Primerdesign™ Ltd

Demonstration kit

genesig® Easy Kit

for use on the genesig® q16

50 reactions

GENESIG

Kits by Primerdesign

For general laboratory and research use only

genesig® Easy: at a glance guide

For each DNA test

Component	Volume	Lab-in-a-box pipette	
Demo reaction mix	10µl	●	
Demo sample	10µl	●	

For each positive control

Component	Volume	Lab-in-a-box pipette	
Demo reaction mix	10µl	●	
Positive control template	10µl	●	

For each negative control

Component	Volume	Lab-in-a-box pipette	
Demo reaction mix	10µl	●	
Water	10µl	●	

Kit contents

- **Demo primer/probe mix (BROWN)**
Once resuspended the kits should remain at -20˚C until ready to use

- **Lyophilised oasig™ Master Mix**

- **Lyophilised oasig™ Master Mix resuspension buffer (BLUE)**

- **Demo positive control template (RED)**

- **4 x Demo samples (PURPLE)**

- **RNase/DNase free water (WHITE)**

- **3 x Template preparation buffer (YELLOW)**

- **54 x genesig® q16 reaction tubes**

- **Internal extraction control template (BLUE)**
Reagent not required unless performing a demo extraction (please see genesig Easy extraction kit handbook for further instructions)

Reagents and equipment to be supplied by the user

genesig® q16 instrument

genesig® Easy DNA/RNA extraction Kit
This kit is designed to work well with all processes that yield high quality DNA but the genesig Easy extraction method is recommended for ease of use.

genesig® Lab-In-A-Box
The genesig Lab-In-A-Box contains all of the pipettes, tips and racks that you will need to use a genesig Easy kit. Alternatively, if you already have these components and equipment these can be used instead.

Kit introduction

This kit is a demonstration kit for use on the q16 instrument. The core components of this kit are identical to those in the standard genesig Easy kit range.

The kit includes 4 demonstration samples that are carefully designed to give a range of test results that will be representative of the results that will be achieved by the real genesig Easy kits.

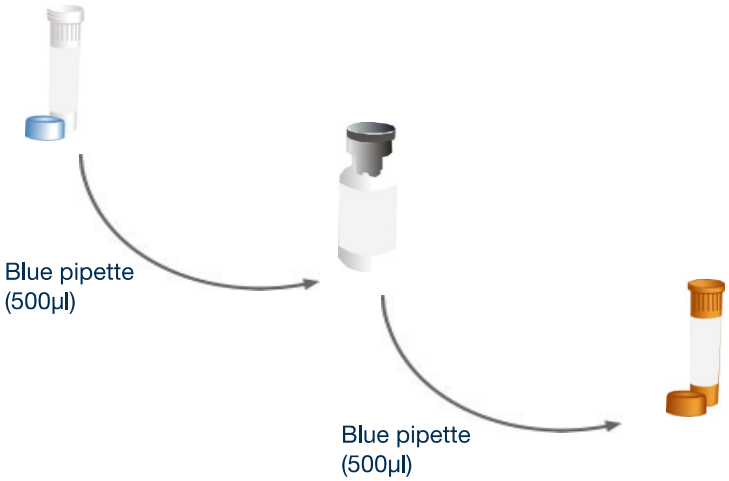
Simply use these 4 demonstration samples as if they were “real-world” samples.

The 4 samples are as follows:

1. Demo sample Neg: This sample is designed to mimic a negative sample and will give a negative result.
2. Demo sample Low: This sample is designed to mimic a weak positive sample.
3. Demo sample Med: This sample is designed to mimic a positive sample with an average level of DNA present.
4. Demo sample High: This sample is designed to mimic a strong positive sample.

Step-by-step guide

1. Create your reaction mix



Use the blue pipette to transfer 500µl* of the oasig Master Mix resuspension buffer into the tube of lyophilised oasig Master Mix and mix well by **gently swirling**. Then transfer all of that master mix into the brown tube labelled demo primers/probe.

* Transferring 525µl of the oasig Master Mix resuspension buffer to your oasig Master Mix (instead of the 500µl recommended above) will enable you to take full advantage of the 50 reactions by accounting for the volume losses during pipetting. In order to do so with the genesig Easy fixed volume pipettes use 1 x blue, 2 x red and 1 x grey pipettes to make the total volume. Please be assured that this will not adversely affect the efficiency of the test.

Cap and shake tube to mix. A thorough shake is essential to ensure that all components are resuspended. **Failure to mix well can produce poor kit performance.**

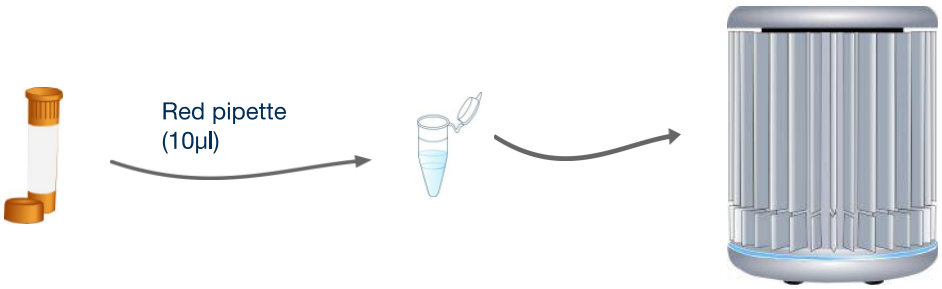
Leave to stand for 5 minutes. Now your reaction mix is ready to use.

Store the reaction mix in the freezer from hereon.

Top tip

- Ensure that the reaction mix is mixed thoroughly before each use by shaking.
- Once resuspended do not expose genesig Easy kit to temperatures above -20°C for longer than 30 minutes at a time.

2. Add reaction mix to all reaction tubes

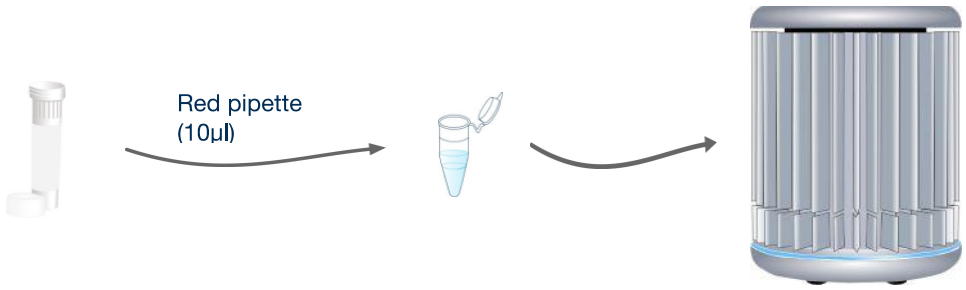


For every reaction to be run, use the red pipette to add 10µl of your demo reaction mix to every tube.

Top tip

- Always pipette the reaction mix directly into the bottom of the tube.
- You can label the tube lids to aid your reaction setup but avoid labelling tube sides.

3. Negative control



For each test you will require a negative control. Instead of DNA, water is used. This sample should prove negative thus proving that all of your positive samples really are positive.

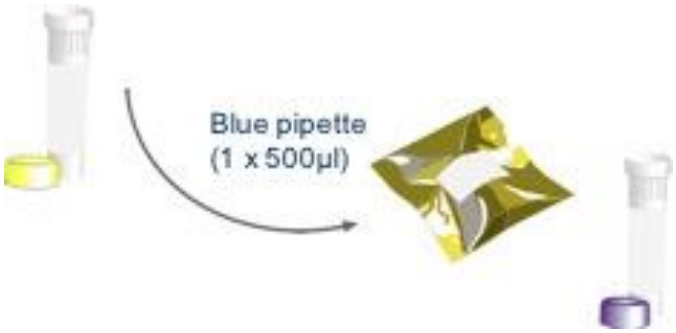
To create a negative control reaction simply use the red pipette to add 10µl of the water to the required reaction tubes. Close these tubes after adding the water.

Because some genesig kit targets are common in the environment you may occasionally see a “late” signal in the negative control. The q16 software will take this into account accordingly.

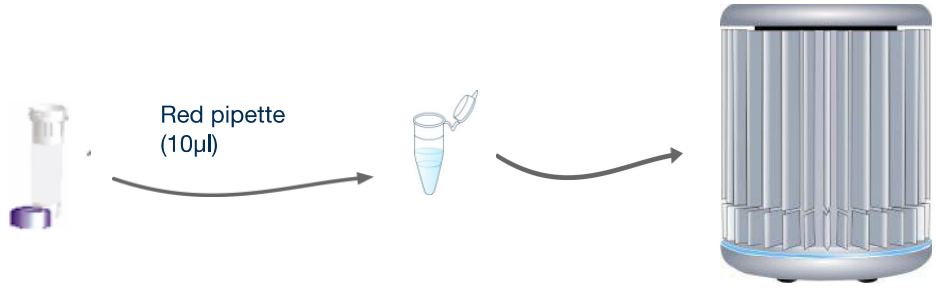
Top tip

- Always add the water to the side of the tube to reduce the introduction of bubbles.

4. Set up your test



Use the blue pipette to transfer 500µl of template preparation buffer into each of the test samples supplied (purple lid). Cap and shake the tubes to mix.

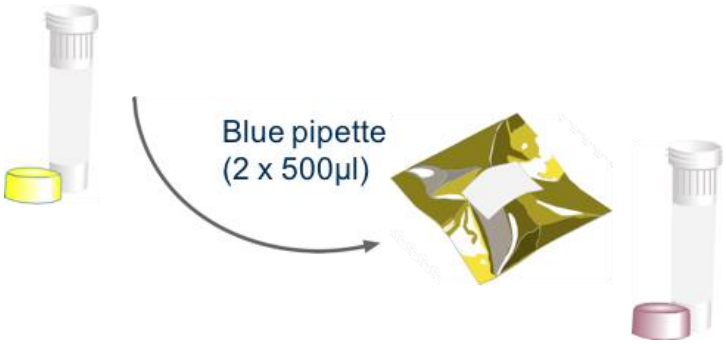


For each of the four test samples, use the red pipette to add 10µl of the demo sample to the required reaction tubes. Always change pipette tips between samples.

Top tip

- Always add the DNA sample to the side of the tube to reduce the introduction of bubbles.

5. Positive control



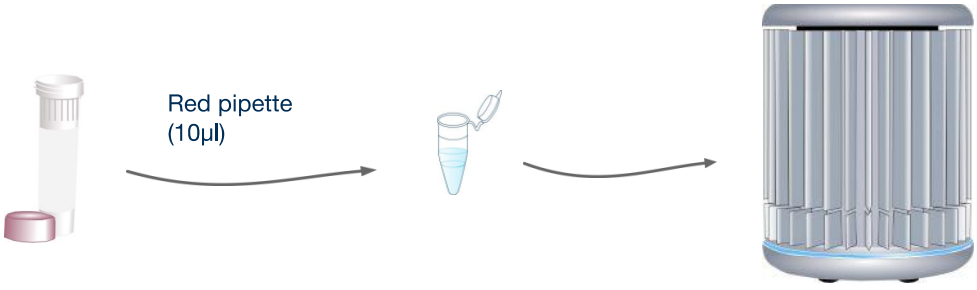
Use the blue pipette to transfer 1000µl (2 x 500µl) of template preparation buffer into the positive control tube (red lid). Cap and shake the tubes to mix.

Each time you run a test you will require a positive control. This is a small portion of DNA from your target of interest. It serves two purposes:

1. It will always test positive so it shows that everything is working as it should be.

2. The q16 software knows how much DNA is present in the positive control. So, it can automatically compare your sample of interest with the positive control to calculate the amount of target DNA in your sample.

To create a positive control reaction, simply use 10µl of the positive control instead of your test sample.

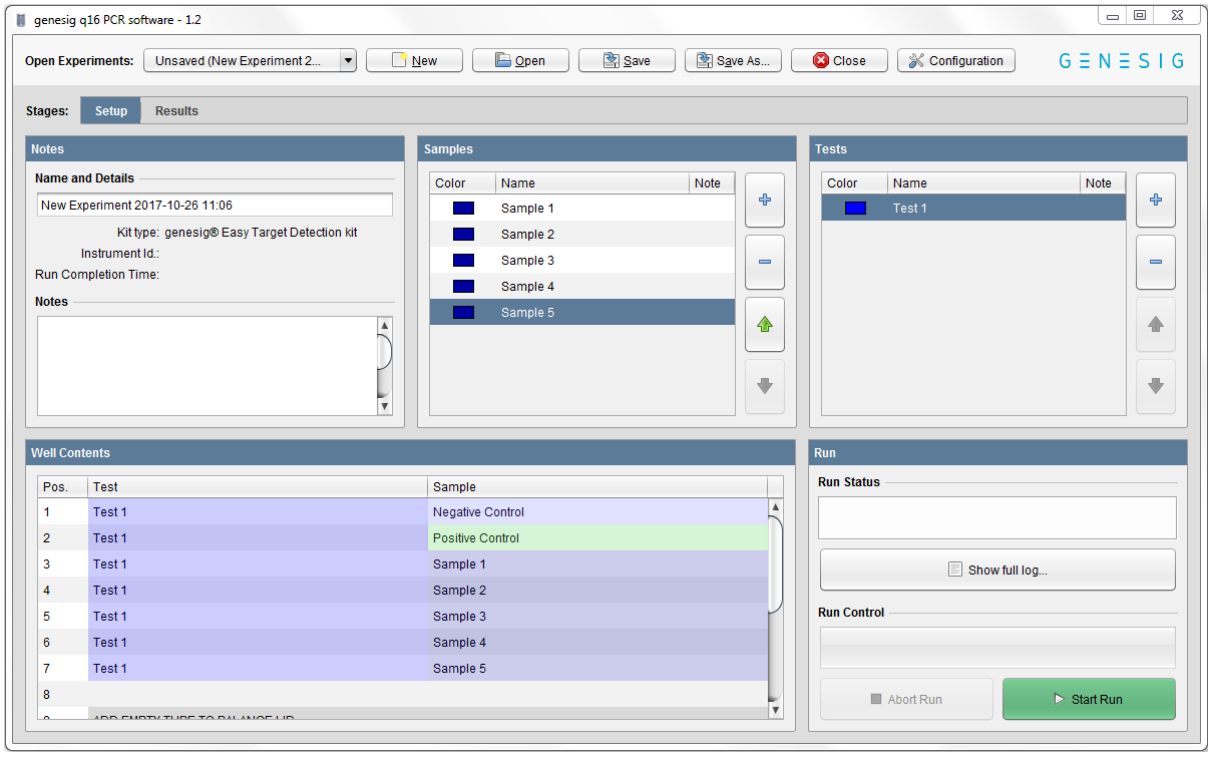


Take great care when setting up your positive control. The positive control template has the potential to give you a false positive signal in your other samples. Set positive controls up last after all other sample tubes are closed. Always change pipette tips between samples. You may even choose to set up positive controls in a separate room.

Top tip
• Always add the positive control to the side of the tube to reduce the introduction of bubbles.

6. Running the test

Open a new experiment and select “Target detection test”. Use the sample section “+” sign to add 4 samples, edit sample names accordingly. Place the tubes into the correct positions in your q16 as defined by the software, this may include the positioning of empty tubes to ensure the q16 lid is balanced. The run can then be started.



Top tip

- Before loading tubes into the q16, check for bubbles! Flick the bottom of the tubes to remove any bubbles that may have formed during the test setup.
- Apply centrifugal force with a sharp wrist action to ensure all solution is at the bottom of the reaction tube.
- When repeating a test you can use a previous file as a template by clicking ‘open’ then selecting File name > Files of Type > Experiment file as template

What do my results mean?

Analysis of your data is carried out automatically by the genesig q16. The following information is designed to help you fully understand a result or to troubleshoot:

“Positive”

Explanation
Your sample has produced a positive result. Your target of interest is present and you can use the reported quantity.

“Negative”

Explanation
Your sample has produced a negative result. The target is not present in your sample.

“Test contaminated”

Explanation
The negative control should be completely free of any DNA. If you see this error message it means that at some point during the setup, the negative control has been contaminated with DNA and has given a positive signal. This contamination has invalidated the test. The positive control and your test samples are both possible sources of contaminating DNA. The genesig q16 reaction tubes from previous runs will also contain very high amounts of DNA so it is important that these are carefully disposed of after the run is completed and NEVER OPENED. It may be the case that your kits have become contaminated which will lead to the same problem occurring repeatedly.

Solutions
1. Clean your working area using a commercial solution such as “DNA remover” to ensure the area is DNA free at the start of your run and re-run the test
2. If the problem persists then the kit has become contaminated and it will have to be discarded and replaced with a new kit. When you open the new kit, run a simple experiment to show that changing the kit has solved the problem. Prepare a test which includes only the positive control, the negative control and one ‘mock sample’. For the ‘mock sample’ add water instead of any sample DNA. The result for the negative control and the mock sample should be negative indicating that contamination is no longer present.

Preventive action
An ideal lab set-up has a ‘Clean area’ where the test reagents are prepared and a ‘sample area’ where DNA/RNA samples and the positive control template are handled. The best workflow involves setting up all the test components in the clean area and then moving the tests to the sample area for sample and positive control addition. If this method is followed then the kit components are always kept away from possible sources of contamination. For extra security the negative control can be completely prepared and sealed in the clean area. The clean area should be decontaminated regularly with DNA remover to keep it clean.

“Sample preparation failed”

Explanation
The test has failed because the quality of the sample was not high enough. The internal extraction control component identifies whether the sample has been prepared correctly or if the sample is of low quality. This error message means that this quality control test has failed and the sample is not fit for analysis.

Solutions
1. Check the sample preparation protocol for any user errors during preparation.
2. Poor samples can result from overloading the DNA/RNA extraction with too much starting material. Try reducing the amount of starting material and repeat the DNA/RNA extraction.
3. Failing to add the internal extraction control DNA to your sample during the DNA/RNA extraction process can also lead to a reported result of “sample preparation failed”. Ensure that this step has not been overlooked or forgotten. If your samples are derived from an archive store or from a process separate from your genesig Easy extraction kit; you must add 5µl of internal extraction control DNA into each 0.5ml of your sample to make it suitable for use on the q16.

“Positive result, poor quality sample”

Explanation
The test is positive so if you are only interested in obtaining a ‘present or absent’ answer for your sample then your result is secure as a positive test. However, the test contains an internal extraction control component that identifies if the sample is of high quality. This quality control test has failed and the sample is not therefore of high enough quality. The exact copy number of DNA/RNA present cannot be accurately calculated in this instance. If you require quantitative information for your sample then proceed with the solutions below.

Solutions
1. Check the DNA/RNA extraction protocol for any user errors during preparation and repeat the DNA/RNA extraction.
2. Poor samples can result from overloading the DNA/RNA extraction with too much starting material. Try reducing the amount of starting material and repeat the DNA/RNA extraction.
3. Failing to add the internal extraction control DNA to your sample during the DNA/RNA extraction process can also lead to a reported result of “positive result, poor quality sample”. Ensure that this step has not been overlooked or forgotten. If your samples are derived from an archive store or from a process separate from your genesig Easy extraction kit; you must add 5µl of internal extraction control DNA into each 0.5ml of your sample to make it suitable for use on the q16.

“Test failed”

Explanation
The positive control is present to show that all aspects of the test are working correctly together. This error message shows that the quality control test has failed and the test as a whole is invalidated. This finding indicates that a problem has occurred in the test set-up part of the experiment and has nothing to do with DNA/RNA extraction.

Solutions
1. Check the entire workflow to look for any user errors during test set-up and repeat the test e.g. have the right colour pipettes and solutions been used with the correct tubes?
2. A component of the test may have ‘gone off’ due to handing errors, incorrect storage or exceeding the shelf life. Open a new kit and run a simplified test which includes only the positive control, the negative control and one ‘mock sample’. For the ‘mock sample’ add water instead of any sample DNA. If the positive control works, the mock sample will now be called as a negative result indicating that all the components of this kit are working correctly.

“Test failed and is contaminated”

Explanation
The positive control is indicating test failure, and the negative control is indicating test contamination. Please read the “Test Failed” and “Test contamination” sections of this technical support handbook for a further explanation.

Solution
1. For appropriate solutions, read both the “Test failed” and “Test contaminated” sections of this handbook.

Kit storage and stability

This lyophilised kit is stable at room temperature but should be stored at -20ºC on arrival. Once the lyophilised components have been resuspended they should not be exposed to temperatures above -20ºC for longer than 30 minutes at a time and unnecessary repeated freeze/thawing should be avoided. The kit is stable for six months from the date of resuspension under these circumstances.
Primerdesign does not recommend using the kit after the expiry date stated on the pack.

Notices and disclaimers

This product is developed, designed and sold for research purposes only. It is not intended for human diagnostic or drug purposes or to be administered to humans unless clearly expressed for that purpose by the Food and Drug Administration in the USA or the appropriate regulatory authorities in the country of use. During the warranty period Primerdesign genesig® detection kits allow precise and reproducible data recovery combined with excellent sensitivity. For data obtained by violation to the general GLP guidelines and the manufacturer's recommendations the right to claim under guarantee is expired. PCR is a proprietary technology covered by several US and foreign patents. These patents are owned by Roche Molecular Systems Inc. and have been sub-licensed by PE Corporation in certain fields. Depending on your specific application you may need a license from Roche or PE to practice PCR. Additional information on purchasing licenses to practice the PCR process may be obtained by contacting the Director of Licensing at Roche Molecular Systems, 1145 Atlantic Avenue, Alameda, CA 94501 or Applied Biosystems business group of the Applera Corporation, 850 Lincoln Centre Drive, Foster City, CA 94404. In addition, the 5' nuclease assay and other homogeneous amplification methods used in connection with the PCR process may be covered by U. S. Patents 5,210,015 and 5,487,972, owned by Roche Molecular Systems, Inc, and by U.S. Patent 5,538,848, owned by The Perkin-Elmer Corporation.

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