

## GeneProof Epstein-Barr Virus (EBV) PCR Kit



*In vitro* diagnostic medical device

The kit has been manufactured according to EC Directive 98/79/EC as an *in vitro* diagnostic medical device and it has been designed for professional use in specialized clinical and research laboratories.

### KIT CONTENT

REF	ISIN Version IS included in the MasterMix			ISEX Version IS supplied in a separate tube Nucleic acid extraction and PCR inhibition control		
	EBV/ISIN/025 25 rxn	EBV/ISIN/050 50 rxn	EBV/ISIN/100 100 rxn	EBV/ISEX/025 25 rxn	EBV/ISEX/050 50 rxn	EBV/ISEX/100 100 rxn
<b>MasterMix</b>						
EBV	1x750 µl	2x750 µl	4x750 µl	1x750 µl	2x750 µl	4x750 µl
<b>Calibrator</b>						
EBV 10 <sup>4</sup> cp/µl	1x200 µl	1x200 µl	1x200 µl	1x200 µl	1x200 µl	1x200 µl
<b>Calibrator</b>						
EBV 10 <sup>3</sup> cp/µl	1x200 µl	1x200 µl	1x200 µl	1x200 µl	1x200 µl	1x200 µl
<b>Calibrator</b>						
EBV 10 <sup>2</sup> cp/µl	1x200 µl	1x200 µl	1x200 µl	1x200 µl	1x200 µl	1x200 µl
<b>Calibrator</b>						
EBV 10 <sup>1</sup> cp/µl	1x200 µl	1x200 µl	1x200 µl	1x200 µl	1x200 µl	1x200 µl
<b>Internal Standard</b>						
EBV	-	-	-	1x1000 µl	1x1000 µl	2x1000 µl

### STORAGE AND TRANSPORTATION CONDITIONS

The kits could be transported at temperature below -20 °C. The kit will remain stable at least until the expiry date printed on the package, if the storage temperature is kept (-20 ± 5 °C). Kit is stable after 15 repeated freezing/thawing cycles.

### TECHNICAL SPECIFICATION

Target Sequence	DNA sequence of the single copy gene encoding the nuclear antigen 1 (EBNA1)
Analytical Specificity	Epstein-Barr virus, 100 %
Analytical Sensitivity (LoD)	reaches up to 196.088 IU/ml with the probability of 95% (on NIBSC EBV 09/260 using manual extraction GeneProof PathogenFree DNA Isolation Kit)
Diagnostic Specificity	100% (CI <sub>95%</sub> : 83.98% - 100%)
Diagnostic Sensitivity	100% (CI <sub>95%</sub> : 96.53% - 100%)
Linear Range	10 <sup>10</sup> - 10 <sup>2.5</sup> IU/ml with precision of ± 0.5 log
Dynamic Range	10 <sup>10</sup> - 196.088 IU/ml
Reporting Units	cp/µl
Conversion Factor	1 IU = 1 cp
Metrological Traceability	NIBSC EBV 09/260
Validated Specimen	BAL, CSF, plasma, whole blood
External Quality Assessment	Regularly tested by QCMD and Instand e.V. External Quality Assessment Panels.
Regulatory Status	CE IVD

Quality management system is certified in compliance with the requirements of the standard ISO 13485:2016



## METHOD PRINCIPLES

The PCR kit is designed for detection of Epstein-Barr virus (EBV) by the real-time Polymerase Chain Reaction (PCR) method. The EBV detection consists in amplification of a specific conservative DNA sequence of the single-copy gene encoding the nuclear antigen 1 (EBNA1) and in measurement of fluorescence increase. The EBV presence is indicated by the FAM fluorophore fluorescence growth. An Internal Standard (IS) is included in the reaction mix, controlling the possible inhibition of the PCR (ISIN version) or excluded, controlling also the DNA extraction process quality (ISEX version). IS positive amplification is detected in the HEX fluorophore fluorescence channel. The detection kit takes advantage of the "hot start" technology, minimizing non-specific reactions and assuring maximum sensitivity. Ready to Use MasterMix contains uracil-DNA-glycosylase (UDG), eliminating possible contamination of the PCR by amplification products. The kit is designed for *in vitro* diagnostics and provides qualitative and quantitative detection.

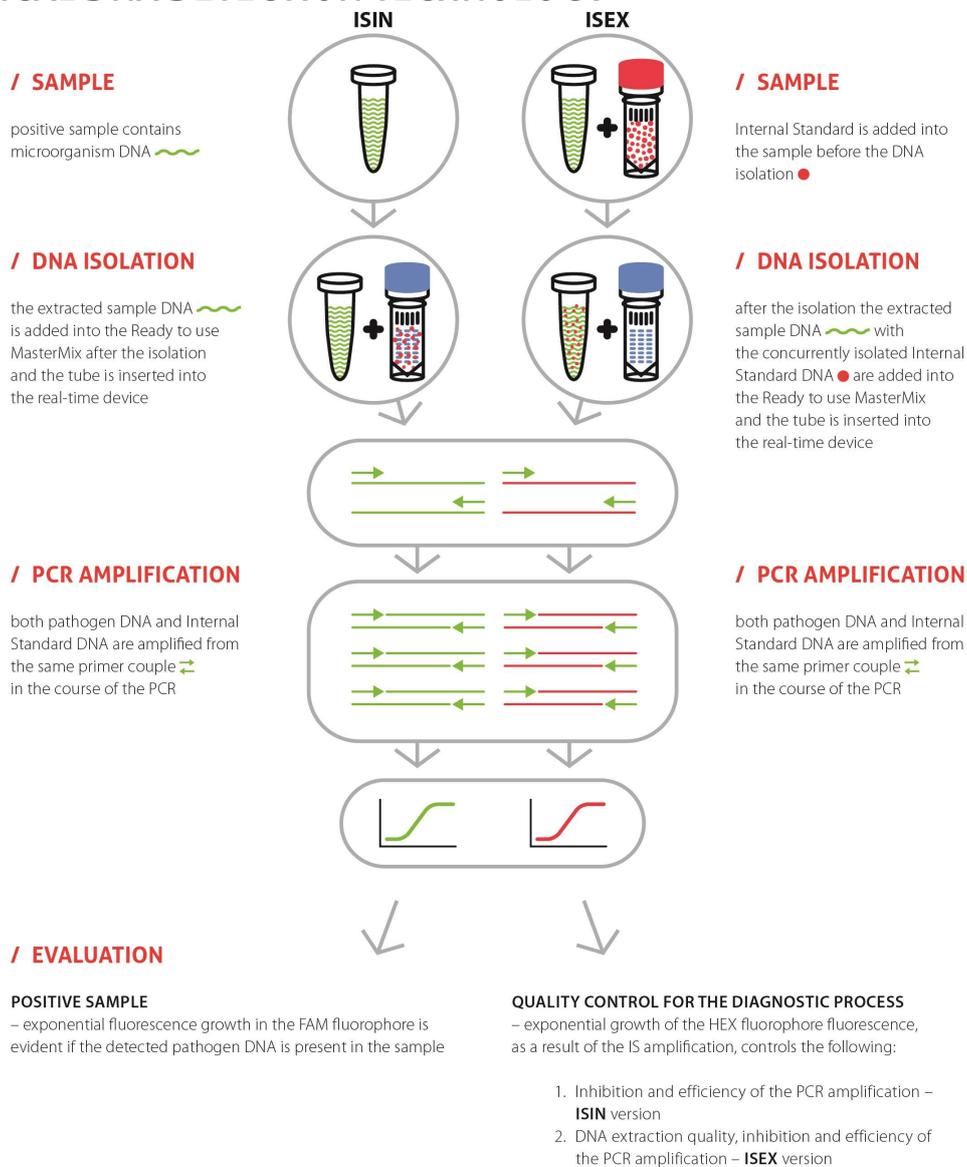
### ISIN version

Internal Standard is included in the MasterMix tube. This PCR kit version enables PCR inhibition control.

### ISEX version

Internal Standard is provided as independent item within the package. This PCR kit version enables both PCR inhibition control and nucleic acid purification process efficiency control.

## MICROBIOLOGICAL DNA DETECTION TECHNOLOGY



# USER MANUAL

## SAMPLING AND SAMPLE STORAGE

Sampling of plasma and cerebrospinal fluid (CSF) should be performed into sterile tubes without any transportation media. Collect whole blood samples to the tubes containing an appropriate non-inhibiting PCR anticoagulant, e.g. EDTA. Keep samples at the temperature between +2 °C and +8 °C and transport them to laboratory within 24 hours. It is necessary to sample between 50 µl and 2 ml of body fluid samples. In case of longer storage all samples should be frozen at the temperature below -10 °C.

## NUCLEIC ACID PURIFICATION

Nucleic acid extraction should be performed by extraction kits available at the market according to protocols for the particular clinical material extraction. The manufacturer recommends the following extraction kits:

GeneProof PathogenFree DNA Isolation Kit  
croBEE NA16 Nucleic Acid Extraction System

When using the ISEX versions of the PCR kits the IS should be added directly into the sample at the beginning of the isolation process so that in the end 1 µl of the resulting elution volume contains 0.1 µl of the IS:

Elution volume	25 µl	50 µl	100 µl	200 µl
Internal Standard	2,5 µl	5 µl	10 µl	20 µl

## PCR SETUP

1. Add 30 µl of MasterMix into PCR tubes.
2. Add 10 µl of the isolated nucleic acid sample or 10 µl of Calibrator/Positive Control into the individual PCR tubes. The final reaction mix volume will be 40 µl. *It is necessary to keep all components at +2 °C to +8 °C during the PCR preparation.*
3. Close the tubes, centrifuge shortly, insert them into the device and let them amplify according to the following PCR profile.  
*Be very careful when handling the Calibrator/Positive Control or the clinical material, incorrect handling could result in contamination and the consequent impairment of the kit components or the MasterMix! The manufacturer is not responsible for the kit impairment due to incorrect handling.*

## AMPLIFICATION PROFILE

Step	Temperature	Time	Data Collection	Cycles
Hold	37 °C	2 min		1
Hold	95 °C	10 min		1
	95 °C	5 s		
PCR	60 °C	40 s	FAM+HEX	45
	72 °C	20 s		

## INSTRUMENTS

Epstein-Barr Virus (EBV) PCR Kit is designed for use with real-time devices from various manufacturers:

### croBEE Real-Time PCR System

Applied Biosystems 7300 / 7500 Real-Time PCR System  
AriaMx Real-Time PCR System  
CFX Connect™ / CFX96™/ Dx Real-Time PCR Detection System  
LightCycler® 2.0 / 480  
LineGene 9600 / 9600 Plus

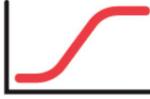
Mic qPCR Cyclers  
QuantStudio™ 3 Real-Time PCR System  
QuantStudio™ 5 Real-Time PCR System  
Rotor-Gene 3000 / Q  
SLAN® Real-Time PCR System  
StepOne™/StepOne Plus™ Real-Time PCR System

Required Detection Channels FAM, HEX

GeneProof diagnostic kits are continually verified with various types of devices. Current list is available at [www.geneproof.com](http://www.geneproof.com) or request the list at [support@geneproof.com](mailto:support@geneproof.com).



## CLINICAL SAMPLE ANALYSIS EVALUATION

Channel FAM	Channel HEX	Result	Interpretation
		Valid	EBV <b>positive</b>
		Valid	EBV <b>positive</b>
		Valid	EBV <b>negative</b>
		Invalid	
		Invalid	

## QUANTITATIVE DETECTION EVALUATION

Use the following formula to calculate the virus concentration in copies/ml while taking into account the volume of material entering the extraction:

$$\text{cp/ml} = \frac{\text{SC} \times \text{EV}}{\text{IV}}$$

SC - Sample concentration (cp/μl)  
 EV - Elution volume (μl)  
 IV - Isolation volume (ml)

$$\text{IU/ml} = \frac{\text{SC} \times \text{EV} \times 1}{\text{IV}}$$

You can use the calculator for pathogen concentration conversion at [www.geneproof.com](http://www.geneproof.com) to make the calculation easier.

## WARNING

A single valid package insert for a specific kit is included in the package or to be requested for the particular lot from the manufacturer. The kit should be disposed of after use according to the current legal regulations considering the fact that the kit doesn't contain any dangerous, infectious or toxic components that would be subject to special safety regulations, and the packaging materials are made of paper and polypropylene. If you have any questions please contact our Customer Service.

### Customer care and technical support

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