



Tissue Lyser


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TissueLyser 2 Spec

儀器利用高速震盪原理進行組織高度均質，以利後續實驗分析
 具備安全保護裝置，唯有前蓋關閉時，機器才可啟動
 數位式時間控制，可設定時間從10秒至99分鐘
 單次檢體處理量最高可到2x24個檢體
 震盪頻率為3 - 30赫茲，可設定9組參數
 適用樣品種類：植物檢體，種子，酵母菌，各式細胞
 儀器內含之基座可直接用清水，殺菌劑，酒精等清潔
 儀器內含之基座均可在 -196 °C (液態氮) 環境下處理

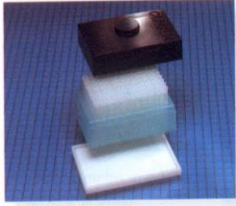





Grinding Jar Set




2*24 adapter sets



2*96 adapter sets




**Beads
(5~7 mm)**




TissueLyser LT

Sample to Insight



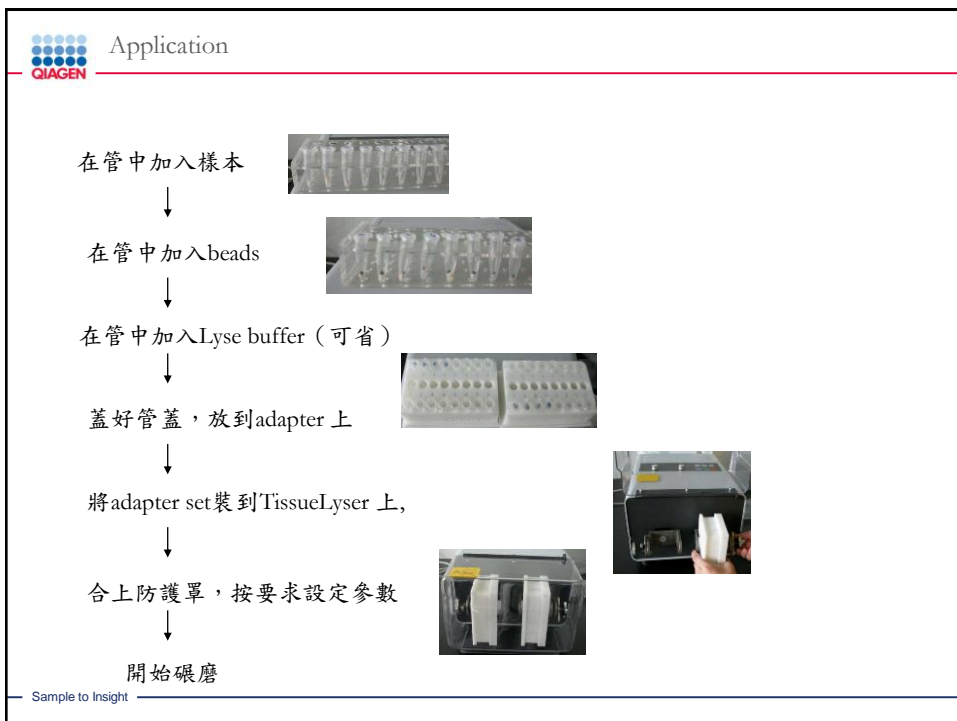
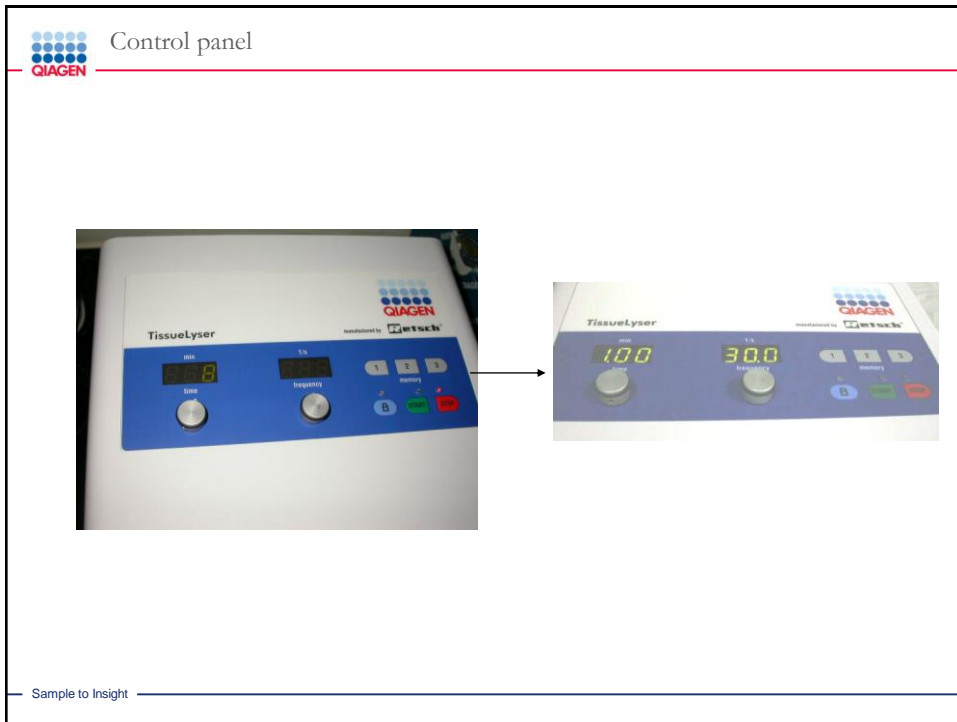
Beads



- Bacteria: 0.1–0.6 mm (mean diameter) glass beads
- yeast and unicellular animal cells: 0.5 mm glass beads
- plant and animal tissues: 3–7 mm stainless steel or tungsten carbide beads

Note: Do not use Buffer RLT in conjunction with tungsten carbide beads. Buffer RLT reacts chemically with tungsten carbide causing damage to the bead surface.

Sample to Insight



植物組織：

葉子

根莖

種子

動物組織：可能需要使用液氮

肌肉

內臟

牙齒

骨

酵母，細菌：需要使用玻璃珠

Plant tissue

Roots/Leaf



碾磨前




碾磨後

注：乾燥的植物樣本也可碾磨，圖片未顯示在此處



Application

Plant seed

黄豆





碾磨前

碾磨後

Sample to Insight

Application

TissueLyser 2	TissueLyser LT
1-192 samples	1-12 samples
Keep cool , when disrupt (Let sample be good)	Keep cool , when disrupt (Let sample be good)
Operation easily, only put samples and lock	Operation easily, only put samples and lock
Operation time shorter	Operation time shorter
Cheaper consumables (Below 20 NTD)	Cheaper consumables (Below 20 NTD)

Sample to Insight



Related product

產品		貨號
TissueLyser (220-240 V, 50/60 Hz)	Universal laboratory mixer-mill disruptor, 220-240 V, 50/60 Hz	85220
TissueLyser Adapter Set 2 x 24	2 sets of Adapter Plates and 2 racks for use with 2.0 ml microcentrifuge tubes on the TissueLyser	69982
TissueLyser Adapter Set 2 x 96	2 sets of Adapter Plates for use with Collection Microtubes (racked) on the TissueLyser	69984
Stainless Steel Beads, 5 mm (200)	Stainless Steel Beads, suitable for use with the TissueLyser system	69989
Tungsten Carbide Beads, 3 mm (200)	Tungsten Carbide Beads, suitable for use with the TissueLyser system	69997
Grinding Jar Set, S. Steel (2x10ml)	2 Grinding Jars(10 ml), 2 Stainless steel Grinding balls(20 mm)	69985
Grinding Jar Set, Teflon(2x10ml)	2 Grinding Jars(10 ml), 2 Teflon Grinding balls(20 mm)	69986

Sample to Insight



QIAxcel Advanced- A new era in qualitative and quantitative nucleic acid analysis

陳立德 Erwin Chen
Technical Product Specialist

Sample to Insight

Title, Location, Date

 Overview




1. What is it all about?


2. QIAxcel product overview

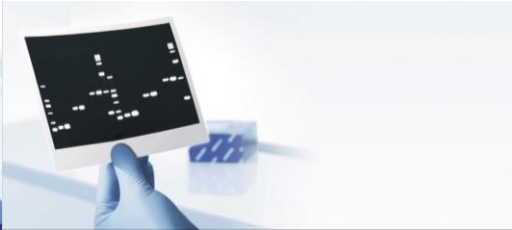
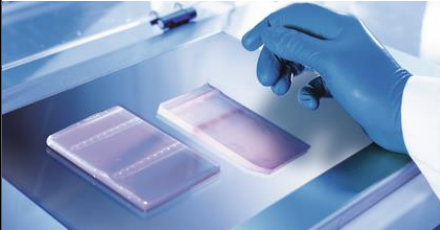
3. Principles & procedures

4. Application data

Sample to Insight

 Detection step of PCR/RFLP products

+ $\left. \begin{array}{l} \text{Denaturation} \\ \text{Annealing} \\ \text{Extension} \end{array} \right\}$ 



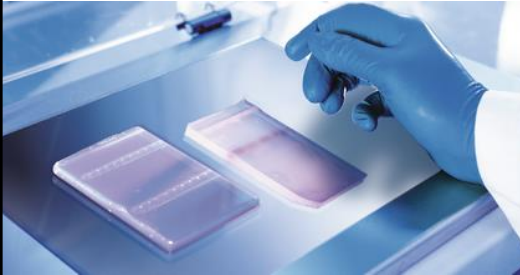
After amplification, PCR/RFLP products are electrophoretically separated for analysis ; gel agarose remains a widely used technic.

Sample to Insight



But have you ever thought about

... how much it costs*?



Material	Amount	Unit	Package Price	Price/Unit	Net Price
0.5-10 µl Disposable Tips	13	pc	39.66	960	0.54
1-200 µl Disposable Tips	1	pc	34.02	960	0.04
Adhesive acryl tape	18	cm	6.96	6600	0.02
Weighing boats	1	pc	7.44	100	0.07
Gloves	2	pc	18.96	100	0.38
Tris	1.21	g	78.82	1000	0.10
Na2EDTA · 2H2O	0.19	g	135	1000	0.03
Agarose	1.25	g	188.52	100	2.36
Acetic Acid	0.28	ml	29.64	1000	0.01
100 bp Ladder	0.25	µg	52.8	50	0.26
EtBr	0.005	ml	37.32	10	0.02
Sample No.			12		
SUB TOTAL					3.81
Labor Cost	25	min	20	60	8.33
TOTAL/No. Of Samples					12.15
TOTAL/Sample					1.01

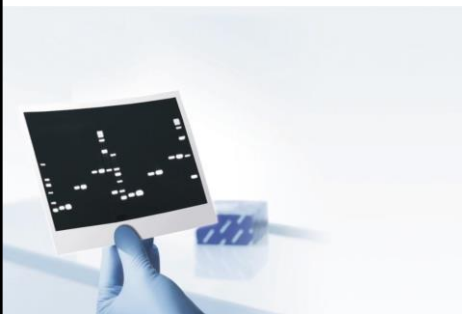
- Materials
 - Agarose or high-resolution agarose
 - Reagents
 - Thermal-printer paper
- Tips, gloves, weighing boats, tape
- Repeat experiments due to manual errors
- Labor time
- Disposal of waste (liquid and solid)

Sample to Insight



Have you ever thought about


... how much time you spend on agarose gel electrophoresis?

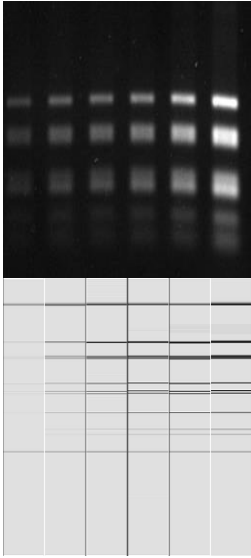


Process Steps	Time	
Gel Preparation	15-30	min
Sample Loading	5	min
DNA/RNA Separation	30-120	min
Analysis	10	min
TOTAL	60-165	min

- Three gels a week:
 - 150 – 430 hours/year
- Two gels a day:
 - 520 – 1430 hours/year

Sample to Insight



 Have you ever thought about



... standardization ?


- Accuracy of results
- Base-pair resolution that can be achieved
- Manual errors
- Automated documentation and analysis



Sample to Insight


 Automation brings multiples benefits to your genotyping workflow

+

Denaturation
Annealing
Extension



... what about automating the detection of your PCR/RFLP products?

- High sensitivity, high resolution
- Fast sample processing for an higher throughput and shorter time to results
- Standardization of results and reproducibility, both intra- and inter-lab
- Less error-prone manual steps
- No handling of Ethidium Bromide

Sample to Insight



Why choosing a detection technology over another?

Because it is all about applications, needs, expectations and trade-off !

	Cheap?	Fast?	Quantitative?	Multiplex?
Agarose Gel	●●	●	●	●
Capillary Electrophoresis (QIAxcel Adv.)	●	●	●	●
RT-PCR	●	●	●	●●
Pyro sequencing	●	●	●	●
Whole genome sequencing	●	●	●	●

With capillary electrophoresis, your genotyping workflow beneficiate from:

- Simple assay design thanks to end-point PCR technology
- Low cost per sample and ease of interpretation of the results
- High performance in term of limit of detection, speed of analysis and resolution
- High potential for multiplexing and get more results per assay

Sample to Insight

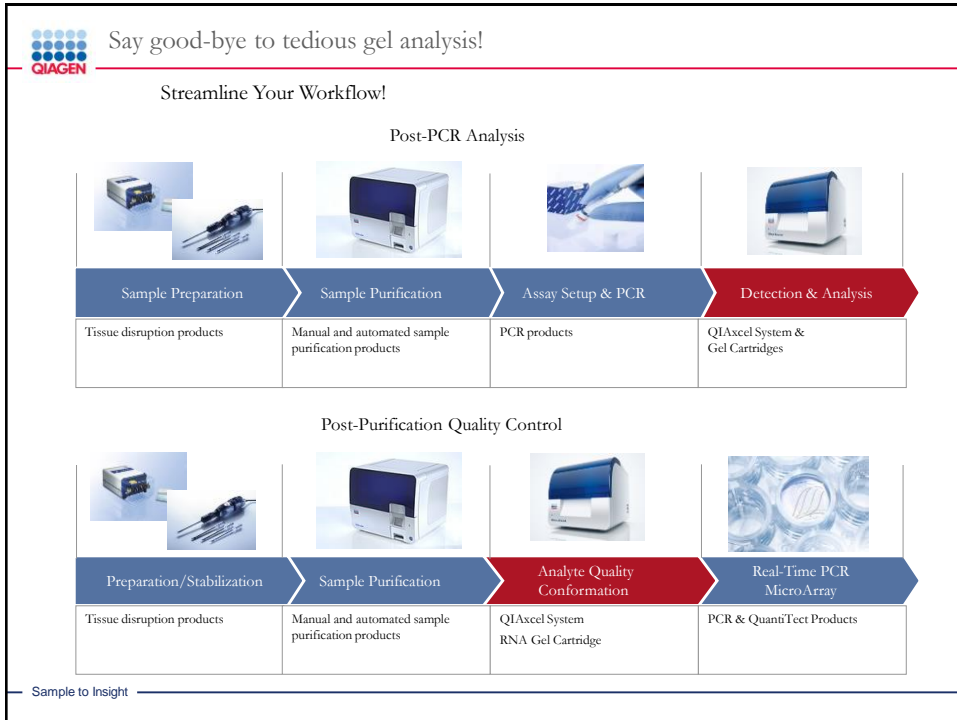



Overview




1. What is it all about?
2. QIAxcel product overview
3. Principles & procedures
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Sample to Insight



 No More Slab-Gel Analysis

Key features of the QIAxcel Advanced System



- Fully automated DNA and RNA analysis
- Ready-to-run gel cartridges
- Fast processing: 12 samples in 3-20 min
- Up to 96 samples per run
- Sample input amounts <math>< 0.1\mu\text{l}</math>
- Detection limit of 0.1 ng/ μl
- High resolution of 3-5 bp
- Digital data output

Sample to Insight



QIAXcel System - Overview

QIAXcel System

- QIAXcel instrument
- Laptop
- QIAXcel ScreenGel Software



Ready-to-go gel-cartridge kits

- DNA High-Resolution
- DNA Screening
- DNA Fast Analysis
- RNA Quality Control



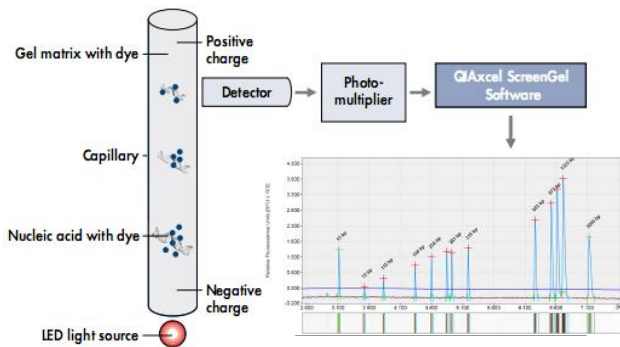
Reagents

- Markers & Buffers

Sample to Insight



The QIAXcel Capillary Electrophoresis Principle



Sample to Insight



QIAxcel Gel Cartridges – Product overview

Gel cartridge name	Analyte	Size range	Best resolution				Run time*	Example applications
			100 bp - 500 bp	500 bp - 1 kb	1 kb - 5 kb	5 kb - 10 kb		
DNA High Resolution 100 runs/1200 samples	DNA	15 bp - 10 kb	3-5 bp	50 bp	500 bp	1-1.5kb	7-20 min	High-resolution genotyping Large and long size range
DNA Screening 200 runs/2400 samples	DNA	15 bp -5 kb	20-50 bp	50-100 bp	200-500 bp	-	5 min	Fast PCR screening (single and multiplex)
DNA Fast Analysis 250 runs/3000 samples	DNA	15 bp -3 kb	50 bp	50 bp	250 bp - 1kb†	-	3-5 min	Fast single amplicon analysis
RNA Quality Control 100 runs/1200 samples	RNA	200 bp -10 kb	200 bp	-	-	-	10 min	Checking RNA quality

*Run time given for 12 samples, depending on method used

Sample to Insight



Typical DNA Application Areas



QIAxcel DNA High Resolution Kit (1200)

- STR/Microsatellite (SSR)
- AFLP/RFLP
- High Resolution Multiplex PCR

QIAxcel DNA Screening Kit (2400)

- Analysis of single DNA fragments
- Low resolution multiplex PCR DNA
- Plasmid DNA checking

QIAxcel Fast Analysis Kit (3000)

- Fast analysis of single amplicons
- (HLA SSP typing)

Sample to Insight



Markers

Recall 2 different Markers are required for size determination:

- **Alignment Marker**
 - Normalize run-time variations
 - Different sizes available (smallest and largest fragment in run)
 - For accurate size determination
 - Included in every run

- **Size Marker**
 - Used as reference for size and concentration determination
 - Dilute in same buffer as samples

Sample to Insight



Markers

Table 2. Recommended QX DNA Size Marker and QX Alignment Marker combinations

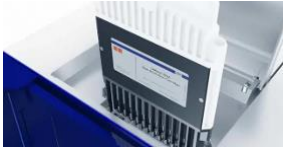
Size marker	Cat. no.	Alignment marker	Cat. no.
QX DNA Size Marker pUC18/HaeIII (50 µl)	929550	QX Alignment Marker 15 bp/1 kb (1.5 ml)	929521
QX DNA Size Marker FX174/HaeIII (50 µl)	929551	QX Alignment Marker 15 bp/3 kb (1.5 ml)	929522
QX DNA Size Marker 25 bp – 500 bp (50 µl)	929560	QX Alignment Marker 15 bp/600 bp (1.5 ml)	929530
QX DNA Size Marker 100 bp – 2.5 kb (50 µl)	929559	QX Alignment Marker 15 bp/3 kb (1.5 ml)	929522
QX DNA Size Marker 50–800 bp (50 µl) v2.0	929561	QX Alignment Marker 15 bp/1 kb (1.5 ml)	929521
QX DNA Size Marker 250 bp – 4 kb (50 µl) v2.0	929562	QX Alignment Marker 50 bp/5 kb (1.5 ml)	929529
QX DNA Size Marker 250 bp – 8 kb (50 µl) v2.0	929563	QX Alignment Marker 15 bp/10 kb (1.5 ml)	929523

Sample to Insight



Fully automated gel electrophoresis

Minimum hands-on time required



- Place the ready-to-run gel cartridge into the instrument



- Load buffer tray and samples



- Select the Process Profile of your choice
.... and GO!

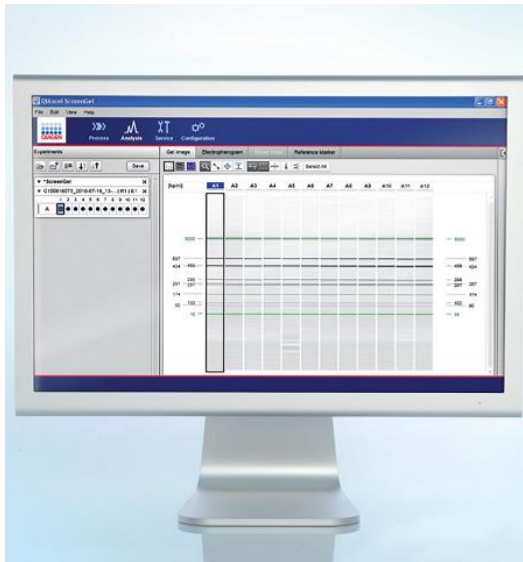


- Look at the report just a few minutes later

Sample to Insight




QIAXcel ScreenGel Software




- Prevents unauthorized access
- Facilitates system setup and analysis
- Minimizes user training required
- Delivers significant time savings
- Enables use of an electronic records system

Sample to Insight


 Enjoy Convenience - QIAxcel ScreenGel Software

QIAxcel ScreenGel features	Advantages
User management and user roles	<ul style="list-style-type: none"> - Allows access only to what is needed - Supports inexperienced users by simplifying interface - Prevents unauthorized access and data manipulation - Requires less training
Complete Process Profiles defining entire workflow	<ul style="list-style-type: none"> - Supports inexperienced users by simplifying interface - Saves time by <ul style="list-style-type: none"> Minimizing time to start an experiment Eliminating manual analysis needs - Easy-to-use - Requires less training
Process wizard guided start of experiment	<ul style="list-style-type: none"> - Supports inexperienced users by guided data entry - Intuitive usage - Higher level of safety
Drag-and-drop and many mouse-based operations	<ul style="list-style-type: none"> - Intuitive usage - Ease-of-use
Report/Export functionality	<ul style="list-style-type: none"> - Time savings for customized data documentation
Support features to comply with 21 CFR part 11	<ul style="list-style-type: none"> - Time savings for data documentation - Supports electronic data documentation

Sample to Insight


 Overview



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Sample to Insight

Genotyping workflow and QIAGEN offering from samples to insights

Automated solutions

- EZ1 Advanced XL
- QIAasymphony SP/AS
- QIAcube
- QIAcube HT
- QIAxpert
- QIAgility
- QIAasymphony SP/AS
- QIAxcel Advanced
- Rotor-Gene Q
- PyroMark Q24 Advanced
- PyroMark Q48 Autoprep

QIAGEN offers flexible automated solutions for seamless genotyping workflow, compatible with QIAGEN market-leading assay technologies.

QIAGEN automated solutions offer flexible throughput and reliable results, in a minimum sample-to-insight timespan.

Sample to Insight

DNA Application

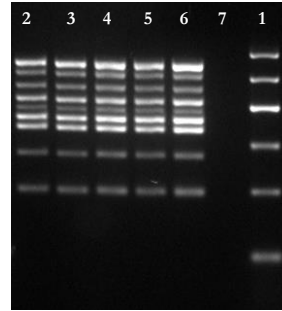
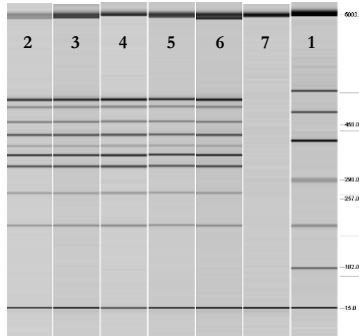
Robust Results at Low Nucleic Acid Concentrations]
QX DNA High Resolution Cartridge

pUC18/HaeIII Marker
 1-25 ng/μl dilution series
 0M500 method

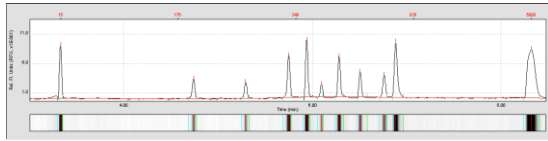
Sample to Insight



DNA Application- Multiplex PCR Assays



DMD 9plex Multiplex PCR
 PCR products were generated using the QIAGEN Multiplex PCR Mastermix.
 From a 25 µl PCR 10 µl was analyzed on a 2% agarose gel.
 1: Gel Pilot 100 bp ladder; 2-6: DMD 9plex multiplex PCR;
 7: NTC.

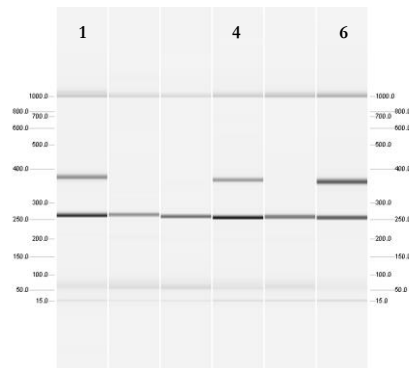


On the QIAxcel system the samples were run using the OMS500 method with the QIAxcel DNA High Resolution Cartridge and QX DNA Size Marker pUC18/HaeIII.
 1: pUC18/Hae III 2-5: DMD 9plex multiplex PCR 7: NTC.

Sample to Insight

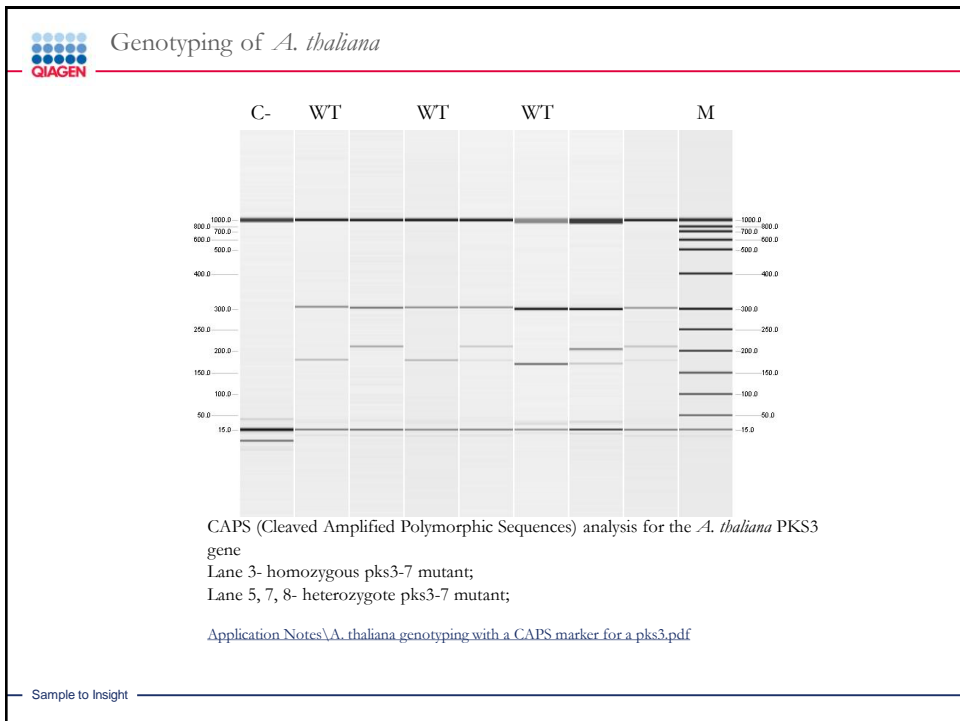
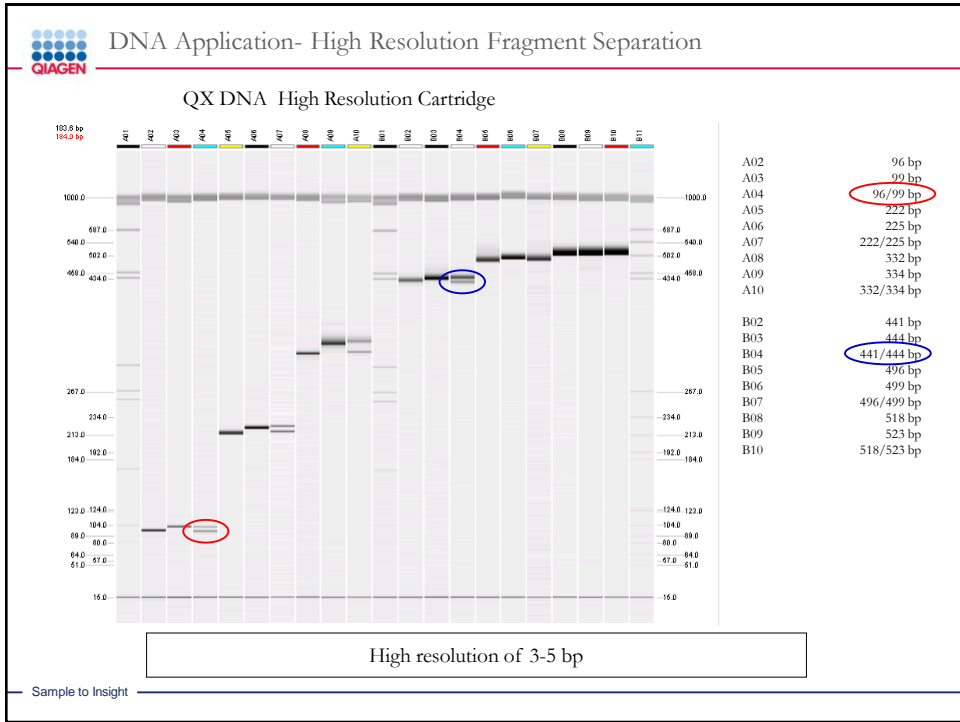


Animal Genotyping

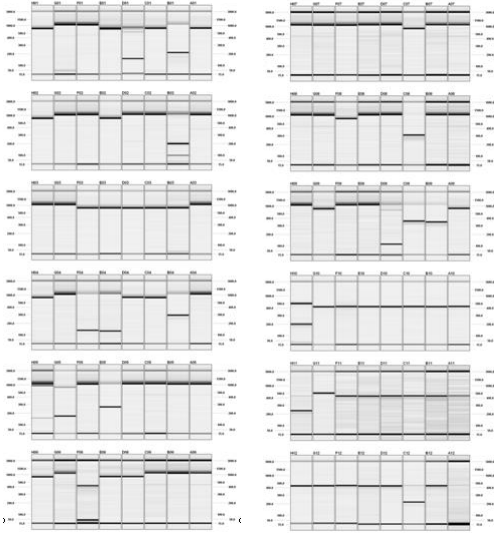


Samples of mice genotyping showing control fragment of myosin- 250bp and a fragment specific for Cre gene - 320bp. Analysis was done on a Screening cartridge with AL320 method, QX DNA size marker 50bp-800bp and 15bp/1000bp alignment maker. Lanes 1,4 and 6 show Cre specific fragment of 320bp indicating the presence of a Cre gene.
 Mice that showed positive for a Cre gene will be used for further breeding.

Sample to Insight



HLA typing



QIAxcel Fast Analysis kit

Alignment marker 15bp-3kb
DNA size marker 50bp-1.5kb
DM150 method:
Separation: at 10 kV for 150 sec
Sample injection: at 10 kV for 10 sec

[Application Notes\Safe and rapid HLA typing using the QIAxcel® system.pdf](#)

Sample to Insight

Application data: multiplex SNP analysis

OPEN ACCESS Freely available online

PLOS ONE

A Novel Multiplex Tetra-Primer ARMS-PCR for the Simultaneous Genotyping of Six Single Nucleotide Polymorphisms Associated with Female Cancers

Chen Zhang^{1*}, Ying Liu^{1,2*}, Brian Z. Ring³, Kai Nie¹, Mengjie Yang¹, Miao Wang¹, Hongwei Shen¹, Xiyang Wu², Xuejun Ma^{1*}

April 2013 | Volume 8 | Issue 4 | e62126

Key factors influencing multiplex PCR:

- Buffer
- Enzyme
- Primers
- Template

↓

QIAGEN multiplex PCR kit

- ✓ No optimization required
- ✓ Ensure high specificity and sensitivity with a built-in hot start
- ✓ Cost-effective

- Reported a novel multiplex T-ARMS-PCR method for genotyping six SNPs in a single reaction.
- **QIAGEN multiplex PCR kit** was used for multiplex PCR amplification
- **QIAxcel advanced** was used for separating and detecting the multiplex PCR products
- Of the 186 samples, up to 11 amplicons can be produced in one single PCR and separated by capillary electrophoresis.
- The multiplex T-ARMS-PCR genotyping results were consistent with sequencing results
- Reliable, fast, and easy to perform

<http://www.ncbi.nlm.nih.gov/pubmed/24527777>

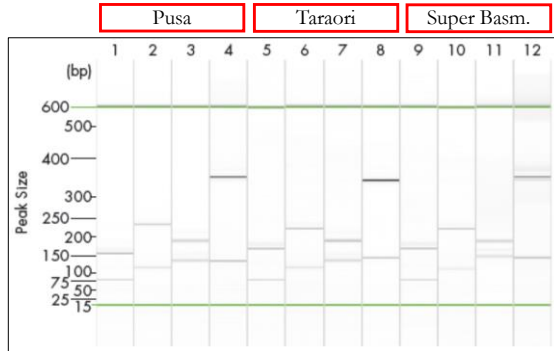
Sample to Insight



Basmati rice genotyping

Prevention of food fraud:

Authentication of Basmati rice using SSR-PCR (DNA Fingerprinting)



Authentication of Basmati rice using SSR-PCR and QIAxcel® Advanced

R. Cassier
ADGENE Laboratoire, Thury Harcourt,
France
(Available as an application note on the
QIAGEN website)

Duplex PCR and capillary electrophoresis of 3 basmati rice varieties.

Lanes 1-4: Pusa. Lanes 5-8: Taraori. Lanes 9-12: Super Basmati.

The simple sequence repeat (SSR) markers were:

1.:RM1+72, 2.:RM44+55, 3.:RM202+241 and 4.:RM171+348.

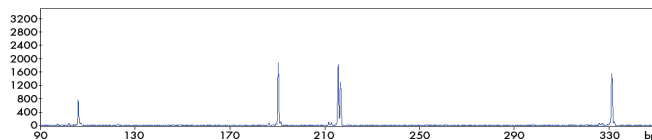
Sample to Insight



Genotyping background - Microsatellites

More general term: **V**ariable **N**umber of **T**andem **R**epeats (VNTRs)

- Repetitive sequences in coding or non-coding regions of the genome
 - Forensics/paternity testing: only non-coding regions determined
- Microsatellites
 - Synonymous: Short Tandem Repeats (STRs), Simple Sequence Repeats (SSRs)
 - Length: 2-6 bp, 10 to 100 repeats
- Minisatellites
 - Length: 10-100 bp, 4 to 40 repeats

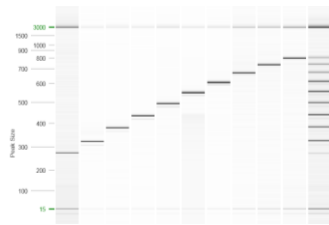


Microsatellites are used for paternity testing, population genetics, linkage analysis, and as indicator of disease

Sample to Insight



MIRU-VNTR for *M. tuberculosis* genotyping



Example of the allelic ladder for locus Mtub21.
Lanes 1-10: individual alleles, Lane 11: allelic ladder

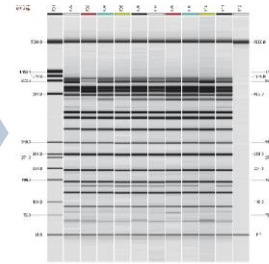
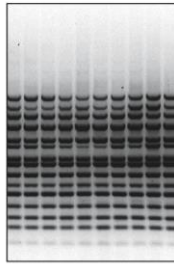


VNTR Repeat	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7	Sample 8	Sample 9	Sample 10	Allelic ladder
1	no	no	no	no	no	no	no	no	no	no	yes
2	no	no	no	no	no	no	no	no	no	no	yes
3	yes	yes	no	yes	no	no	yes	no	no	no	yes
4	no	no	yes	no	no	yes	no	yes	yes	yes	yes
5	no	no	no	no	yes	no	no	no	no	no	yes
6	no	no	no	no	no	no	no	no	no	no	yes
7	no	no	no	no	no	no	no	no	no	no	yes

Gel image of the analysis of 10 samples on the Q4156 locus. B. The corresponding table with Peak Calling Results is shown

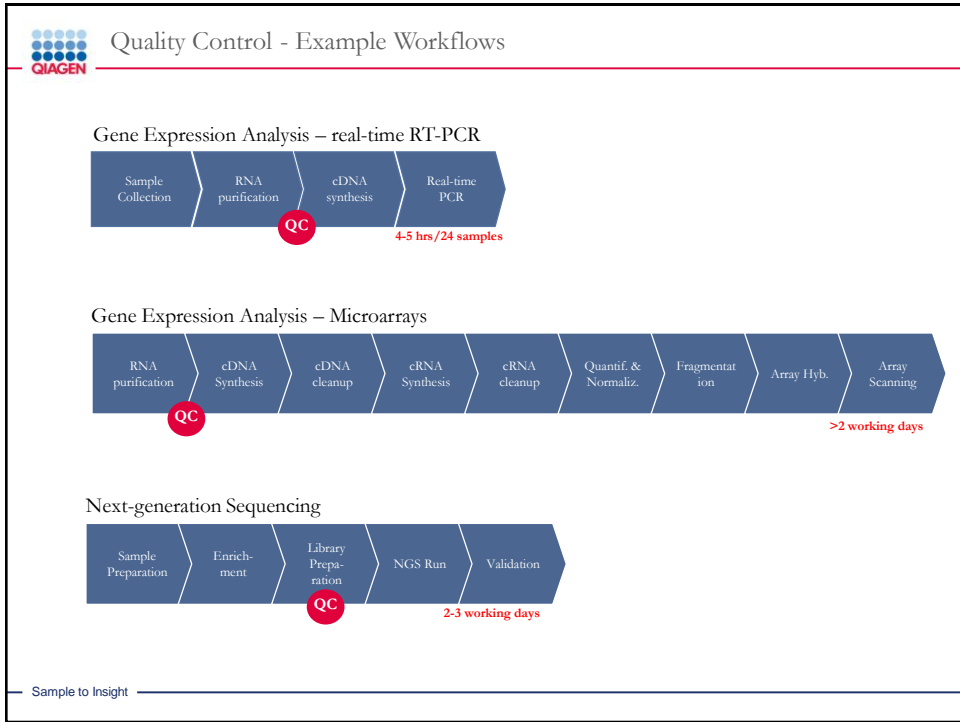


QIAxcel Advanced addresses detection challenges in genotyping



QIAxcel Advanced meets requirements for:

- High performances genotyping (resolution, limit of detection)
- Cost reduction
- Short time to result
- From low to high throughput requirements
- Convenience, ease of use, safety
- Standardization of results in a format easily shared between different laboratories
- Safe data output and storage



RNA QC


		Nanodrop	Gels	Qubit	μFluidics/CE
A260/280	Yield, protein contaminants	V		(V)	
A260/230	Salts & other contaminants*	V			
Quantification	Yield	V	(V)	V	V
Degradation	Sample integrity		V		V
Size range			V		V

There is no one-for-all solution !

Selection criteria:

- Costs/analysis
- Speed
- Hands-on time
- Sensitivity
- Sample consumption

Sample to Insight



QIAXCEL ScreenGel - RIS

Analysis | Report | Peak Calling | Properties

Peak Calling Instruction

Default RNA QC Save as ...

▼ Peaks of Interest

Include size marker samples
 Find centered peak in interval
 Find highest peak in interval

Name	Position	Tot. [%]
18 S	1869 nt	15.00
28 S	5025 nt	15.00

Add
Delete

Name:

Position: Size: Tolerance: %

OK
Cancel

▼ Calculated Columns

Total Concentration ("Total Conc.")
 RNA Integrity Score ("RIS")

Ref. Peak:

Ratio Normalized Area ("Ratio")

Ratio: /


Relative Abundance

What it is:

RNA Integrity Score – "RIS"

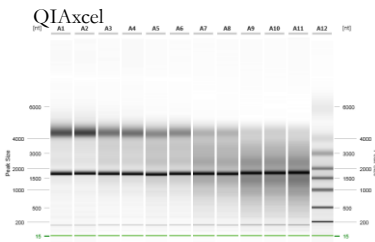
- Classifying eukaryotic RNA (only) data with a single value between 1 to 10
- Newly designed by QIAGEN
- Developed with a large set of RNA samples with different stages of degradation
- Unknown data from eukaryote species can be matched with these algorithm → RIS

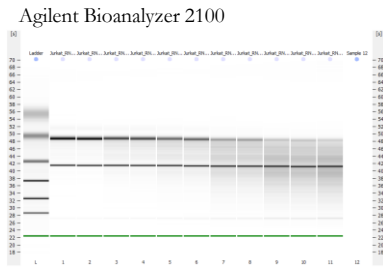
Sample to Insight



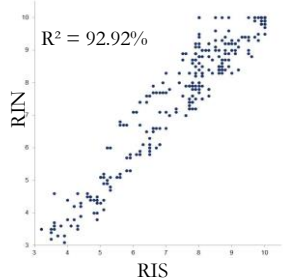
RNA Quality Control - RNA Integrity Score (RIS)

Comparable results to Agilent Bioanalyzer 2100





Lane	Name	RIS	RIN
A1	Jurkat_1	10.0	9.9
A2	Jurkat_1	10.0	9.9
A3	Jurkat_2	9.1	9.2
A4	Jurkat_2	9.1	9.2
A5	Jurkat_3	8.6	8.2
A6	Jurkat_3	8.9	8.2
A7	Jurkat_4	6.6	6.5
A8	Jurkat_4	6.7	6.5
A9	Jurkat_5	5.5	5.1
A6	Jurkat_3	5.6	5.1
A11	Jurkat_6	5.1	4.4



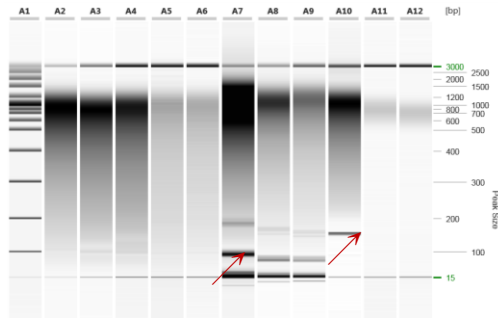
$R^2 = 92.92\%$

Sample to Insight



Illumina HiSeq - NGS library QC with QIAxcel

Different dilutions of the same library after shearing, adaptor ligation, amplification and size selection



Lane	Library	Conc. (ng/μl)
A1	DNA Size Marker	10
A2	Covaris - 8μl	18.93
A3	Covaris - 4μl	8.68
A4	Covaris - 2μl	4.6
A5	Covaris - 1μl	1.51
A6	Covaris - 0.5μl	1.47
A7	Adaptor ligation - 8μl	18.2
A8	Adaptor ligation - 4μl	6.89
A9	Adaptor ligation - 2μl	3.19
A10	PCR - 8μl	5.15
A11	Size selection - 8μl	0.28
A12	Size selection - 4μl	0.26

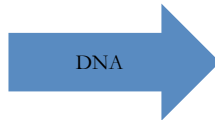
Arrows indicate the presence of adaptors and primer/dimers in the samples after ligation (7-9) and amplification (10).
Size selected samples with concentration of only 0.26ng/μl were detected.

Sample to Insight



The new QIAxcel world

Many old&new applications



- QIAxcel DNA Screening Kit**
- Analysis of single DNA fragments
 - Low resolution multiplex PCR DNA
 - Analysis of fragmented DNA and library construction QC -> NGS

- QIAxcel DNA High Resolution Kit**
- STR/Microsatellite (SSR)
 - RFLP
 - High Resolution Multiplex PCR
 - Large fragment analysis, gDNA

- QIAxcel Fast Analysis Kit**
- Fast analysis of single amplicons

New flexibility to analyse what you want



- QIAxcel RNA QC Kit v2.0**
- Quality check of total RNA, cRNA, fragmented RNA, small-RNA

Sample to Insight



Welcome to the next era in

qualitative and quantitative nucleic acid analysis



Fast time to results

Streamlined workflow with minimized analysis time

Safety and convenience

Using ready-to-use gel cartridges

High sensitivity and low detection limit

Cost efficiency and your precious samples are saved

Broad application range

Innovative gel chemistry for a range of applications

Sample to Insight



Questions?

Sample to Insight