Insta Q96®-6.0
LA1074

Real-Time PCR System

HIMEDIA
HiGenoMB®
Unzipping Genes

HIMEDIA®
For Life is Precious

Introduction

With a vision to redefine PCR based solutions, HiMedia Laboratories Pvt. Ltd. launched the Insta-Q Real-Time PCR Platform with its unique range of features making it an exclusive Real-Time PCR System in the market. Our **User-Friendly State of the Art** machine can measure amplification as it occurs, cycle by cycle, thus resulting in precise & accurate quantification.

The **Insta Q96® - 6.0, Real-Time PCR System** is a fully integrated quantitative PCR amplification, detection and data analysis platform. The latest design combines a thermal cycler, an advanced optical system with individual LED excitation source and an intuitive data analysis software. The **Gradient Feature** aids in easy assay optimization.

These robust machine is genuinely **Open Systems** – which enable the user to decide the choice of reagents and kits to be run. The machine come with **Factory Calibrated Filters**. Re-calibration is required only in case of major machine upgradations. A unique feature of the Insta Q96® - 6.0 is the qPCR optics available in a more flexible format. To get accurate results, the **Robotic Arm Scans Individual Well** which **Eliminates** the use of Passive Reference Dye - **ROX dye**.

The software is equipped to export the raw data in multiple formats such as **Excel, Images, Text, Pdf** thus allowing results to be viewed in common programs.

The sensitivity and specificity of the Insta-Q Series of instruments is impressive and will help the user to generate **Faster, Hassle-free and Reliable results** to achieve desired research goals.

Features

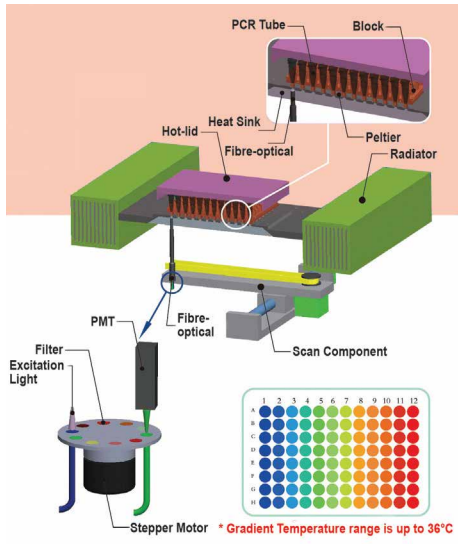
- Truly Open System [Compatible with Kits and Reagents of other companies].
- ROX independent Real-Time PCR system. Normalization with ROX dye not required.
- Customizable dye library to create new excitation/detection wavelength combinations in given range and hence future proof.
- User Friendly Software facilitates simple assay set up and data interpretation for Plus/minus assay utilizing Internal Positive Controls, comparative data analysis(Ct value), Standard curve, Relative Standard Curve, Gene expression analysis, Allelic Discriminations, Dye discrimination multicomponent algorithm.
- Auto Gain intensity function for fluorescence adjustments.
- 12 different gradient temperatures (1°C to 36°C gradient range).
- Wireless connectivity.
- Factory calibrated filters, no need of calibration after new dye added or in future.

Dye Library	
Channel Wavelength	**Dyes**
470nm – 525nm	FAM, SYBR, EvaGreen®
523nm – 564nm	HEX, JOE, TET, VIC, Cal Fluor® Gold 540 / Yakima Yellow
571nm – 612nm	ROX, TexRed, Cal Fluor® Red 610 / JUN
628nm – 692nm	CY5, Mustang Purple / Quasar 670 / Pulsar 650
678nm – 718nm	Cy5.5, Quasar 705
550nm – 585nm	TAMRA, NED, Cy3, ABY

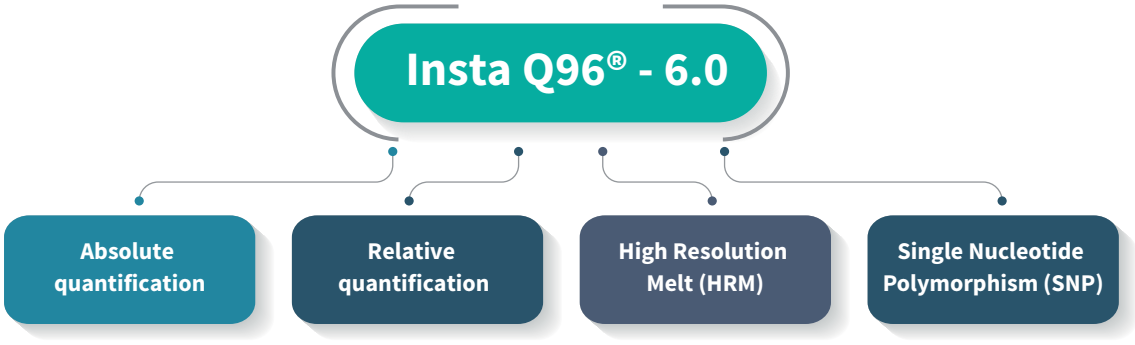
1. Innovative 3D Hotlid Design and Technology
2. 96 Wells High Throughput
3. Gradient facility
4. Well to well individual scanning
5. Optical fibre based Photo Multiplier Tube Technology for detection

Working Principle of the Machine

- Ferrotec Peltier technology used for thermal cycling during PCR assay.
- LED based excitation source with advanced fibre optic transmission technology for Sensitive and Reliable photoelectric detection system.
- Photo multiplier Tube (PMT) detects fluorescent emission.
- Stepper motor with robotic arm containing optical fibre used for individual well scanning.
- Scanning time period: 5.5 seconds for 96 wells.



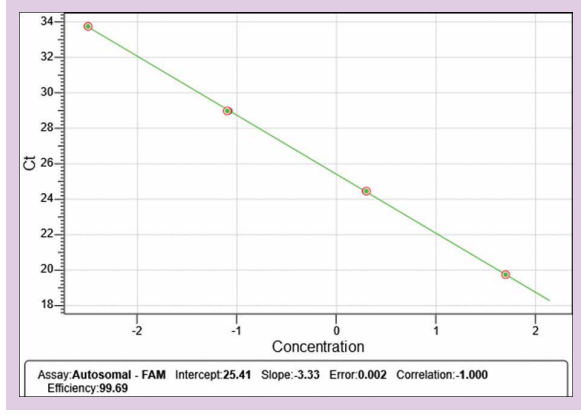
Analysis procedures supported by Insta-Q Series software



Absolute Quantification

- Absolute quantification is achieved by comparing the Ct values of the test samples to a standard curve.
- The result of the analysis is quantity of nucleic acid (copy number, unit mass) per given amount of sample (per cell, per ng of total RNA).
- Absolute quantitation uses serially diluted standards of known concentrations to generate a standard curve.
- Standard curve produces a linear relationship between Ct and initial amounts of total DNA or cDNA from RNA of the Gene of interest (GOI), allowing the determination of the concentration of unknowns based on their Ct values.
- The linearity is denoted by the R squared (r^2) value (r is Pearson Correlation Coefficient) and should be very close to 1 (> 0.985).
- The efficiency of both the standard curve and sample reactions should be between 90 and 110%.

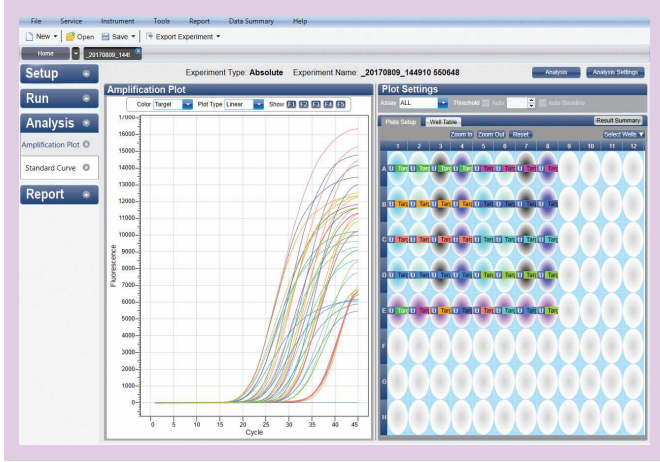
Standard Quantification Assay



Plotting a Standard Curve

- In absolute quantification, the quantity (e.g., copy number or unit mass) of the unknown sample is interpolated from a range of standards of known quantity.
- To construct a standard curve, a template with known concentration is required.
- Dilution of this template is then performed and these dilutions serve as the standards. The unknown test samples are assayed with the standards in the same experimental run.
- The standard curve constructed from the diluted standard template can then be used to determine the target quantity in the unknown sample by interpolation, similarly to using molecular size standards to determine the molecular size of an unknown DNA band on an agarose gel.
- Standard curve can be imported from previous run experiments. It can be imported only in standard curve assays. Hence standards need not be run every time.

Software Analysis Interface



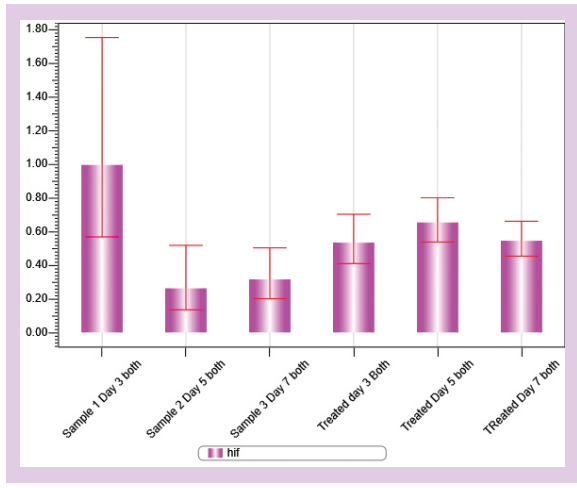
Relative Quantification

- Let's get the nomenclature settled.
  - The gene of interest whose expression is getting determined is the target gene.
  - The housekeeping gene whose expression is unregulated is called the reference gene.
  - The sample (or group of samples) being used as a control is the calibrator sample.
  - Finally, the sample (or group) that is being treated or tested for differences is the test sample.
  - The ratio of the target gene expression in the test sample over the calibrator sample is interchangeably called the expression fold change or relative gene expression.
- Amplification efficiency of the reaction is an important consideration when performing relative quantitation.
- Past methods of calculating gene expression have assumed the amplification efficiency of the reaction is ideal, or 1.
- Actual amplification efficiency values for a particular reaction can be established via a standard curve measurement during assay design, and multiple standard curves should be run to verify that this efficiency measurement is reproducible.
- Although absolute quantification can be useful in determining absolute quantities of target, the majority of scientific questions regarding gene expression can be accurately and reproducibly answered by measuring the relative concentration of the GOI in unknown samples.
- Differences in Ct value between an unknown sample and reference sample are expressed as fold- changes (i.e., up- or down- regulated) relative to the reference sample and thereby the results are expressed as a target/reference ratio.

Features

- Automated calculation of ΔCt and ΔΔCt values by software.
- Exact and final RQ values provided by software at the end of the assay.
- Easy and hassle free transfer of data to Excel or Word format on a Single Click.
- Option to import Standard curves run from other experiments in RQ assays as well.
- Normalization to multiple endogenous controls.

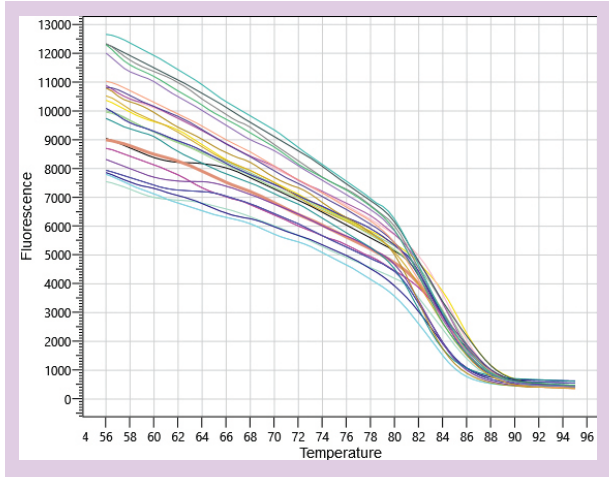
Relative Quantification



High-Resolution Melt Analysis

- The principle of HRM is the same as a Low-Resolution Melt curve, except that the temperature difference between each fluorescence reading is reduced.
- During a Low-Resolution Melt curve analysis, the temperature increases are typically in 0.5 °C steps, but for HRM this is reduced to 0.008 - 0.2 °C increments.
- This allows a much more detailed analysis of the melting behaviour.
- HRM sensitivity and reliability has been improved with the use of a variety of new dsDNA intercalating dyes viz., - LCGreen (R), SYTO9, EvaGreen (R), Chromofy and BEBO.

HRM data



Features

- HRM assays can be run using the same software. Saves the trouble of learning and procurring a new software.
- No external calibration required for running HRM assays.

- Cost effective compared to other genotyping technologies such as sequencing and TaqMan SNP typing.
- Fast and able to accurately genotype huge numbers of samples in rapid time.
- Fast and high-throughput analysis of post-PCR of genetic mutations or variance in nucleic acid sequences.
- With a good quality, HRM assay powerful genotyping can be performed by non-geneticists in any laboratory with access to an HRM capable Real-Time PCR machine.

HRM has renewed interest in the utility of DNA melting for a wide range of uses, including:

- Mutation discovery (gene scanning)
- Species identification
- Screening for loss of heterozygosity
- Somatic acquired mutation ratios
- DNA fingerprinting
- HLA compatibility typing
- SNP genotyping
- Association (case/control) studies
- Characterization of haplotype blocks
- Allelic prevalence in a population
- DNA methylation analysis
- Identification of candidate predisposition genes
- DNA mapping

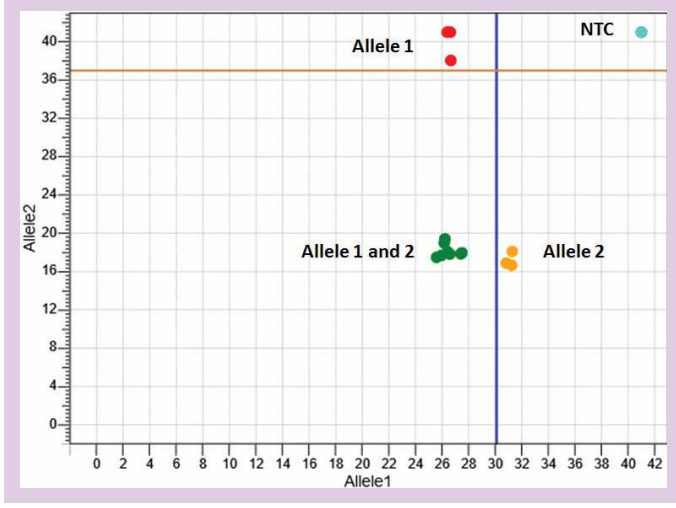
Single Nucleotide Polymorphism (SNP)

- A Single Nucleotide Polymorphism or SNP is a DNA sequence variation occurring when a single nucleotide in the genome differs between members of a species or two allele of a gene.
- Probe based SNP Genotyping Assays provide a highly flexible technology for detection of polymorphisms within any genome.
- Probe Assays have a simple workflow and provide a quick way to generate genotyping data.

Features

- Auto Call and Manual call options
- Easy and colour coded Scatter plot based on SNP assay analysis

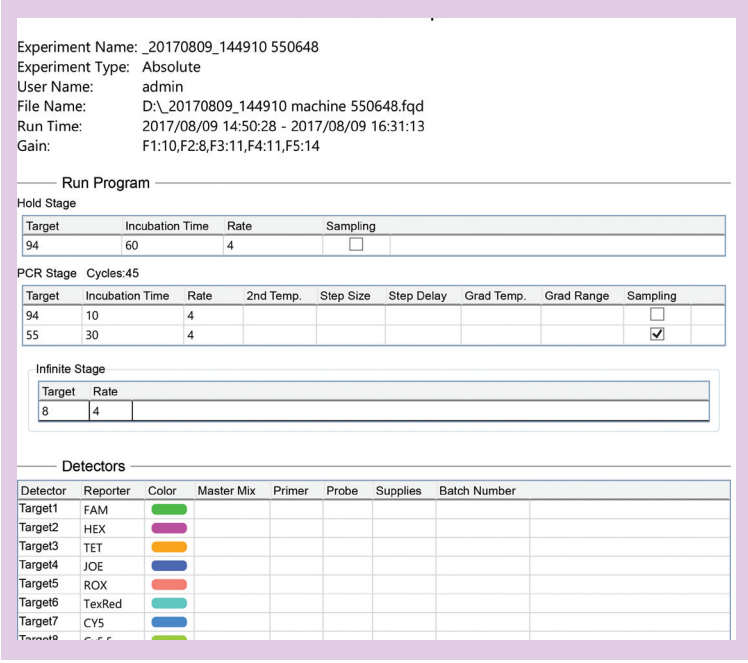
SNP



Report Generation

- Generate automatic assay reports at the end of PCR run.
- Customize assay reports as per requirement using built in report editor
- All in one consolidated report for
  - Accurate & concised experimental details
  - Basic experiment information
  - Experiment process
  - Plate diagram
  - Amplification curve
  - Result table with Ct values

Consolidated Report / QC Report



Experiment Name: _20170809_144910 550648
Experiment Type: Absolute
User Name: admin
File Name: D:_20170809_144910 machine 550648.fqd
Run Time: 2017/08/09 14:50:28 - 2017/08/09 16:31:13
Gain: F1:10,F2:8,F3:11,F4:11,F5:14

Run Program

Hold Stage

Target	Incubation Time	Rate	Sampling
94	60	4	☐

PCR Stage Cycles:45

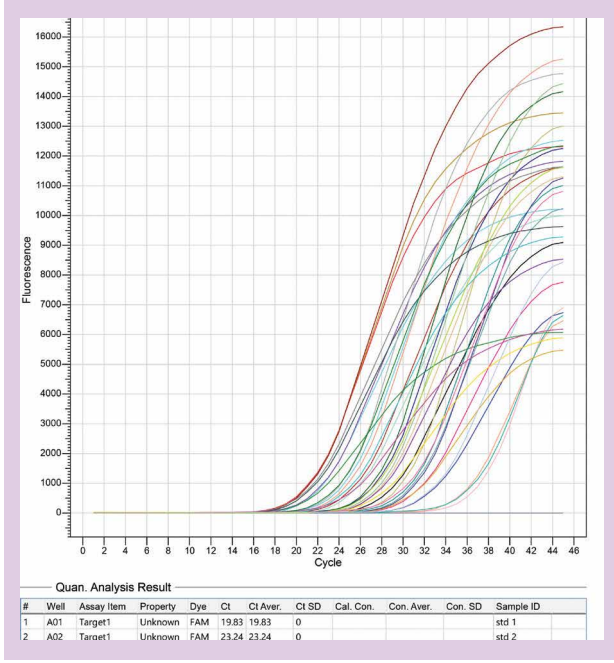
Target	Incubation Time	Rate	2nd Temp.	Step Size	Step Delay	Grad Temp.	Grad Range	Sampling
94	10	4						☐
55	30	4						☑

Infinite Stage

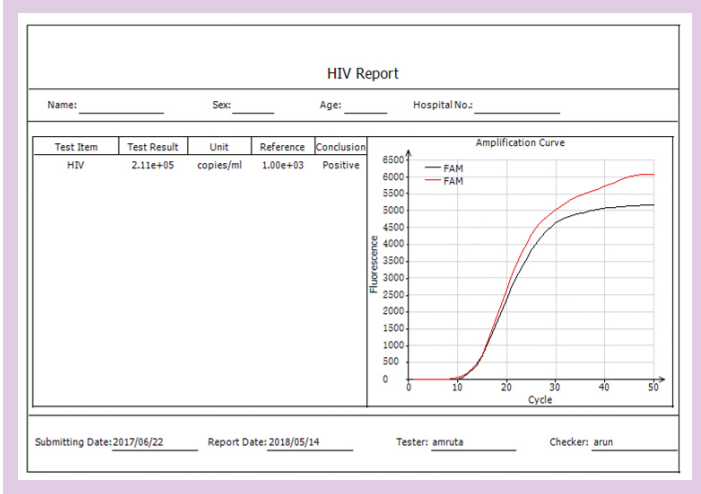
Target	Rate
8	4

Detectors

Detector	Reporter	Color	Master Mix	Primer	Probe	Supplies	Batch Number
Target1	FAM						
Target2	HEX						
Target3	TET						
Target4	JOE						
Target5	ROX						
Target6	TexRed						
Target7	CY5						



Report Template



HIV Report

Name: Sex: Age: Hospital No.:

Test Item	Test Result	Unit	Reference	Conclusion
HIV	2.11e+05	copies/ml	1.00e+03	Positive

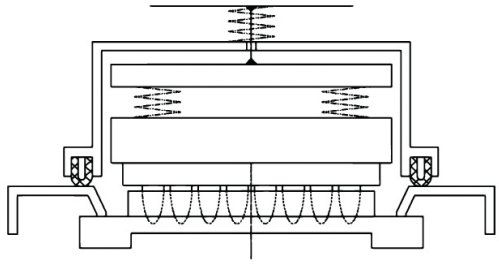
Amplification Curve
FAM
FAM
Fluorescence
Cycle

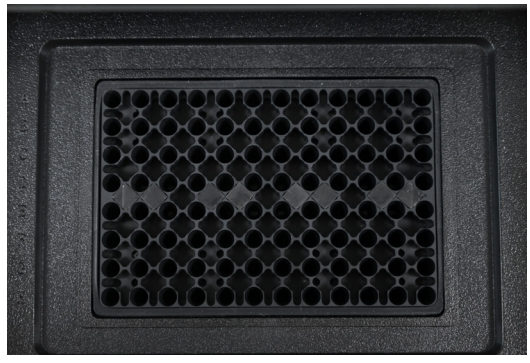
Submitting Date: 2017/06/22 Report Date: 2018/05/14 Tester: amruta Checker: arun

Product Hardware

Hot Lid Technology

- Innovative 3D Hot Lid. It consists of a Pressure Box which exerts uniform pressure on the plate module through 6 compression springs.
- Obtain perfect sealing and avoid sample evaporation or overloading due to lid imbalance.
- The aluminium plate fits snugly on the PCR plate with a certain amount of pressure. This airtight seal prevents the cold air and hot air connection on the module. Thus, the module bears dynamic temperature uniformity.

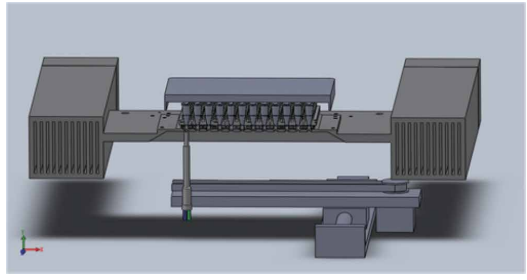




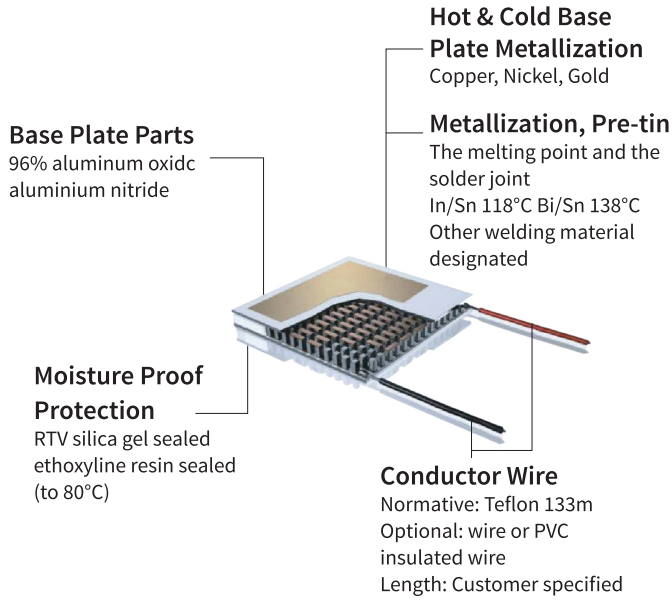
Unique PMT scanning system

Bottom scanning technology for well-to-well individual scanning.

- Precise optical path system combined with sensitive PMT system detects fluorescence activity accurate, sensitive & reliable.
- The probe has a long-life LED light source which requires no maintenance.

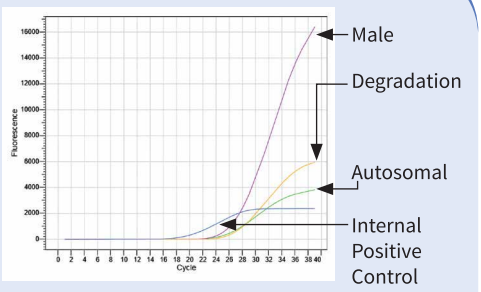


- The new model of Thermo Electric (TE) base plate (72 series) has a longer life span.
- The new adhesive technology used with the advanced semi-conductor substrate:
  i. Improves the performance of the TE base plate under highly humid conditions.
  ii. Greatly improves the life span of the TE base plate

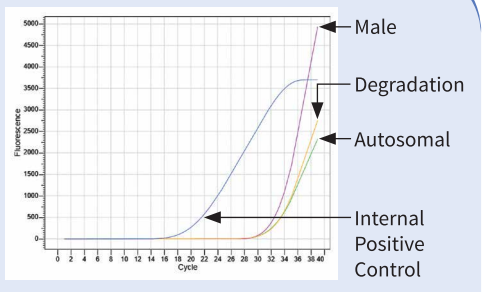


Graphical Representation of Data Obtained Using LA1074

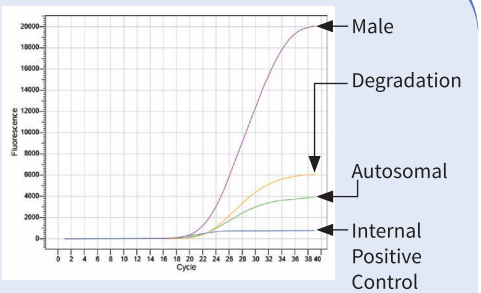
Hair DNA



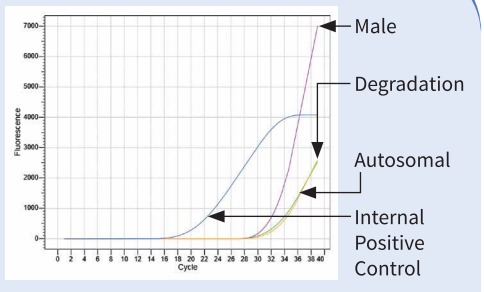
Tooth DNA



Muscle tissue (foetus)

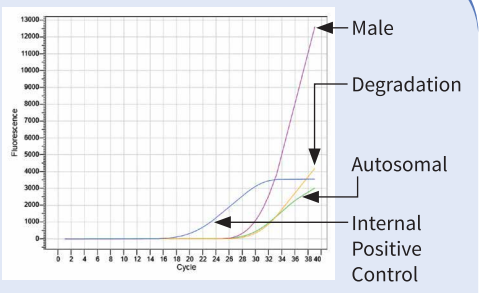


Bone DNA

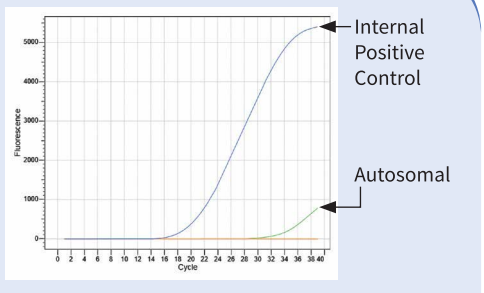


Insta-Q96® 6.0 (LA1074)
Real-Time PCR System

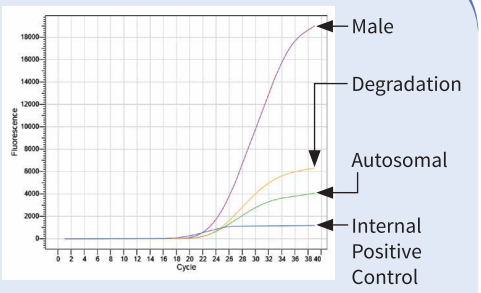
Blood-stained fabric



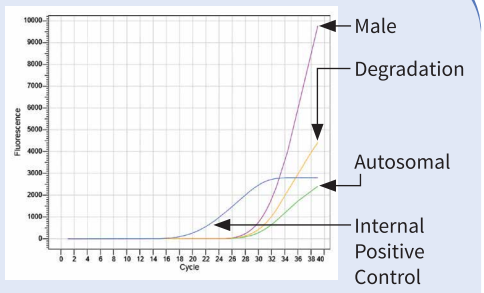
Bone DNA



Nail clip



Blood DNA



Disclaimer: The images/graphs presented here are for representation purposes only and are obtained by using a standard human DNA quantification kit.

HiGenoMB® Forensic-ID DNA Quantification Software (MBES01)

HiMedia's HiGenoMB® Forensic-ID DNA Quantification Software is a user friendly, Web-Based application developed specifically to assist forensic experts who work on Human Identification (HID). **HiMedia's HiGenoMB® Forensic-ID DNA Quantification Software** is Novel and First open software developed and designed for use with **Insta-Q96® 6.0 (LA1074)**. The software supports all commercially available Human DNA Quantification Kits.

Features

- The **HiMedia's HiGenoMB® Forensic-ID DNA Quantification Software** is designed to perform Real-Time analysis without any data alteration.
- Based on the kit processed in **Insta-Q96® 6.0 (LA1074)**, our software automatically gives information about the **Quantity of DNA** and has additional built-in features to calculate the **Degradation Index (sample quality assessment), Human Male:Female Mixtures or Ratio, Sample Inhibition with IPC Shift and other parameters**.
- The **HiMedia's HiGenoMB® Forensic-ID DNA Quantification Software** also helps to prepare a dilution series to setup various downstream STR experiments.
- The final values are presented using Dynamic Report Generation Algorithm in non-editable reporting format (.pdf) with IP based Time Stamping.
- The software has Secure User Access, which is encrypted using advance cryptography with Auto Logout Facility.

HiGenoMB® Primer and Probe Design Software (MBES02)

Features

- Design primers or assays for PCR, qPCR, or sequencing (any species).
- Design algorithm includes multiple checks to reduce primer-dimer formation.
- Provides flexible sequence entry and batch entries.
- Licensed Software

HiGenoMB® Forensic-ID DNA Quantification Software	MBES01-1LC	1lc	On request
HiGenoMB® Primer and Probe Design Software	MBES02-1LC	1lc	On request

HiGenoMB® HIMEDIA
Unzipping Genes

Human Identification

Human DNA Quantification Kits are required in forensic laboratories for simultaneous quantitative and qualitative assessment of total human and human male DNA in a single, highly sensitive real-time PCR reaction. HiMedia's Insta-Q96® series validated for the latest forensic human & male DNA Quantification Kits helps to deliver accurate, sensitive and specific results that work together with the HiGenoMB® Forensic-ID DNA Quantification Software to enable informative and integrated workflow decisions.

COMPATIBILITY CHART

Parameters	Quantifiler™ Human DNA Quantification Kit *	Quantifiler™ Y Human DNA Quantification Kit *	Quantifiler™ Duo DNA Quantification Kit *	Quantifiler™ HP DNA Quantification Kit *	Quantifiler™ Trio DNA Quantification Kit *	PowerQuant® System Kit*
Validated real-time PCR instrument(s)	Insta Q96® Insta Q96® Plus Insta Q96® - 6.0	Insta Q96® Insta Q96® Plus Insta Q96® - 6.0	Insta Q96® - 6.0	Insta Q96® - 6.0	Insta Q96® - 6.0	Insta Q96® - 6.0
Channels to be used	FAM – Human VIC – IPC ROX – Passive Reference Dye	FAM – Human VIC – IPC ROX – Passive Reference Dye	FAM – Male VIC – Human NED – IPC ROX – Passive Reference Dye	VIC – Small Autosomal ROX – Large autosomal NED – IPC Cy5 – Passive Reference Dye	FAM – Male VIC – Small Autosomal NED – Large autosomal ROX – IPC Cy5 – Passive Reference Dye	FAM – Human autosomal VIC – Y chromosomal Cy5 – Degradation TAMRA – Internal Positive Control ROX – Passive Reference Dye
Cycling time	~90 min	~90 min	~90 min	~60 min	~60 min	~60 min
Fully integrated system with instrument, data collection, and analysis software	Yes	Yes	Yes	Yes	Yes	Yes
Compatible analysis software	HiGenoMB® Forensic-ID DNA Quantification Software					
Quality/ degradation index	NA	NA	NA	Yes	Yes	Yes
Human Male: Female Ratio & Sample Inhibitions	NA	NA	Yes	NA	Yes	Yes
Calculation for Dilution and reaction set up in HID kits for downstream application	Yes	Yes	Yes	Yes	Yes	Yes

* HiGenoMB® Forensic-ID DNA Quantification Software is compatible with Quantifiler™ kits from ABI and PowerQuant® System kits from Promega

Products For Forensic Applications At-A-Glance

Code	Product Name
Manual Nucleic Acid Purification Kits	
MB524	HiPurA® Forensic Sample Genomic DNA Purification Kit
MB525	HiPurA® Bone DNA Purification Kit
MB531	HiPurA® Buccal DNA Purification Kit
MB504	HiPurA® Blood Genomic DNA Miniprep Purification Kit
MB554	HiPurA® Multi-Sample DNA Purification Kit
MB542	HiPurA® Soil DNA Purification Kit
MB578	HiPurA® Quick Bone DNA Purification Kit
MB580	HiPurA® Forensic Multi-Sample DNA Purification Kit
MB522	HiPurA® Sperm Genomic DNA Purification Kit
MB573	HiPurA® Urine DNA Purification Kit
MB544	HiPurA® Stool DNA Purification Kit
Magnetic Bead Based Extraction Kits	
MB554MPF32200	HiPurA® Multi sample Pre-Filled Plates for Insta NX® Mag32
MB554MPF96-200	HiPurA® Multi sample Pre-Filled Plates for Insta NX® Mag96
MB554PC16200	HiPurA® Pre- Filled cartridges for DNA Extraction
Insta NX® Extraction Kits for Forensic Application	
MBIN012	Insta NX® Bone DNA Purification Kit
MBIN021	Insta NX® Blood RNA Purification Kit
MBIN001	Insta NX® Blood Genomic DNA Purification Kit
MBIN003	Insta NX® Tissue Genomic DNA Purification Kit
MBIN020	Insta NX® Forensic Multi-Sample DNA Purification Kit
MBIN017	Insta NX® Frozen Blood DNA Purification Kit
InstaDNA™ Cards/Kit	
MBT126	InstaDNA™ card
MBT137	InstaDNA™ Twin Card
MBT121	InstaDNA™ Quadricard
MBT109	InstaDNA™ Kit
MBT145	InstaDNA™ Twin Card Kit
MBT158	InstaDNA™ Quadricard Kit
Identification Kits	
ML189	Blood Identifier Kit
ML200	Semen Identifier Kit
ML201	Crime Scene Identification Kit
ML214	Crime Scene Investigation kit (For sexual assault cases)
Point Of Care Testing (POCT)	
MBLF002	Insta-LF™ Human Blood Point of Care Detection Kit
Forensic Buffers	
ML127	Stain Extraction Buffer
ML128	Forensic Buffer
ML203	1M Sodium Chloride
ML204	1M Sucrose
ML205	1M DTT
PCR Kits	
MBPCR143	Hi-PCR® Horse Probe PCR kit
MBPCR184	Hi-PCR® Cow Detection Kit (Real-Time Probe Based PCR)
MBPCR185	Hi-PCR® Buffalo Detection Kit (Real-Time Probe Based PCR)
MBPCR186	Hi-PCR® Cattle Sex Determination Kit (Real-Time Probe Based PCR)
MBPCR210	Hi-PCR® Cow-Buffalo Detection Kit (Real-Time Probe Based PCR)
Software	
MBES01	HiGenoMB® Forensic-ID DNA Quantification Software
MBES02	HiGenoMB® Primer and Probe Design Software

Consumables For Real-Time PCR

PCR Tubes

CG281	PCR Tubes, Flat lid
CG282	PCR Tubes, Flat lid
CG282E	PCR Tube, Flat Lid
PW1255	PCR Tubes, Thin walled

PCR Blocks

PR3	PCR Blocks (Semi-skirt)
PR5	PCR Blocks (Non-skirt)
PR19	PCR Blocks (Non-skirt)

Premium Grade Barrier Tips

LA749A	Max capacity 10 µL
LA750A	Max capacity 20 µL
LA751A	Max capacity 200 µL
LA859A	Max capacity 1000 µL

Sealing Films for PCR Blocks

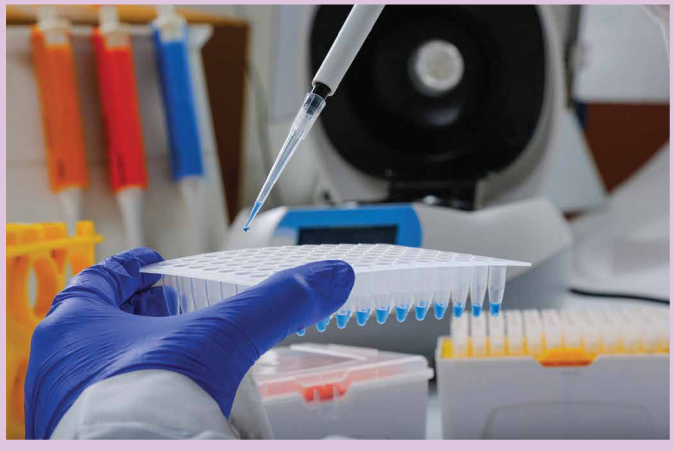
PR18	Optical Sealing Film 96 well PCR plate
PR20	Aluminium Sealing Film (for storage)
PR21	Polypropylene Sealing Film

PCR Strips

PR12	8-Strip PCR Tube with dome cap – Clear
PR14	8-Strip PCR Tube without cap – Clear
PR15	8-Strip PCR Tube Flat caps – Clear
PR16	8-Strip optically clear Dome caps for Real-Time PCR
PR17	8-Strip tubes & optically clear flat caps for Real-Time PCR
PR23	8-Strip PCR tubes & optically clear with attached flat caps for Real-Time PCR

Pipettes

LA611	Varivol II Micropipette-10 (Capacity : 0.5 to 10 µL)
LA617	Varivol II Micropipette-20 (Capacity : 2 to 20 µL)
LA618	Varivol II Micropipette-200 (Capacity : 20 to 200 µL)
LA955	µPet Autoclavable Micropipette (Capacity: 0.5 - 10 µL)
LA956	µPet Autoclavable Micropipette (Capacity: 2 - 20 µL)
LA959	µPet Autoclavable Micropipette (Capacity: 20 - 200 µL)



Technical Parameters of the Product

Product Name	Insta-Q96® - 6.0
Product Code	**LA1074**
No. of channels	6
Multiplexing	6 Color
Sample Capacity	96x0.2 mL Well PCR plate/ tubes, 12x8 (0.2 mL) Strips , ***optical clear bottom***
Dynamic Range	1~10^{10} Copies
Excitation Wavelength	300-800nm
Emission Wavelength	500-800nm
Detected Flourescence	F1: FAM, SYBR F2: HEX, TET, VIC, JOE, NIC F3: ROX, TEXAS-RED F4: CY5 F5: CY5.5 F6: CY3, NED, TAMRA
Passive reference dye	**ROX or other not required (optional)**
Block Temp. Range	4~105°C (Minimum Increment 0.1°C) Soak Low Temperature, Conservation Function
Heating / Cooling Rate	4.0°C/s (max)
Temp. Control Accuracy	≤ ± 0.1°C
Temp. Fluctuation	≤ ± 0.1°C
Temp. Uniformity	≤ ± 0.3°C
Temp. Control Mode	Block / Tube Simulation Mode (Automatic Control Based On Sample Volume)
Sample Volume Range	5~100 µL
Gradient Temp. Range	1~36°C
Hot-Lid Temp. Range	30~110°C (Adjustable Default 105°C), **Automatic Hot-Lid**
Flourescence Detection Repeatability	Within 5%
Scan Mode	Entire Plate or Designated Line
Run Time	Max 20 Segments for each Program, Max 99 Cycles
Operation Mode	Continuous
Scan Period	5.5 seconds
Feature Function	• Absolute Quantification • **Automatic Data Analysis** • Melt Curve • Genotyping • Gradient • Correction • Customized Parameters • Relative Quantification • Multi-Channel Crosstalk Correction • HRM • SNP Analysis • Background • **Automatic Gain** • **No passive reference dye required** • Compatible with latest forensic human/male DNA testing quantitation kits
Operating System	Microsoft: Windows 8/ Windows 10, Software: Excel 2007, 2010, 2013 and Office 365
PC Configuration	Memory: 4GB RAM, Hard Disk: 500GB, CPU: Intel i3 & latest
Power Supply	100 - 240V ~ 50/60Hz 600W
Dimensions (LxWxH)/ Weight	410mm x 386mm x 352mm / 28 kg
Socket	USB Adapter, Bluetooth Adapter
Certifications	**CE-IVD & ANVISA Approved**

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