techstar®

StarCycle
Multiplex fluorescence analysis system

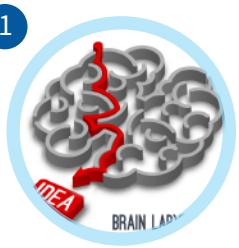
You just need to put in the sample, StarCycle does the rest!

STARCYCLE

1. Background and Significance

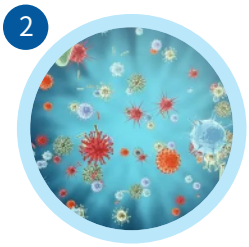
Problems faced by nucleic acid detection:

1



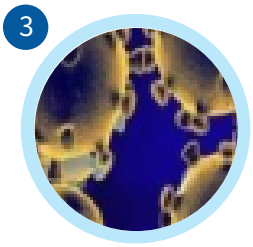
Cumbersome operation. The testing process is complex.

2



Symptoms are similar. Difficulty in timely diagnosis (missed diagnosis).

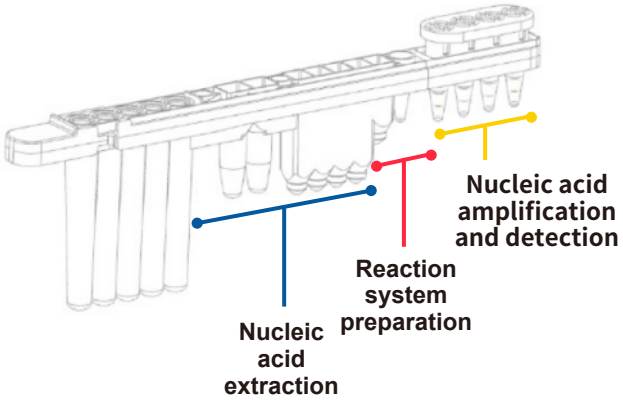
3



Mixed infection of pathogens. Single index detection is prone to miss detection.

2. Introduction to the multiplex fluorescence analysis system

The StarCycle multiple fluorescence analysis system integrates **nucleic acid extraction**, **reaction system preparation**, **nucleic acid amplification and detection**, and result interpretation into one, realizing full automation, quantitative and multi-index of nucleic acid detection. With the use of special detection reagent cards, 8 samples can be detected at the same time, and each sample can detect up to 16 indicators. The system does not need professional laboratory and professional technical personnel, and is easy to operate.



1 Principle of detection

Component

Automatic nucleic acid detection instrument

+

Test reagent

Principle

Nucleic acid extraction by magnetic beads

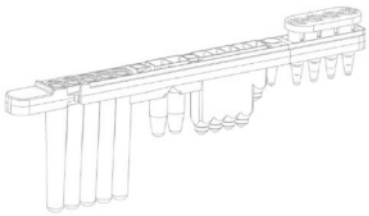
+

Fluorescence PCR detection

2 StarCycle multiplex fluorescence analysis system

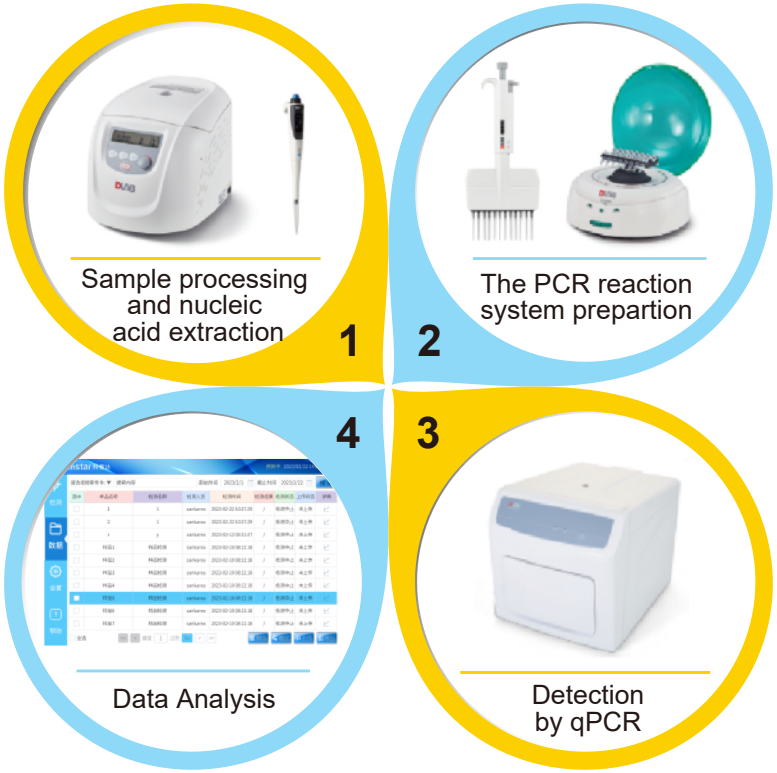
Advantages:

- One-stop solution, fully automatic nucleic acid extraction, PCR system preparation, qPCR detection and data analysis.
- Up to 8 samples can be tested simultaneously , and each sample could be screened for up to 16 targets.



Testing consumables

Automatic nucleic acid detection instrument



3. StarCycle kit reagent

1 Medical testing

Categories	Target of detection	Targets
Respiratory tract diseases	Six respiratory pathogens nucleic acid detection kit (Real-time PCR)	Influenza A, influenza B, respiratory syncytial virus, human adenovirus and Mycoplasma pneumoniae, group A streptococcus
Sexually transmitted diseases	Five sexually transmitted disease nucleic acid detection kit (fluorescent PCR)	Chlamydia trachomatis (CT), Neisseria gonorrhoeae (NG), Mycoplasma genitalium (MG), Mycoplasma hominis (MH), Trichomonas vaginalis (TV)
Genitourinary tract diseases	Four nucleic acid detection kit for vaginitis (fluorescent PCR)	Candida albicans, Candida alopecia, Candida tropicalis and Gardnerella vaginalis
	Eleven nucleic acid detection reagents for urogenital pathogens (fluorescent PCR)	Citrobacter frei, Enterobacter aerogenes, Morganella, Streptococcus agalactis, Enterococcus faecalis, Proteus mirabilis,Mycobacterium avium, E. coli, Klebsiella pneumoniae, Pseudomonas aeruginosa, Staphylococcus aureus

2 Food safety: testing for foodborne microorganisms

Categories	Target of detection
Aquatic products	Salmonella, Shigella, Staphylococcus aureus, Vibrio parahaemolyticus
Cold dishes, bean products, meat and meat products	Salmonella, Shigella, Staphylococcus aureus
Eggs and egg products	Salmonella, Shigella
Food poisoning (common bacteria) group A	Salmonella, Shigella, Staphylococcus aureus, Vibrio parahaemolyticus, Listeria monocytogenes, diarrheagenic Escherichia coli, Bacillus cereus, Proteus mirabilis
Food poisoning (common bacteria) group B	Vibrio vulnificus, Clostridium perfringens, hemolytic Streptococcus, Yersinia enterocolitica, Enterobacter sakazakii, Campylobacter jejuni, Vibrio alginolyticus
Food poisoning (virus)	Rotavirus, Norovirus, intestinal adenovirus, astrovirus, Sapovirus

3 Zoonoses: Testing for zoonotic diseases

Categories	Target of detection
Zoonotic diseases	Brucella, Leptospira, Toxoplasma gondii, Bartonella, Babesia

4 Animal diseases

Categories	Six nucleic acid tests of swine respiratory pathogens	Five nucleic acid test of swine virulent infectious diarrhea pathogen
Test targets	Mycoplasma pneumoniae, porcine pseudorabies virus, classical swine fever virus, Porcine circovirus type 2, swine influenza virus, porcine blue ear virus	Transmissible gastroenteritis virus, porcine Rotavirus, swine fever virus, porcine epidemic diarrhea virus, porcine delta coronavirus.
Type of Sample	Whole blood, serum, and mouth and nose swabs	Whole blood, serum, tissue samples (viscera, lymph nodes, etc.)
Significance of detection	① Timely detection of pathogens to prevent the spread of infection in pig farms, early isolation of pigs with virus. ② Similar symptoms screening, accurate diagnosis.	① Regular screening of sows, early detection of latent or recessive pathogens, to prevent maternal infection. ② Preventive screening after stress reaction(column change, refueling, environment, etc.)

Four swine virulent infectious disease pathogen nucleic acid detection kit	
Test targets	Swine Fever Virus (CSFV), Pseudorabies Virus (PRV), Porcine Reproductive and Respiratory Syndrome Virus (PRRSV), African Swine Fever Virus (ASFV)
Type of Sample	Pig serum, tissue samples (viscera, lymph nodes, etc.)
Significance of detection	① Regular screening of farms, early detection, to prevent the expansion of infection groups ② Early screening of new pig seedlings to prevent the introduction of sick pigs

Common swine reproductive disorder pathogen nucleic acid detection kit	
Test items	Swine fever virus (CSFV), Pseudorabies virus (PRV), Porcine Reproductive and Respiratory syndrome Virus (PRRSV), Porcine Parvovirus (PPV), Japanese encephalitis virus (JEV) and Porcine Circovirus type 2 (PCV2)
Type of Sample	Serum, sow placenta/fetal fluid, stillbirth tissue samples
Detection object	Sows to be pregnant, sows to give birth, and postpartum sows
Significance of detection	① Regular screening of sows, early detection of reproductive disorder pathogens ② Similar symptoms investigation, accurate diagnosis ③ Early screening of new pig seedlings to prevent the introduction of sick pigs

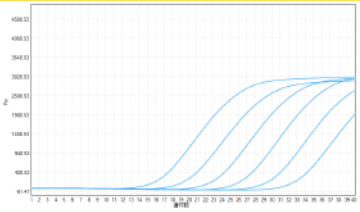
Six swine fever pathogen nucleic acid detection kit	
Test items	Swine fever virus (CSFV), Pseudorabies virus (PRV), Porcine Reproductive and Respiratory syndrome Virus (PRRSV), African Swine Fever virus (ASFV), Japanese encephalitis virus (JEV) and swine influenza virus (SIV)
Type of Sample	Serum
Detection object	Suspected swine with febrile symptoms
Significance of detection	① Accurately identify the types of swine fever to prevent infectious heat sources from expanding infection ② Similar symptoms investigation, accurate diagnosis

4. Application

1 Animal diseases

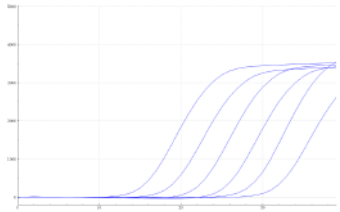
▼ Excellent linearity and sensitivity

Instrument of comparison

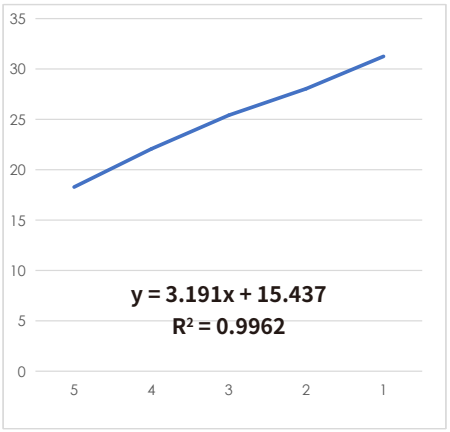


Hole number	Concentration of samples	Ct value
1	1.00E+06	15.14
2	1.00E+05	18.60
3	1.00E+04	22.05
4	1.00E+03	25.43
5	1.00E+02	28.83
6	1.00E+01	32.06

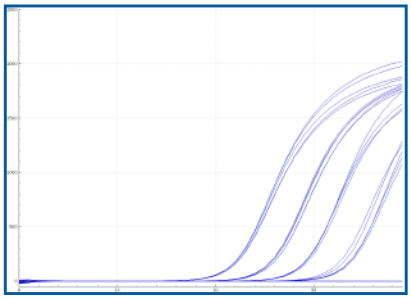
Teachstar StarCycle

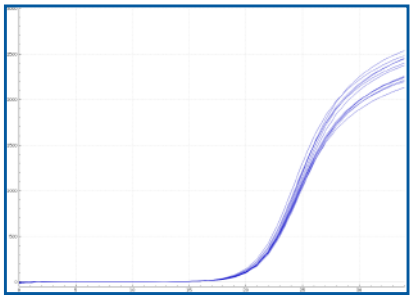


Hole number	Concentration of samples	Ct value
1	1.00E+06	14.74
2	1.00E+05	18.28
3	1.00E+04	22.07
4	1.00E+03	25.41
5	1.00E+02	28.04
6	1.00E+01	31.25



▼ Good repeatability





2 Validation of actual samples of porcine respiratory tract

		Contrast reagent results		Total
		Positive(+)	Negative(-)	
Test reagent results	Positive(+)	86	0	86
	Negative(-)	2	39	41
Total		88	39	127

Positive coincidence rate =97.72%
Negative coincidence rate =100%
The total coincidence rate was 98.42%
One were co-infected with pig rings and pseudorabies.

3 Verification of actual samples of porcine diarrhea

		Contrast reagent results		Total
		Positive(+)	Negative(-)	
Test reagent results	Positive(+)	63	0	63
	Negative(-)	1	38	39
Total		64	38	102

The positive coincidence rate was 98.43%
Negative coincidence rate =100%
The total coincidence rate was 99.02%
Four of them were co-infected with porcine delta coronavirus and porcine rotavirus.

4 Clinical VALIDATION

Five urogenital pathogens		Synthesis method (culture +PCR)	
		Positive(+)	Negative(-)
Test box	Positive(+)	90	1
	Negative(-)	2	72

The positive coincidence rate was 97.83%. The negative coincidence rate was 98.63%
Positive predictive value 98.90%; The negative predictive value was 97.30%
The total coincidence rate was 98.18%

Multiple co-infections: 30 clinical samples of 165 cases were co-infected
(24 cases were co-infected with 2 pathogens, 6 cases were co-infected with 3 pathogens).
High rate of missed detection: 25 cases of positive indicators were inconsistent with the submitted indicators.

Multiple tests and systematic screening are particularly important and urgent for the accurate diagnosis of infectious diseases.

5. Application

Open system, can be customized according to demand development

6. Key technology innovation and problem solving

Easy to use	Through the integration of detection reagents and detection instruments, automatic detection is realized, sample input results out, reduce the difficulty of operation and the requirements for professional and technical personnel are convenient for application.
Fast and efficient	Through the rapid risting and cooling technology, the fastest 60 minutes to achieve the whole process detection.
Accurate diagnosis	The realization of 8 samples and the simultaneous detection of multiple indicators in each sample is conducive to the accurate diagnosis of diseases with similar symptoms. Early detection of mixed infections.
Transport storage at normal temperature	Through freeze-drying technology, the product can be transported and preserved at room temperature.

Wuxi Techstar Technology Co., Ltd.

Meiyu road No.117 workshop No.2, meicun road street, xinwu district, wuxi city, jiangsu province, PRC

www.tech-star.cn

+86-0510-68518058-9010

techstar@tech-star.cn

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