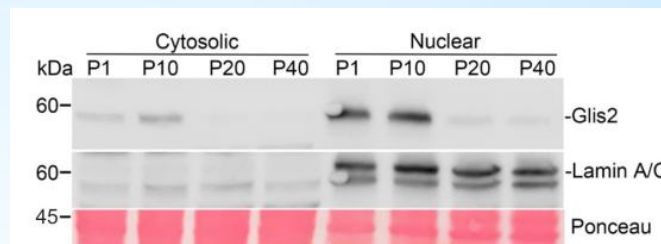
- Adult wild type and Cystic C57BL/6J mice

Protocol:

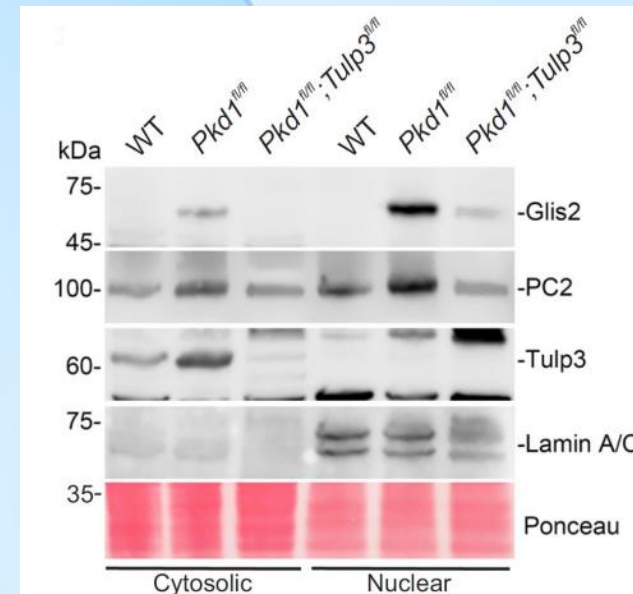
1. Use kidneys stored at -80°C, with approximately 1/4 used for protein preparation.
2. Cut tissues and transfer to CK-28-R tubes, adding lysis buffer.
3. Homogenize using Precellys Evolution at 6800rpm for 30s, with a 1-minute ice bath between runs.
4. Centrifuge and collect the supernatant (cytosolic fraction).
5. Resuspend the pellet in 1X Red Loading buffer and sonicate.

Conclusion:

1. Protein fractionation from wild-type, cystic, and rescue mouse kidneys analyzed Glis2 distribution with Lamin A/C as a nuclear marker.
2. This technology is vital for ADPKD research, supporting protein dynamics and therapeutic development.
3. The Precellys Evolution homogenizer efficiently produces high-quality protein fractions for reliable localization and expression comparisons.



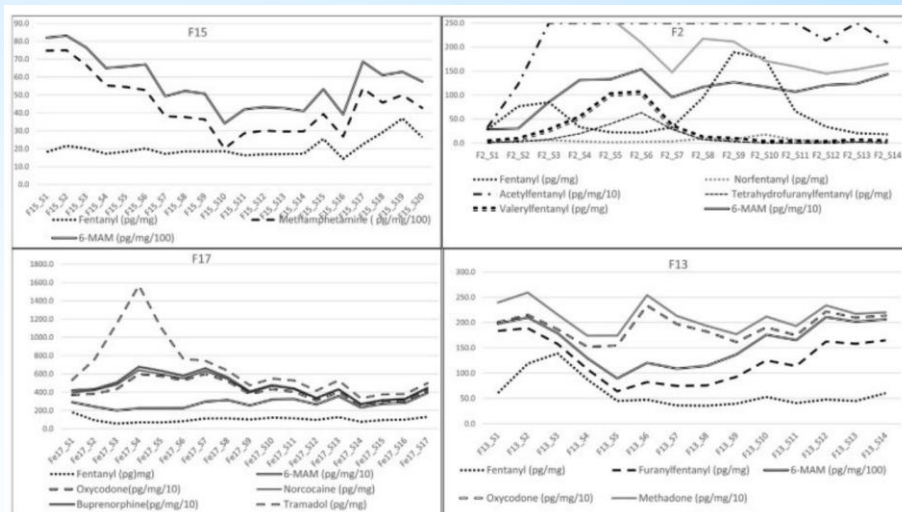
Immunoblot analysis shows Glis2 expression in cytosolic and nuclear fractions from wild-type (WT) mouse kidneys at different postnatal stages.



Immunoblot of kidney lysates from wild-type (WT), cystic (Pkd1^{fl/fl}), and disease rescue (Pkd1^{fl/fl}, Tulp3^{fl/fl}) mice.

Hair Synthetic Opioids Analysis and Fentanyl Analogue User History Evaluation

- **Sample:** **Hair sample** from US polydrug users cut into 1cm segments
- **Lysing kit:** MK28-R_2mL
- 2.8 mm stainless beads



Segmental hair analysis allows us to know the consumption history of several synthetic opioids from 4 US polydrug users who do fentanyl. The sample S1 is the nearest portion of the scalp are represented by sample "S1."

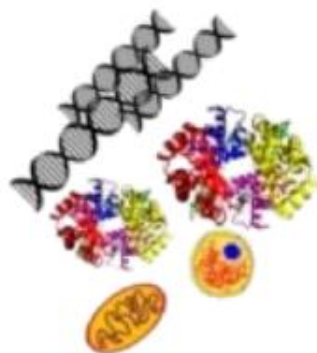
Protocol:

1. Hair samples from polydrug users were decontaminated with dichloromethane, methanol, and water for 2 minutes.
2. Samples were cut into 1 cm pieces for segmental analysis; "S1" represents the most recent hair pieces.
3. Each sample was homogenized using Precellys 24* (3 cycles of 60 seconds at 6500 rpm).
4. After centrifugation, solid-phase extraction was performed.
5. Separation was done using an Acquity UPLC BEH phenyl column and Xevo TQS.

Conclusion:

This UHPLC-MS/MS method enabled the first quantification of synthetic opioids, including vareryl fentanyl and tetrahydrofurfanylfentanyl from hair samples. It aids in analyzing polydrug histories of fentanyl users, helping labs identify synthetic opioids in specific groups.

Homogenization



- **Free molecules**
(proteins, hormones, small molecules etc. ...)
- **Nucleic acids**
(DNA/RNA)



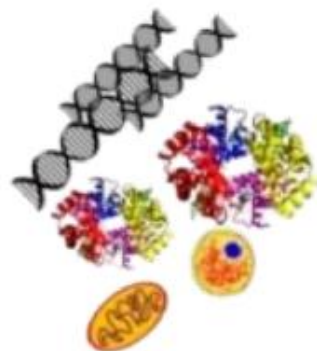
Application

Western blot
Mass spectrometry
ELISA

UPLC-MS/MS
GC-MS

PCR / qPCR
CRISPR/Cas9
WGS
RNA-Seq
Microarray

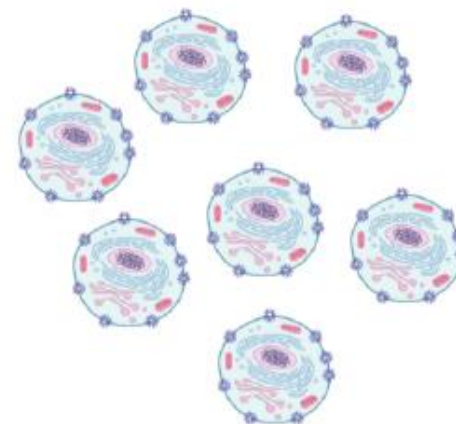
Homogenization



- **Free molecules**
(proteins, hormones, small molecules etc. ...)
- **Nucleic acids**
(DNA/RNA)



Dissociation



- **Living Single Cell**

How To Get SINGLE LIVING CELLS From A Fresh Tissue

- Tissue dissociation is a process by which a biological tissue is broken down into its individual living cells.
- This technique is essential for various applications in cell biology and medicine, particularly for **cell culture, gene expression analysis, and molecular biology studies**.

Enzymatic

- ✓ Easy to use
- ✓ No instrument needed
- ✓ High viability rate
- ✗ Manual method (reproducibility)
- ✗ Effective on soft tissues
- ✗ Low performances on hard tissues

Combination of Enzymatic & Mechanical

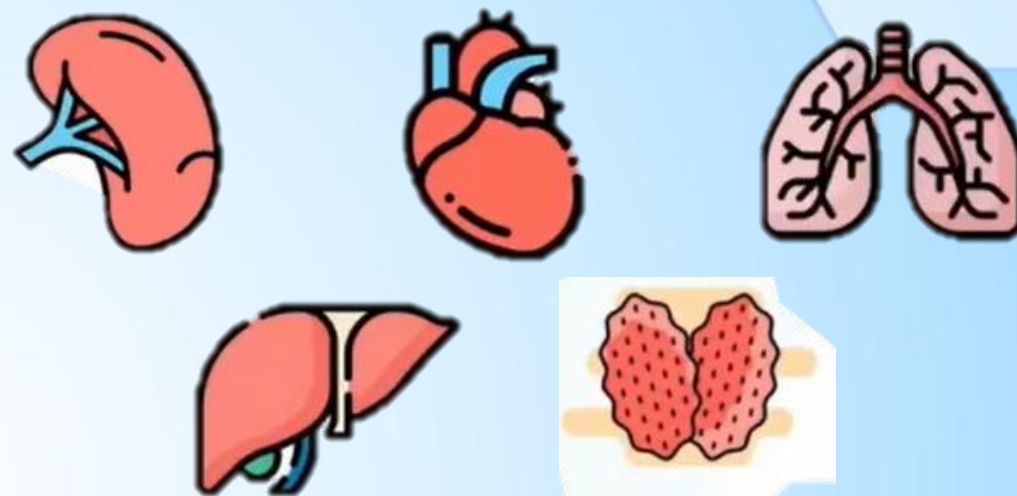
- ✓ Fast method
- ✓ High cell viability rate
- ✓ Effective on a wide variety of cells

Mechanical

- ✓ Fast method
- ✓ No need of reagent
- ✓ Effective on hard tissues
- ✗ Low viability rate (damage)
- ✗ Heterogenicity (size and type of cells)
- ✗ Low performances on soft tissues

PRECELLYS MULTI-TISSUE DISSOCIATION KIT

- Combination of **Enzymatic and Mechanical Dissociation**
- Patented Bead-Shearing Technology
- Starting from **FRESH TISSUE**(100-200mg) to get single living cells
- Validated on Liver (mouse) / Spleen (mouse) / Lung (human, mouse) / Heart (mouse) / Thymus (mouse)
- **80% Cell Viability Rate**



WORKFLOW OF PRECELLYS MULTI-TISSUE DISSOCIATION KIT



Add the enzymes mix and the sample in the dissociation tube



Place the tube in the Precellys - 4500 rpm x 3 seconds



Incubate at 37°C for 30 mins



300 g for 10 minutes centrifugation + resuspension

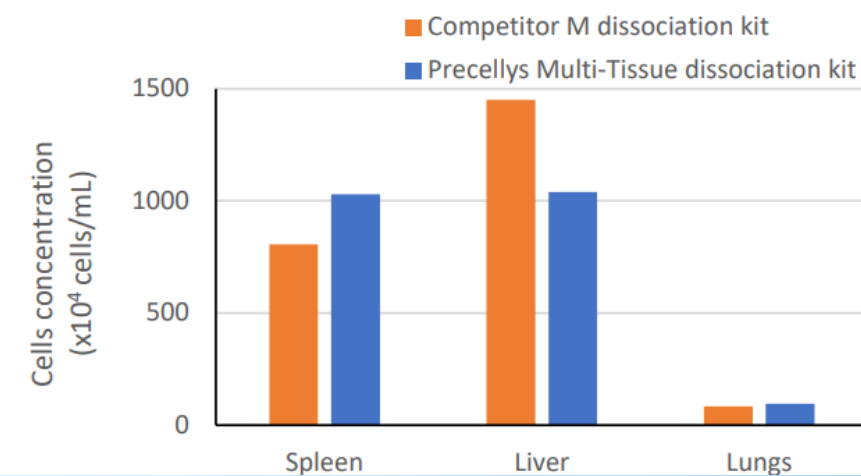
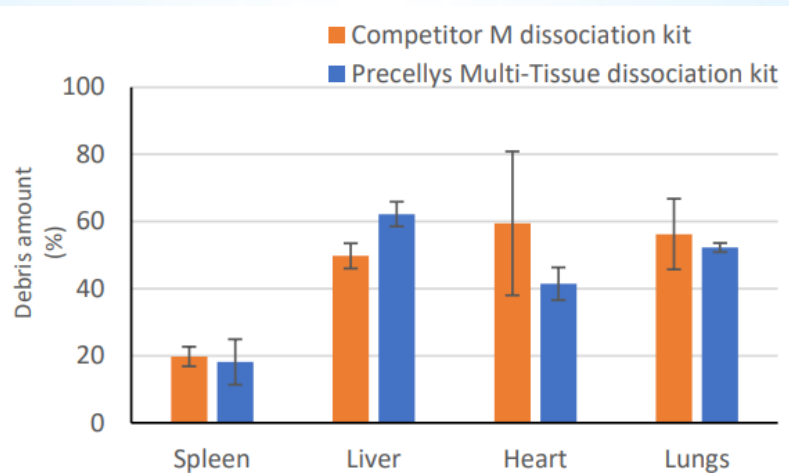
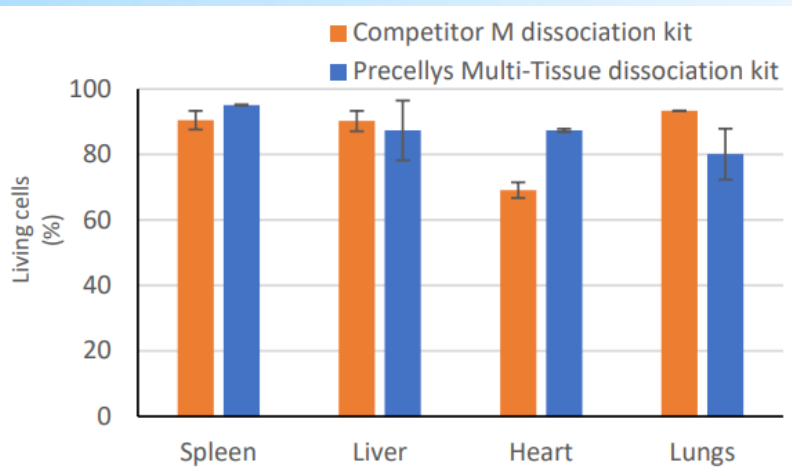
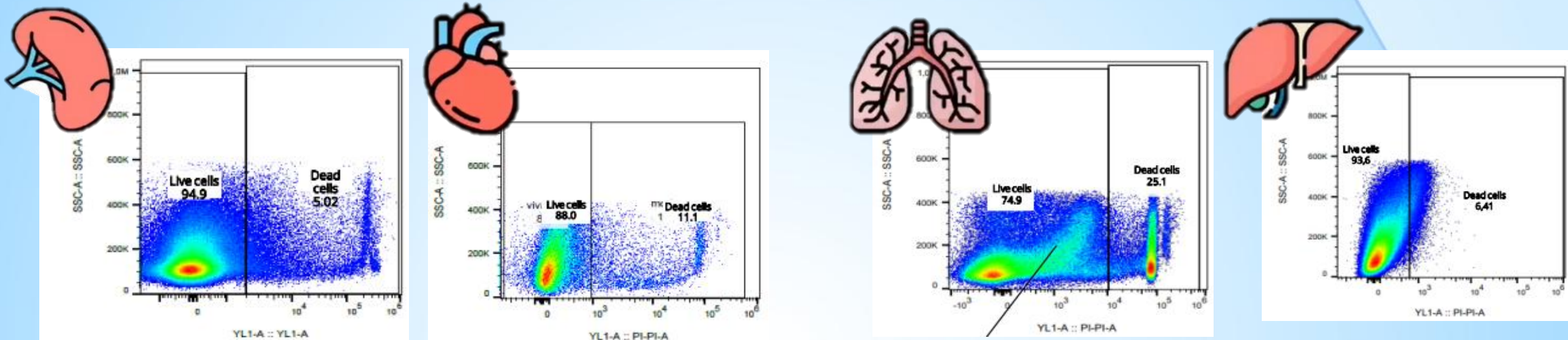


Resuspend sample and filter through a 100 µm cell strainer



Place back the tube in the Precellys - 4500 rpm x 3 seconds

COMPARATIVE TISSUE DISSOCIATION PERFORMANCE: PRECELLYS MULTI-TISSUE DISSOCIATION KIT VS. COMPETITOR KIT



Application

Single Cell Analysis

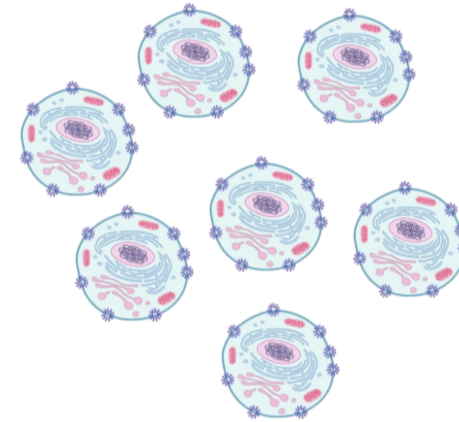
Nucleic Acids
Lipidomic
Metabolomic
Sequencing

Cell Culture

New line
Differentiation
Cytotoxicity
Regenerative medicine

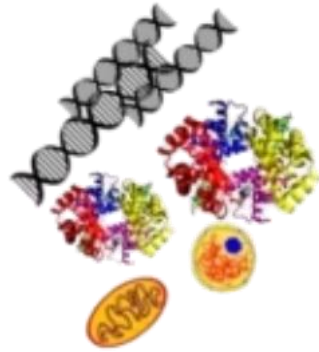


Dissociation



- **Living Single Cell**

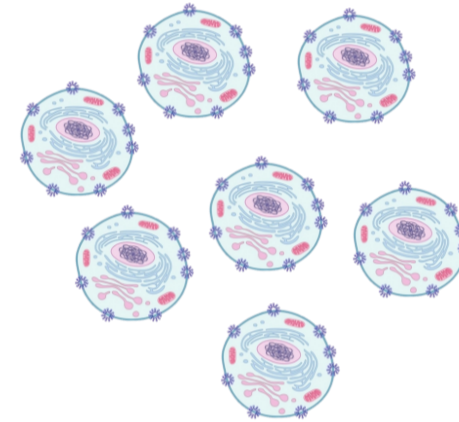
Homogenization



- **Free molecules**
(proteins, hormones, small molecules etc. ..)
- **Nucleic acids**
(DNA/RNA)



Dissociation



- **Living Single Cell**

Lysing Kit Application Protocol Search

Careers  Search



 My account   EN ▾

PRODUCTS

EXPERTISE

RESOURCES

NEWS

ABOUT US

CONTACT

APPLICATION CENTER

ACCESS OVER 2,500 SCIENTIFIC DOCUMENTS CONTRIBUTED BY THE BERTIN INSTRUMENTS USER COMMUNITY!

[Home](#) / [Application center](#)

↓ Choose your interests & get your selection of scientific documents

Search



INDUSTRIES



INTERESTS



675 results



Protein extraction comparison
between precellys evolution
touch and sonication

Assessment of the Coriolis
Compact on Microbial
Monitoring of Spacecraft Air

Heart dissociation in mice using
Precellys Multi-tissue
dissociation kit

Drug Screening in Hair at 8
Seconds per Sample Using the
Precellys 24 Touch and Luxon-
MS/MS



HOMOGENIZATION AND EXTRACTION OF FLUORESCENT CHEMICAL COMPOUNDS FROM MOUSE BONE TISSUE

Atlanthera Laboratories, Saint-Herblain, France

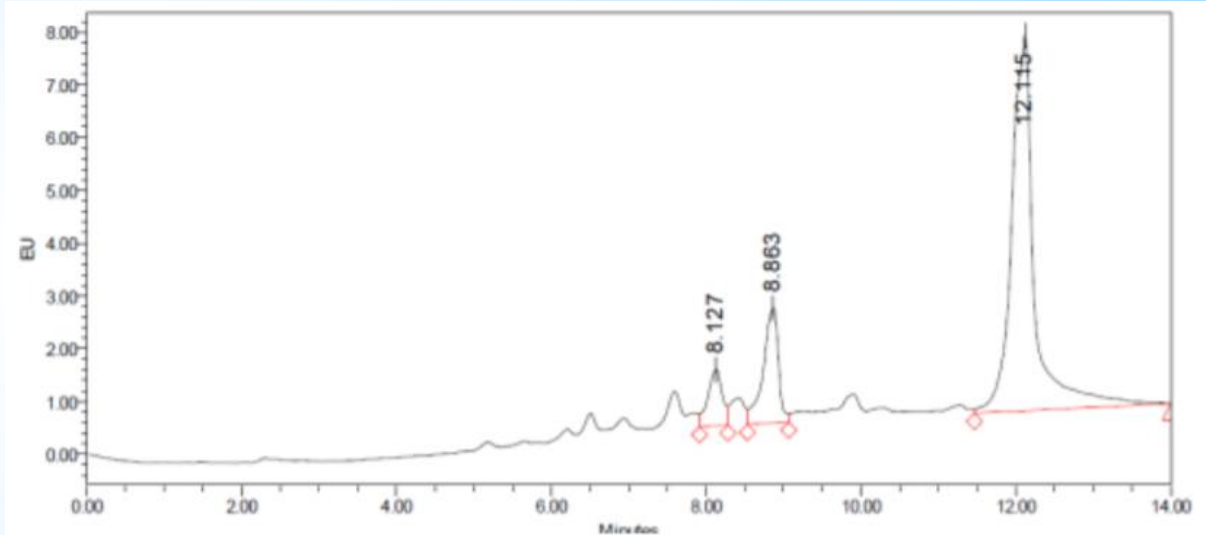
/ MATERIALS

- Instrument: Precellys® Evolution
- Lysing kit: Hard tissue grinding MK28-R reinforced 2mL tubes with 2.8mm stainless beads (KT03961-1-008.2)
- Tissue samples: mouse tibia (50 to 110 mg)
- Homogenization buffer: PBS
- Extraction buffer: 6N HCl, CHCl₃/methanol
- Suspension buffer: acetonitrile

/ PROTOCOL

Precellys® Evolution, 8500 rpm, 8x10 sec (10 sec breaks), room temperature

Samples: Mouse tibia were removed, cleaned from soft tissues, snap frozen in liquid nitrogen and stored at -20°C. Frozen tibia were either dry processed or processed in PBS buffer. Homogenized tissue was suspended in extraction buffer. Organic phase was purified, evaporated and the dry extract was resuspended in acetonitrile prior to HPLC analysis.



<http://ppt.cc/B9BgR>



Thank You!



均泰生物科技股份有限公司
Genetech Biotech Co., Ltd.



台北市內湖區新湖二路168號4F



sales@gtbiotech.com.tw



+886-2-27965108



+886-2-27965907