

# Blood Screening

## Automatic Blood Screening System For Nucleic Acid Testing

### Intended use

Blood transfusion is a life-saving intervention that has an essential role in patient management within health care systems, but many patients requiring transfusion do not have timely access to safe blood. WHO recommends that all blood donations should be screened for infections prior to use. Screening for HIV, hepatitis B and hepatitis C should be mandatory. According to the WHO report on blood safety (2018), 12 countries are not able to screen all donated blood for one or more of the above infections.

### Nucleic Acid Test Kit for HBV HCV HIV (Real-time PCR)

Daan designed this kit based on fluorescent PCR/RT-PCR amplification detection technology for the qualitative detection of hepatitis B virus (HBV), hepatitis C virus (HCV) and human immunodeficiency virus type 1 (HIV-1) nucleic acids in mixed/separated serum and plasma specimens.

### Features



HBV/HCV/HIV-1 triple independent amplification.



UNG enzyme pollution prevention system.



An internal control was set to monitor the whole process.

### Procedure



Sample



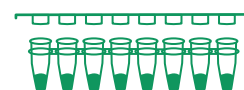
Barcode Identification



Automatic Sample Loading



Automatic Extraction

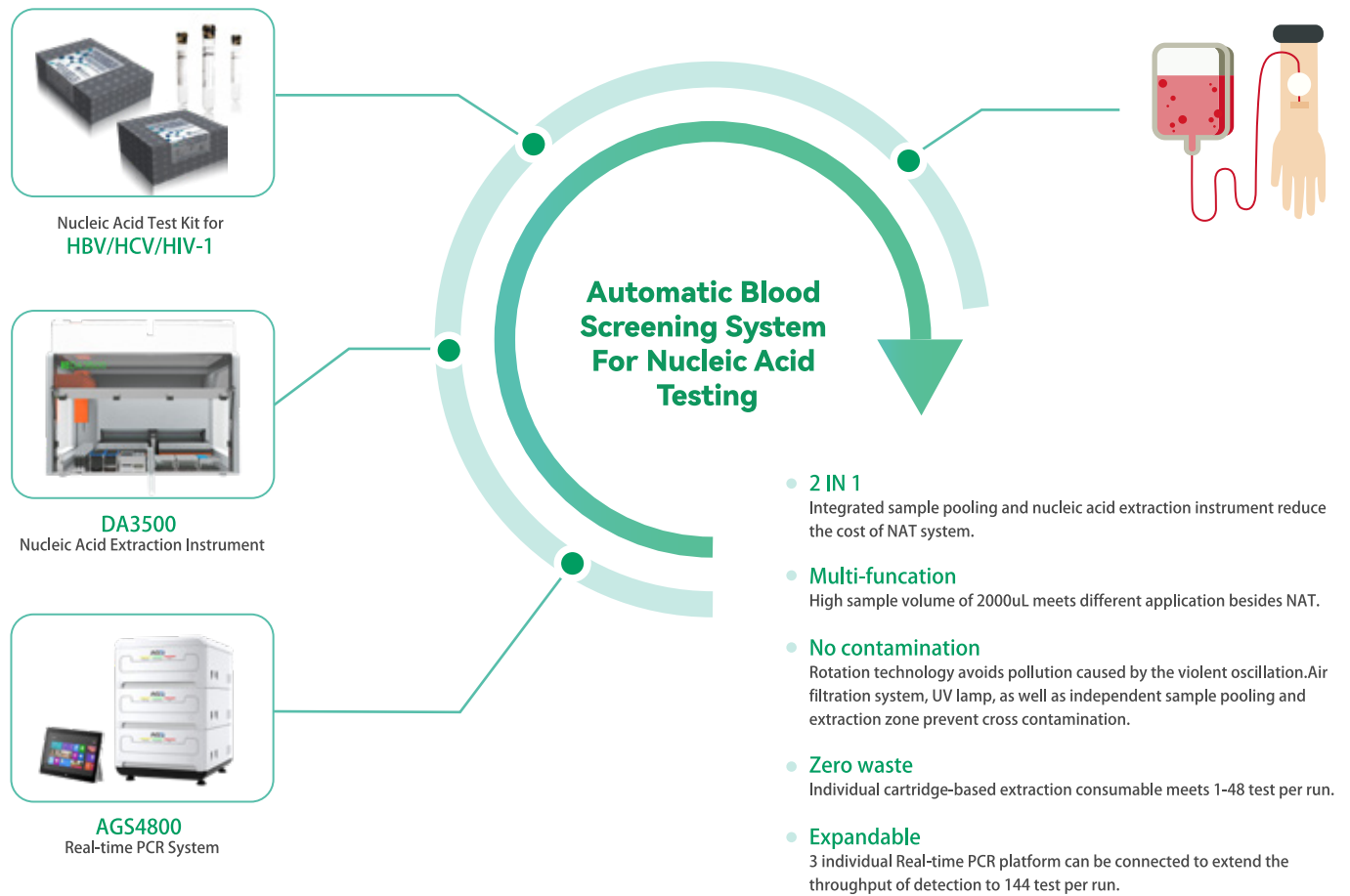


PCR Set-up



RT-PCR

## Workflow



## Results

If internal control, positive quality control and negative quality control meet quality control requirements, result can be judged as following:

**Positive result:** There is S-shaped amplification curve for FAM detection channel and Ct value is lower than 40.

**Negative result:** There is no S-shaped amplification curve for FAM detection channel.

**Grey area:** There is S-shaped amplification curve for FAM detection channel and Ct value is higher than 40. The whole test should be repeated.

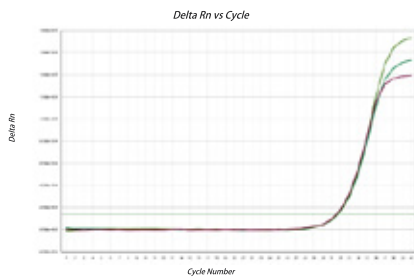


Fig.1. Sensitivity of HBV Blood Screening Real-time PCR Kit

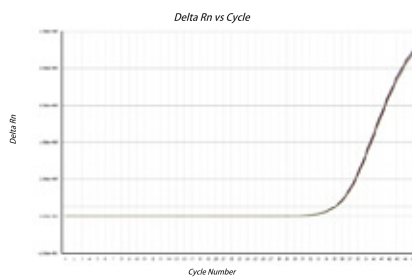


Fig.2. Sensitivity of HCV Blood Screening Real-time PCR Kit

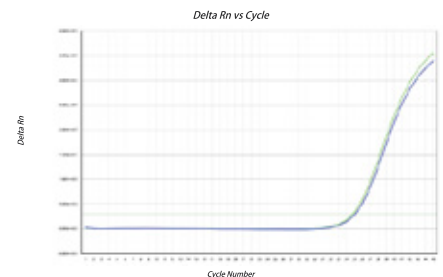


Fig.3. Sensitivity of HIV Blood Screening Real-time PCR Kit

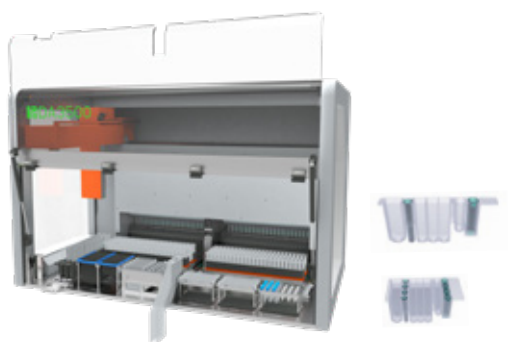
## Nucleic Acid Test Kit for HBV/HCV/HIV-1

Methodology	RT-PCR
Quality control	Internal control and UNG enzyme anti-contamination
LOD	1mL single sample: 100 IU/mL, Mixed sample: 500 IU/mL
Quantitative/qualitative	Qualitative
Storage and shelf life	-20±5°C, 12 months



## DA3500 Nucleic Acid Extraction Instrument

Ready-to-use reagents simplify the extraction process. While individual and '4-in-1' cartridges satisfy different number of samples.



Method	Magnetic beads
Sample volume	20~2000uL
Sample capacity	48 samples
Running time	60 min/48samples (45 min only for extraction)
Anti-contamination	HEPA filter, UV light
Mixing method	Rotation

## AGS4800 Real-time PCR System

It's high cost performance that combine with 6 channels in detection, and it can be extended to 8 channels.

Through-put	48/96/144 (each 48 through-puts run individually)
Fluorescence Channel	[F1-F2, F1-F4,F1-F6] (optional) F7-F8 (reserved)
Temperature range	30.0-99.9°C
Temperature accuracy	±0.1°C (@55°C)
Temperature uniformity	±0.3°C (@55°C)
Temperature rate	≥4.5°C/s
Cooling rate	≥4.5°C/s



## WHO data

99.8% of the donations in high-income countries and 99.9% in upper-middle-income countries are screened following basic quality procedures, as compared to 83% in lower-middle-income countries and 76 % in low-income countries. The prevalence of transfusion-transmissible infections in blood donations in high-income countries is considerably lower than in low- and middle-income countries.



## Prevalence of transfusion-transmissible infections in blood donations

	HBV	HCV	HIV
High-income countries	0.02%	0.007%	0.002%
Upper middle-income countries	0.29%	0.19%	0.10%
Lower middle-income countries	1.70%	0.38%	0.19%
Low-income countries	2.81%	1.00%	0.70%

## Daan Gene Co., Ltd.

### CHINA (Headquarters)

📍 **Add.:** No.19, Xiangshan Road, Science Park, High & New Technology Development District, Guangzhou, Guangdong, P.R. China  
☎ **Tel.:** +86-20-32068126  
☎ **Fax:** +86-20-32068352  
✉ **Email:** marketing@daangene.com

### CANADA office

📍 **Add.:** #413-4538 Kingsway, Burnaby, BC V5H 4T9, Canada  
☎ **Tel.:** +16044517588  
☎ **Fax:** +604451.7587  
✉ **Email:** gbai@daangene.net

### COLOMBIA office

📍 **Add.:** Cl 93 No.16 46 of 702, Bogotá D.C.  
☎ **Tel.:** +57 3103940417  
✉ **Email:** alonso.zheng@daangene.net

🌐 **Website:** <https://en.daangene.com/>

