

ESEQuant Tube Scanner

Next-generation technology for point-of-need tests

The ESEQuant Tube Scanner is an OEM business-to-business solution based on next-generation technology that enables rapid tests at the point of need. This comprehensive and flexible system, based on unique detector technology, is adaptable for use with a wide variety of tube tests. The ESEQuant Tube Scanner can be used with fluorescent dyes and colorimetric assays and provides fast, accurate, and sensitive results.

Benefits of the ESEQuant Tube Scanner:

- 200 µl PCR tube test format with customizable features
- Minimal development risk and low development costs
- Stand-alone device or can be connected to your PC
- Complete test and data management software included
- Small, lightweight, and portable

Short time to market

Most importantly, you start your R&D work with a fully developed scanner from serial production. This means that you save costs, speed up your R&D work, and shorten the time-to-market for your rapid tests.

After the initial development phase, simply choose from a wide range of available accessories (see back page) to make the tests easier and safer for your customers. When you have decided on the instrument configuration, you can easily customize the design, workflow, and software according to your requirements.

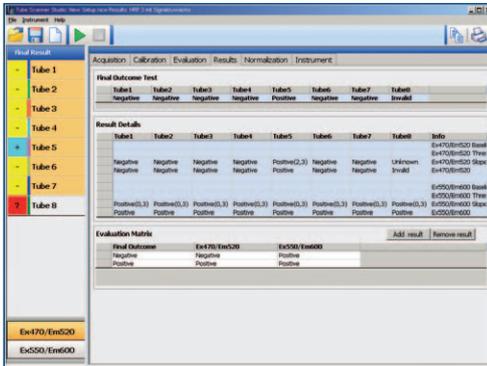
ESEQuant Tube Scanner features

The ESEQuant Tube Scanner is a small easy-to-use fluorescence measurement system that is extremely sensitive, robust, and cost-effective. Utilizing a fluorescence detector based on modern microsystems technology and state-of-the-art LED and filter technology, the sensitivity of the tube scanner is comparable to top-of-the range commercial spectrophotometers, yet has an extremely small footprint.

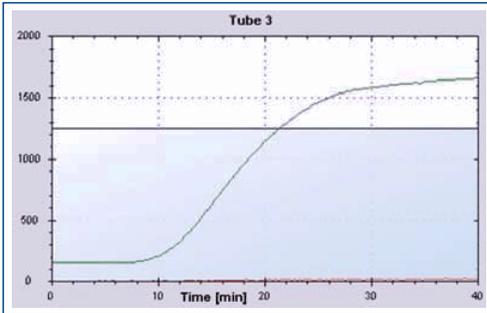


ESEQuant Tube Scanner.

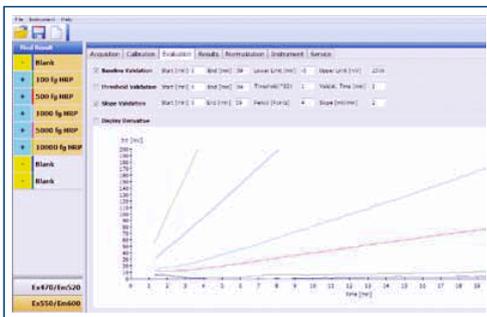




Automated generation of results.



Real-time amplification of a gene present in methicillin-resistant *Staphylococcus aureus*.



Determination of enzyme kinetics and concentration using the ESEQuant Tube Scanner.

Signal acquisition

- 8 tubes and 2 dyes visible individually (e.g., FAM™, TAMRA™, ROX™, Cy®3, Cy5. Other dyes and combinations are available; please inquire)
- Temperature range (15–95°C)
- Choice of graph or table format

Results

- Fully automated interpretation of results
- Both qualitative and quantitative output
- Outcomes from individual reactions can be combined into one final result

Evaluation

- Various algorithms are available for evaluation of data
- Helpful tools for selection of parameters
- Calibration and normalization of readers

Applications

The ESEQuant Tube Scanner is suitable for:

- Isothermal real-time and end-point nucleic acid amplification and tests
- Tests performed in clinical chemistry
- Any other fluorescence test in tube format, with or without thermal control

Some examples of ESEQuant Tube Scanner applications are shown below.

Molecular diagnostics

The portability and small footprint of the ESEQuant Tube Scanner makes it highly suited for molecular diagnostics applications at the point of care.

- DNA or RNA testing in minutes using appropriate chemistry
- Isothermal DNA amplification processes at constant temperatures

Immunodiagnosics

- Fluorescent detection of enzyme activity in minutes
- Exceptional sensitivity — as low as 2 attomoles HPR using the QuantaRedEnhanced Chemifluorescent HRP Substrate (Thermo Fisher Scientific)
- Suitable for enzyme-linked immunosorbent assay (ELISA) readout and quality control applications

Genetic testing

Genetic tests, such as single nucleotide polymorphism (SNP) analysis can be carried out directly from whole blood samples using the ESEQuant Tube Scanner.

- One-button operation for ease of use
- Fully interpreted results

Application examples

MRSA DNA detection

Methicillin-resistant *Staphylococcus aureus* (MRSA) is highly resistant to some antibiotics and can lead to serious infections in some patients. Rapid screening is key to containing any outbreak of infection. Currently, diagnosis must be performed in a laboratory and takes several hours. By using Recombinase Polymerase Amplification (RPA) technology, a novel and rapid isothermal nucleic acid amplification technology developed by TwistDX, in combination with the ESEQuant Tube Scanner, amplification is possible on site in <10 minutes for 8 samples simultaneously.

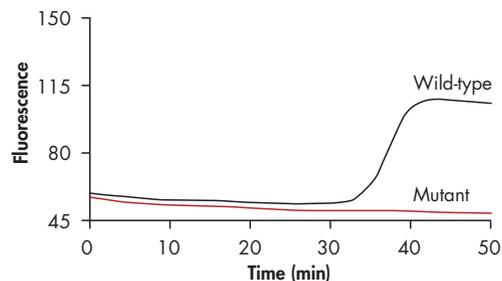
MRSA is detected by isolating bacteria from nasal swabs. The sample is amplified in a 200 µl polypropylene tube and illuminated from the side using the ESE confocal fluorescence sensor to monitor the reaction in real time. RPA technology is sensitive down to the single molecule level. Using the ESEQuant, a few target molecules can be detected in <10 minutes.

This approach may provide a scalable molecular diagnostics field-based test, while overcoming sample preparation and sampling issues.

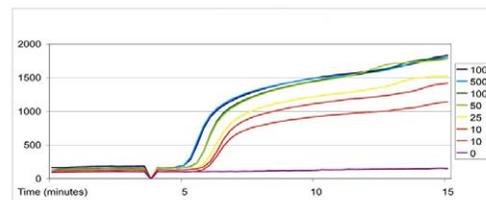
Determination of protease activity

Proteases may be used to digest unwanted proteins and antibodies found in reagents. To do this, the specific activity of proteases needs to be determined. The specific activity is the amount of product formed by an enzyme in a given amount of time under given conditions per milligram of enzyme.

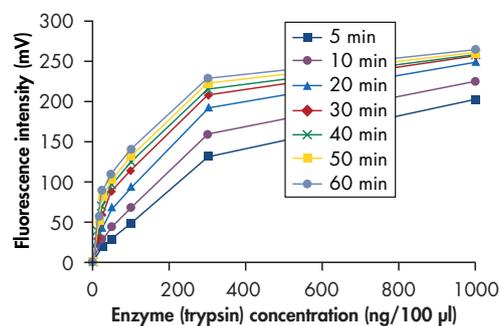
Quality control of reagents for the presence of proteases is, therefore, an integral part of any quality management system for companies providing reagents for biotech, R&D, pharmaceuticals, diagnostics, and other industries. ▶



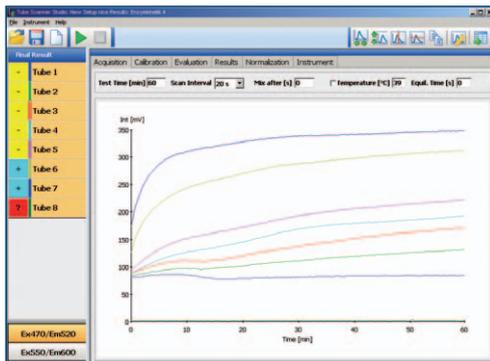
Genetic test system for warfarin dosing (using Smart Amplification by Riken, Japan; Lezhava, 2010).



Real-time data of an isothermal DNA amplification reaction (RPA by TwistDx) down to 10 copies in less than 7 minutes for the spa-gene of *S.aureus*.



Response curve determined with the ESEQuant Tube Scanner.



Data directly displayed in the ESEQuant Tube Scanner Software. Intensity against time is shown for different trypsin concentrations.

Using the ESEQuant Tube Scanner, proteases were detected in amounts <25 pg in 5 minutes. The Pierce Fluorescent Protease Assay Kit was used to generate fluorescence. The kit includes fluorescein-labeled casei for use as a substrate for assessing protease activity in a sample by fluorescence resonance energy transfer (FRET). FTC-Casein is native casein that has been labeled using a large molar excess of fluorescein isothiocyanate (FITC). Fluorescence properties of this strongly labeled, intact protein substrate change dramatically upon digestion by proteases, resulting in a measurable indication of proteolysis. FRET-based measurement detects the decrease in fluorescence quenching (or increased total fluorescence) that occurs as the FTC-Casein substrate is digested into smaller fluorescein-labeled fragments. Data are displayed directly in the ESE-Quant Tube Scanner Software.

ESEQuant Tube Scanner system components

The ESEQuant Tube Scanner system is comprised of:

- ESEQuant Tube Scanner
- Battery pack (optional)
- Worldwide power plug
- Car adaptor (optional)
- Software
- Rechargeable Accu Power Pack (optional)

Ordering Information

Product	Contents	Cat. no.
ESEQuant TS FAM/ROX	ESEQuant Tube Scanner for the measurement of FAM and ROX in tubes	9002100
ESEQuant TS FAM/TAMRA	ESEQuant Tube Scanner for the measurement of FAM and TAMRA in tubes	9002101

Other wavelengths are available; please inquire.

For up-to-date licensing information and product-specific disclaimers, see the respective QIAGEN kit handbook or user manual. QIAGEN kit handbooks and user manuals are available at www.qiagen.com or can be requested from QIAGEN Technical Services or your local distributor.

Visit www.qiagen.com/tube-scanner and find out more!

Trademarks: QIAGEN® (QIAGEN Group), Cy® (GE Healthcare); FAM™, ROX™, TAMRA™ (Applera Corporation or its subsidiaries).
1070066 09/2011 © 2011 QIAGEN, all rights reserved.

Australia = 1-800-243-800
Austria = 0800-281011
Belgium = 0800-79612
Brazil = 0800-557779
Canada = 800-572-9613
China = 800-988-0325
Denmark = 80-885945

Finland = 0800-914416
France = 01-60-920-930
Germany = 02103-29-12000
Hong Kong = 800 933 965
India = 1-800-102-4114
Ireland = 1800 555 049
Italy = 800-787980

Japan = 03-6890-7300
Korea (South) = 080-000-7145
Luxembourg = 8002 2076
Mexico = 01-800-7742-436
The Netherlands = 8000-0229592
Norway = 800-18859
Singapore = 1800-742-4368

Spain = 91-630-7050
Sweden = 020-790282
Switzerland = 055-254-22-11
Taiwan = 0080-665-1947
UK = 01293-422911
USA = 800-426-8157
www.qiagen.com

