Life Science Equipment

unicorn

QuantaVue 6X
Real-time PCR

Real-Time qPCR System

The quantitative polymerase chain reaction (qPCR) is an established method for the highly sensitive detection and quantification of DNA or RNA. The measuring principle is based on fluorescent signals, which, cycle by cycle, capture the presence of the existing target sequence in real time. The key features of this detection method are outstanding high-performance optics as well as excellent temperature uniformity over 96 samples.

The QuantaVue product family guarantees well-founded real-time PCR results as it benefits from peerless temperature control precision in the sample block regardless of the number of samples used. The patented high-performance optics guarantee the outstanding homogeneous excitation and illumination of all individual samples. The Unicorn product family sets new standards of flexibility and precision – for all real-time PCR applications.

Technical Advantages

- Innovative optical detection design - Higher Sensitivity
- Unique real-time scanning technology - Less Optical Cross-talk
- Special hollow-out sample block - Faster & Uniform Thermal Conductivity
- Powerful & Easy-to-Use software - Intuitive Operation, Intelligent Analysis
- Plug & Play - Ex-factory Calibration, Maintenance-free

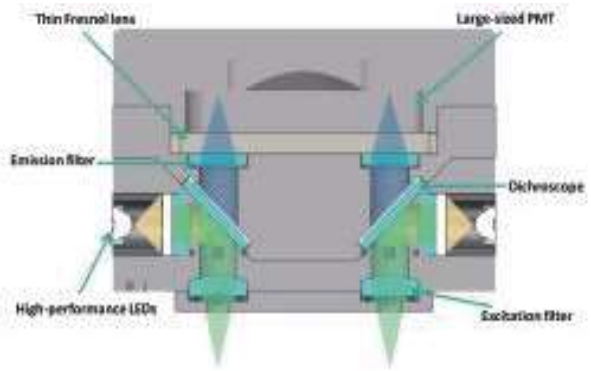
Applications

- Gene Expression Analysis
- Genotyping
- Gene Mutation Analysis
- Pathogen Detection & Quantification
- GMO Detection
- Protein Stability Screening
- miRNA Analysis

Product Features

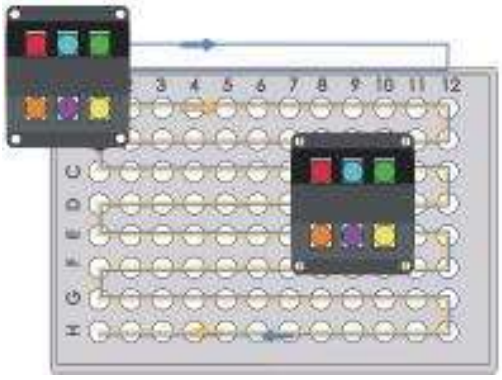
1. Innovative Optical Design--- *Higher Sensitivity, Less Cross-talk*

As for the core detector, the QuantaVue system further improves the detection sensitivity by using Fresnel lens combined with large area PMT, a patented new optical detection system. High quality PMT is used to ensure the detection sensitivity of the system. Meanwhile, it combines the advantages of thin Fresnel lens with short focal length to make the detector closer to the sample, thus effectively reducing the loss of optical signal as well as optical cross-talk between samples, and finally improves the detection sensitivity. Further, the matching of high frequency LED and PMT makes the detection time of each well and each fluorescent channel very short, so that effectively reducing fluorescence quenching.



The state of the art optics shuttle of the QuantaVue system

In terms of scanning methods, the Unicorn innovatively adopts the time-resolved well-by-well scanning technology. Through the setting of interlaced scanning heads, the problem of cross-talk between wells is significantly reduced from the perspective of spatial distribution. Meanwhile, high-precision scanning heads are used to detect signals of different fluorescent channels in different wells in time sequence (time-resolved), thus eliminating the cross-talk in principle.



Innovative time-resolved well-by-well scanning pattern

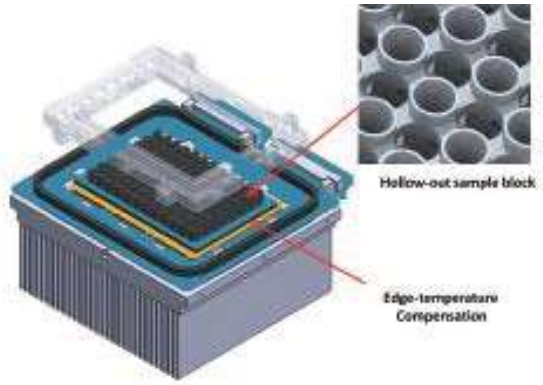
- High Sensitivity
- Less Cross-talk
- Fast Scan
- No Edge Effects
- Maintenance-free

2. Outstanding Thermal Cycler --- *Superior Uniformity, Precision, Speed*

The QuantaVue system uses the latest Peltier components through strict screening and testing for excellent performance and stable quality, the unique hollow-out thermal block which has higher ramp rates than standard blocks by reducing the overall mass of metal block, the edge temperature compensation technology based on thermal conductive carbon film and auxiliary heating plate for maintaining tight temperature uniformity throughout the entire sample plate, and the precise temperature control algorithm for fast time to target temperature and faster protocol run times.

As a result, the QuantaVue is distinguished by excellent temperature control precision and uniformity of ± 0.2 °C (over 96 wells) and first-class heating rates of up to 6 °C/s. In addition, to ensure the highest specificity for different assays, the device is equipped with a gradient function with a spread of up to 36 °C. This combination makes the entire system absolutely ideal for any real-time PCR application.

- QPCR in the proven 0.1 ml format with 96 wells
- Precise temperature control of ± 0.2 °C across the entire sample block
- Innovative thermal block with outstanding ramping rates of up to 6 °C/s
- Gradient function over 12 columns with a 36 °C spread



Special hollow-out thermal block for reliable, consistent results

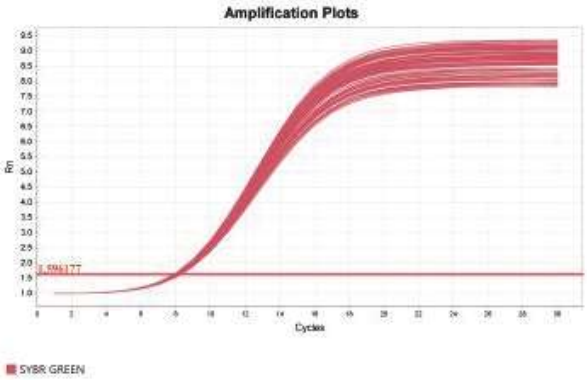
3. Impressive performance you can trust to generate high-quality data

The combination of innovative optics and unique thermal cycler with incomparably precise temperature control ensures ideal amplification results. This makes the QuantaVue a trustworthy partner for quantitative real-time PCR applications.

- Excellent reproducibility and 10-log dynamic range
- Precise quantification with 1.33-fold discrimination
- True Five-Target Multiplexing

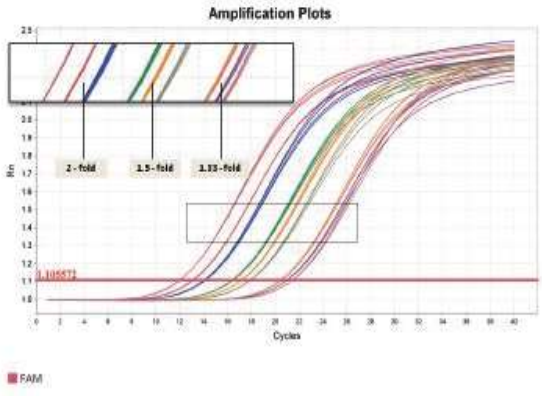
Excellent reproducibility for reliable results.

Amplification of a plasmid template in 96 wells. The mean ct value of 11.86 with a standard deviation of 0.05 was determined automatically, illustrating highly homogeneous amplification results obtained by the Unicorn.



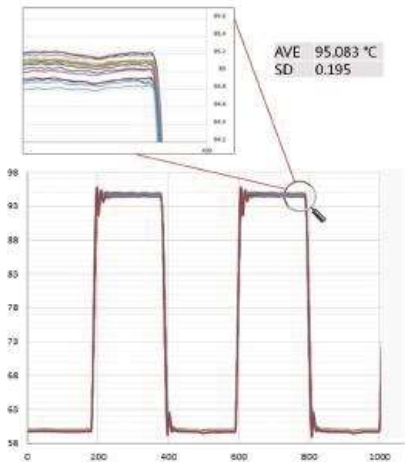
Sensitive detection and high-confidence target discrimination down to 1.33-fold.

Amplification of a plasmidtemplate in 96 wells. The mean ct value of 11.86 with a standard deviation of 0.05 was determined automatically, illustrating highly homogeneous amplification results obtained by the Unicorn.



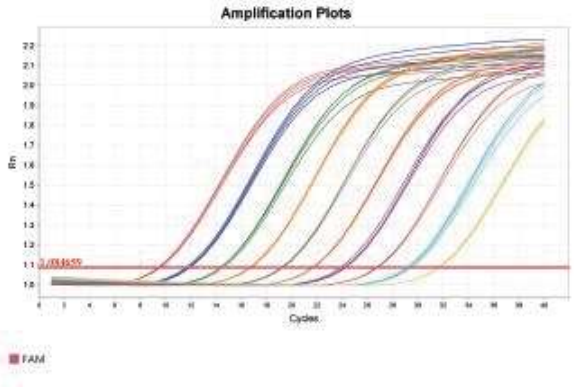
Superior Uniformity, Precision and Speed.

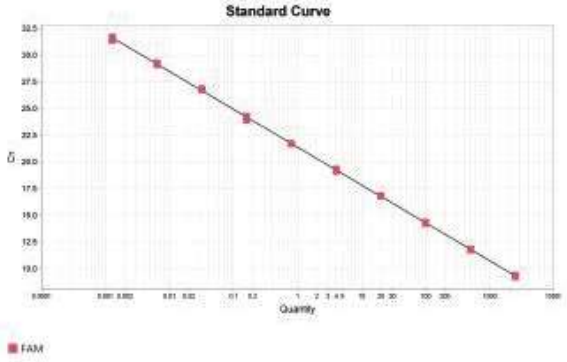
The QuantaVue thermal cycler exhibits high average ramp rates, rapid setting time, and tight thermal uniformity. This graph shows the temperature measured by probes in 20 wells across a sample block. The traces are nearly indistinguishable due to the tight uniformity with <±0.2℃ temperature fluctuation.



Broad linear dynamic range ensuring accurate quantification.

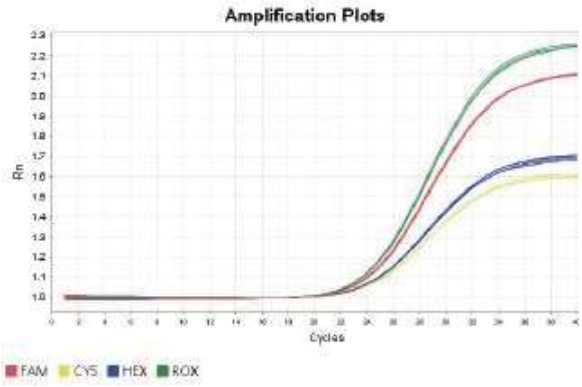
The example of plasmid DNA amplificationshows an optimal linearity over 10 orders of magnitude from 2.5 ng/μl to 0.12 fg/μl, illustrating the broad linear dynamic range of the system

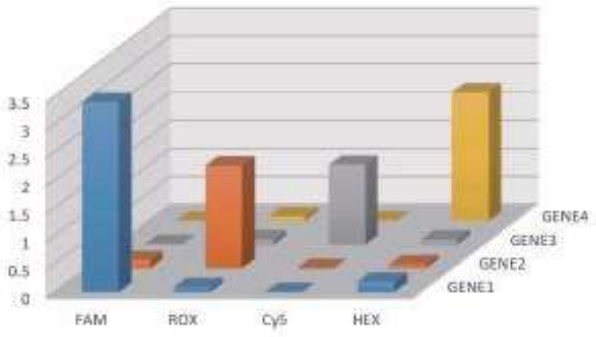




Multiplexing for richer datasets.

The QuantaVue system can discriminate up to five targets in a single reaction well. The fluorescent data from four FAM-HEX-ROX-Cy5 channels of four different target genes in a single well showing there is almost no cross-talk between different channels.





4. Special Analyzer Software

QuantaVue Analyzer Software is powerful software for a powerful instrument. It accommodates user needs and different types of experiments with intuitive navigation and customizable settings. The logical, clear arrangment of all the tools, the intuitive handling, and last but not least the parameter-oriented memory and programming concept make the software easier to use.

- User-friendly and clearly structured
- Intuitive navigation and customizable settings
- Integrated analysis algorithms with automatic analysis
- Comprehensive analysis modules for multiple applications
- License-free, free updates

Intuitive navigation and customizable settings

To further speed up your process, get the experiment started with the quick plate feature, and then enter or edit well information on your own schedule - before, during , or after the run has finished.

Intelligent Analysis

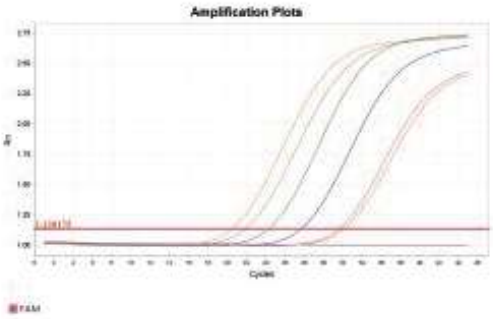
To ensure that operation is as simple as possible, many of the steps occur automatically – such as performing normalized gene expression analysis (ddCt), you take your results a step further without having to export data and set up your own analysis macro.

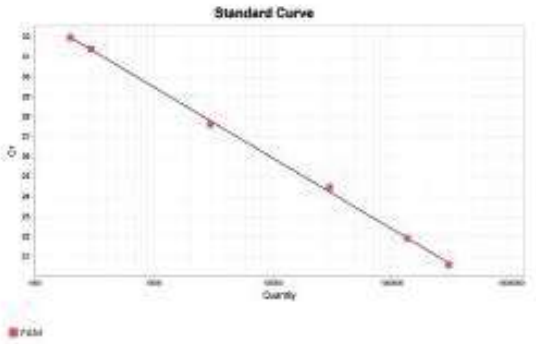
Personalized Data Export

The software allows you to save predefined analysis settings for auto-exporting run data into their format of choice, including Excel, PDF, txt export format.

Absolute quantification

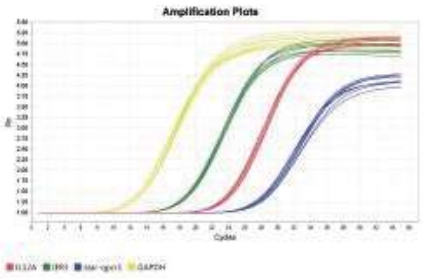
The module enables analysis of genes of interest with the use of a standard curve. Additional flexibility is achieved by importing standard curves from other experiments.

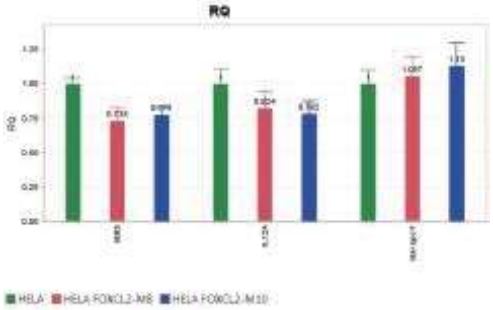




Relative quantification

With this module, you can customize groupings of data within projects for a thorough comparison of data. The module also includes integrated correlation, volcano, and cluster plot analysis, with the ability to drill down to amplification plots..



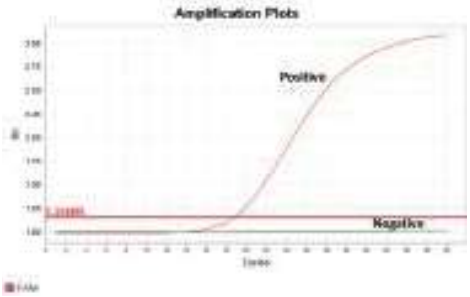


5. Comprehensive Function

The software has built-in data analysis modules with automatic baseline subtraction and threshold calculation for determining Ct values or possible standard curves and PCR efficiencies. Further analyses can likewise be conducted automatically, such as absolute or relative quantifications. The software also includes analysis methods for probe-based allelic discrimination and the use of a positive/negative analysis via the end-point detection of samples.

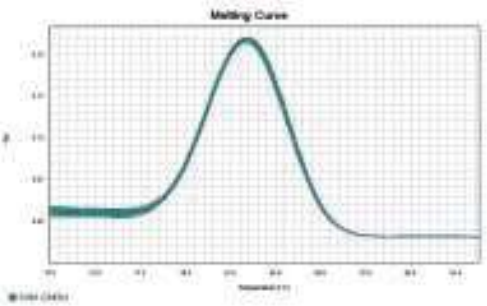
Positive/Negative Analysis.

The figure shows that the positive and negative African swine fever virus samples are well differentiated.



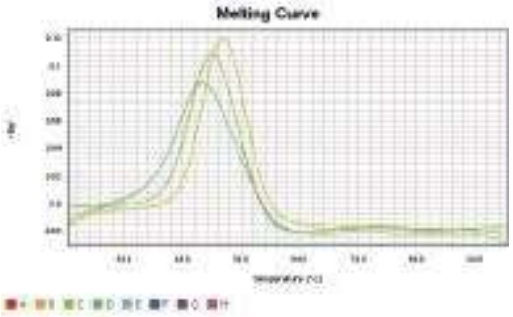
Melt curve analysis.

In this experiment, 96 replicates of human genomic DNA were amplified followed by a dissociation step with a melting temperature (Tm) of 77.9°C (SD 0.07°C), showing good specificity of the reaction.



Protein Stability Screening.

The figure shows that the protein exhibits different Tm values when binding with ligands of different concentrations (1mM, 0.1mM, 0mM), which indicates that the protein thermal stability changed.



Specification

Model	QuantaVue 6X
Black capacity	96
Sample volume	1-50μl
Heating/cooling method	Peltier
Maximum ramp rate	6℃/s
Temperature setting range	4-100℃
Heated lid	Electronic automatic lid
Temperature accuracy	±0.2℃
Temperature uniformity	±0.2℃
Gradient zone	12 columns
Gradient range	1-36℃
Excitation source	6 long-life, high performance LEDs
Detector	Highly sensitive PMT(photo multiplier tube) with Fresnel lens
Scanning principle	Time-resolved scanning technology
Detector position	Top of the block
Excitation/detection range	455-650nm/510-715nm
Fluorescence channel	6 channels
Detection sensitivity	1 copy of the target sequence
System sensitivity	Detect differences as small as 1.33-fold in target quantities in singleplex reactions
Dynamic range	10 orders of magnitude
Dye compatibility	FAM/SYBR Green, VIC/JOE/HEX/TET, NED/TAMRA/Cy3, JUN, ROX/Texas Red, Mustang Purple, Cy5/LIZ

Data Analysis Modes		
Absolute quantification	Relative quantification	Endpoint qualitative analysis
Melt curve analysis	Protein Stability Screening	Genotyping

Data Export
Customizable reports containing run setting, data graphs, and spreadsheets can be directly exported or saved as Excel, txt, PDFs

Shanghai Unicorn Medical Technology Co., Ltd.

Room J, Building 4, B Zone, No. 925 Yecheng Road, Jiading Industrial Area, Shanghai

Tel: +86 (021) 6082 8473 Cel: +86 173 1710 8636 Email: info@unicornlifescience.com

www.unicornlifescience.com