Novogene

Pre-QC Handbook

Leading Edge Genomic Services & Solutions

Contents

This document provides guidelines on how to prepare, quantify, and submit samples to Novogene. Whether you are submitting DNA or RNA samples, it is essential that the appropriate instructions be followed to enable the successful completion of your project.

I. PRE-QUALITY CONTROL (QC) INSTRUCTIONS

Customers must provide the sample quality analysis results obtained using one of the following methods: Qubit®, NanoDropTM, agarose gel electrophoresis, or Agilent 2100. It is recommended samples be analyzed by Qubit/PicoGreen/gel electrophoresis (with quantity indicator), so that the results will correspond more closely to Novogene QC results. NanoDropTM quantification is NOT recommended. If NanoDropTM is utilized for pre-QC quantification, Novogene strongly recommends that you send more DNA/RNA for processing than the amounts given above.

For gel electrophoresis, the following conditions are recommended:

DNA: 1.0% agarose gel; 1.0% TAE solution; 100V for 40 min

RNA: 1.0% agarose gel; 0.5× TBE solution; 180V for 16 min

Note:

Different electrophoresis conditions may generate a different, and potentially misleading, QC report on your samples. Therefore, it is highly recommended that you adhere to the conditions recommended above for the initial check, and that you provide Novogene with a picture of the gel.

II. DEMONSTRATIONS OF QUALIFIED DNA/RNA SAMPLES

1. Demonstration of Markers Used

Novogene utilizes the following molecular size markers for sample quality control testing (Fig. 1).

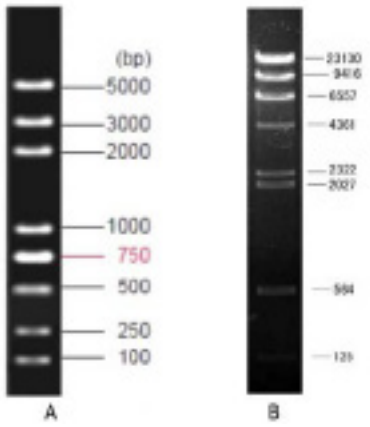


Fig. 1. (A) Trans2KTM Plus DNA Marker, (B) λ/HindIII DNA Marker, bp.

2. Demonstrations of DNA sample qual ity

2.1 Main types of sample quality

A qualified DNA sample is compared with common types of unqualified samples (Fig. 2):

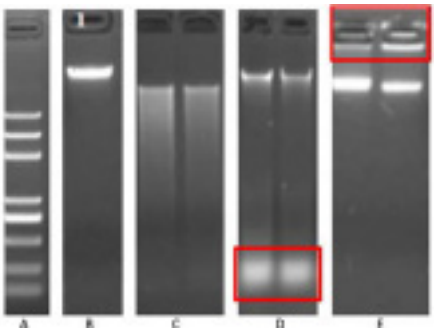


Fig. 2. Examples of DNA quality. (A) Trans2KTM Plus DNA Marker, (B) qualified sample, (C) degraded sample, (D) sample contaminated with RNA, (E) sample contaminated with protein. Red boxes denote areas of contamination

2.2 Samples with degradation

The gel picture illustrates samples with degradation. Severe degradation can impact the quality of the prepared library and subsequent bioinformatics analysis (Fig. 3):

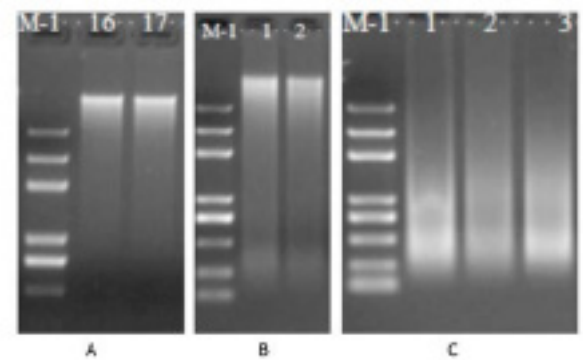


Fig. 3. DNA samples with degradation. Panels A, B, and C demonstrate increasing levels of DNA degradation. M-1, Trans2KTM Plus DNA Marker.

2.3 Samples with RNA contamination

RNA contamination of DNA samples (Fig. 4) can impede the library construction process. It is strongly recommended to digest your DNA samples with RNase before shipping.

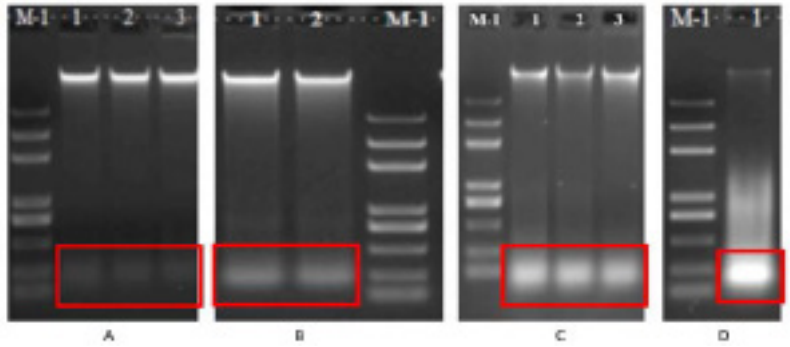


Fig. 4. DNA samples contaminated with RNA. Panels A – D demonstrate increasing levels of RNA degradation. Red boxes denote areas of contamination. M-1, Trans2KTM Plus DNA Marker.

2.4 Samples with protein contamination

DNA samples can be contaminated by proteins, as illustrated in Fig. 5. It is recommended that you purify protein-contaminated DNA samples by affinity column. Please note that column purification will lead to some loss of DNA.

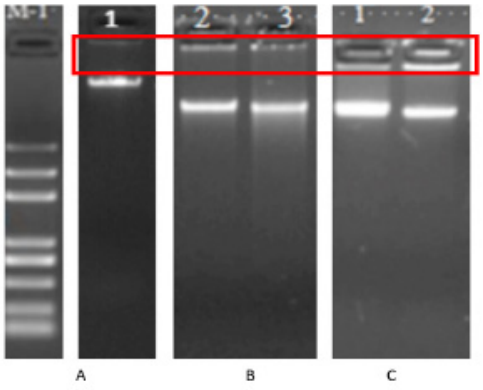


Fig. 5. DNA samples contaminated with protein. Panels A – C demonstrate increasing levels of protein contamination.

3. Demonstrations of RNA sample quality

3.1 Main types of sample quality

A qualified RNA sample is compared with common types of unqualified samples (Fig. 6):

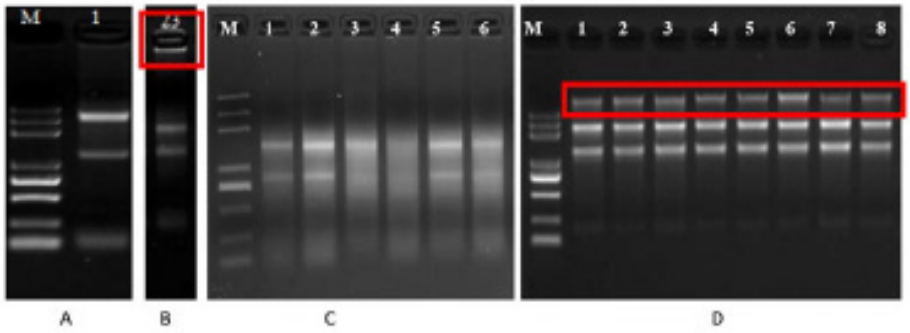


Fig. 6. Examples of RNA quality. (A) qualified sample, (B) sample with protein contamination, (C) samples with degratdation, (D) samples with genomic DNA contamination. Red boxes denote areas of contamination. M, Trans2KTM Plus DNA Marker.

3.2 Samples with protein contamination

A qualified RNA sample is compared with common types of unqualified samples (Fig. 6):

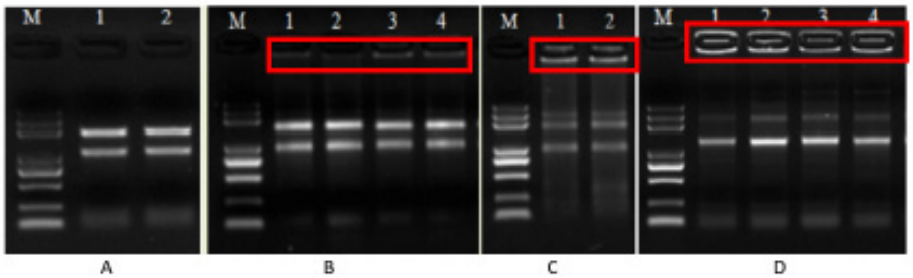


Fig. 7. RNA samples with protein contamination. Panels A – D demonstrate increasing levels of protein contamination. Red boxes denote areas of contamination. M, Trans2KTM Plus DNA Marker..

3.3 Agarose gel and Agilent 2100 analysis of RNA samples

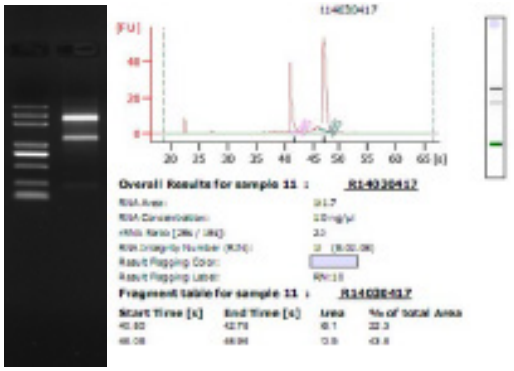


Fig. 8. An example of gel electrophoresis (left), and Agilent 2100 (right), results for an acceptable total RNA sample.

Fig. 9. An exampl e of gel electrophoresis (left), and Agilent 2100 (right), results for a degraded total RNA sample.

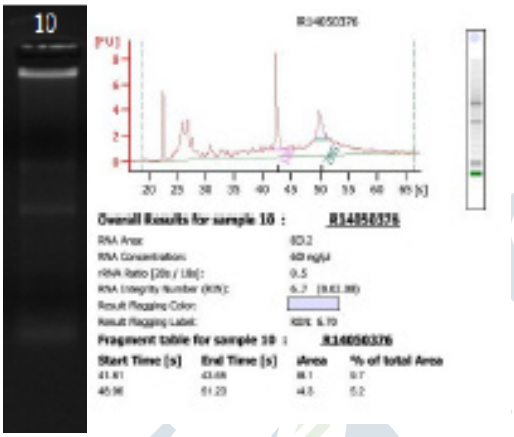


Fig. 10. An example of gel electrophoresis (left), and Agilent 2100 (right), results for an RNA sample with contamination.

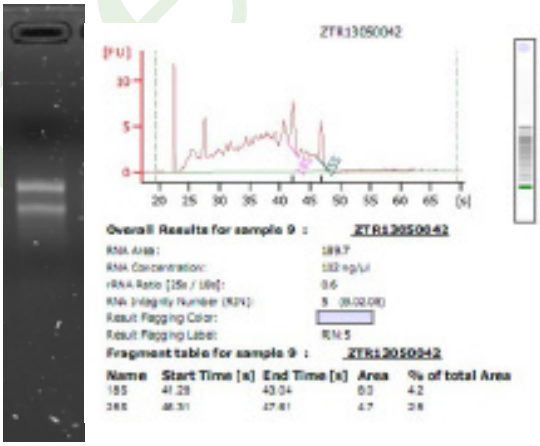


Fig. 11. An example of gel electrophoresis (left), and Agilent 2100 (right), results for a viscous total RNA sample.

IV. SAMPLE LABELING RECOMMENDATIONS

1. It is important to prevent the sample labels from being dissolved by solvents and from falling off the tubes. Use waterproof marker pen to write directly on the tube wall or lid is recommended strongly. Or you can also write the sample information on a paper/plastic label, stick the label onto the tube wall, and then secure the label to the tube by wrapping with clear, adhesive tape (e.g. Scotch tape) completely around the tube.

2. Please fill out and attach the Sample Information Form provided by Novogene in the email before shipping the samples. Please make sure that the sample information on the Sample Information Form matches the labels on the tubes.

V. SAMPLE PACKING RECOMMENDATIONS

1. For DNA and RNA samples, Novogene recommends 1.5 ml or 2 ml screw-cap DNase- and RNase-free microcentrifuge tubes. Please use Parafilm to seal each tube before packaging. Novogene does not recommend shipping samples dissolved in organic solvents (such as absolute ethanol or isopropanol) because the solvents may cause leakage of the samples, which can result in cross-contamination between samples. If it is unavoidable to ship samples in organic solvents, please use screw-cap tubes and seal the opening of the tube with at least 10 layers of Parafilm.

2. In order to avoid crushing during shipping, Novogene highly recommends placing the sample tubes in a container such as a 50-ml tube or a box with interior racks/holders. Cotton and absorbent papers can be used to prevent tubes from moving around inside the container.

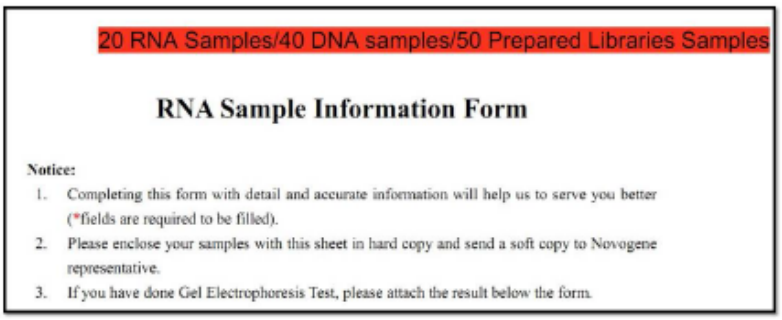
3. RNA samples should be kept in dry ice during shipment. Genomic DNA samples should be kept in blue ice during shipment. Saliva samples should be shipped at room temperature.

4. In order to stick with our high quality control standards, 96-well plates and PCR stripe tubes are NOT acceptable containers for your sample shipping. The only container we allow for sample shipping is 1.5 ml or 2 ml tube. (See picture below).

Fig. 12. Recommended and prohibited tubes for sending samples

VI. COMPLETING THE SAMPLE SUBMISSION FORM

A Sample Information Form must be submitted for each sequencing service project. All information on the forms should be filled out carefully. Please submit the completed ELECTRONIC COPY via email to our local sales representative and enclose a HARD COPY in the shipment. In both copies, please make sure you mark the samples summary (Sample types and number) at the top of the Form (Fig. 13)


20 RNA Samples/40 DNA samples/50 Prepared Libraries Samples

RNA Sample Information Form

Notice:

1. Completing this form with detail and accurate information will help us to serve you better (*fields are required to be filled).
2. Please enclose your samples with this sheet in hard copy and send a soft copy to Novogene representative.
3. If you have done Gel Electrophoresis Test, please attach the result below the form.

Fig. 13. Sample summary (top) and Sample Information Form

VII. SHIPPING SAMPLES TO NOVOGENE

Disclaimer: The information below only constitutes a recommendation for shipping samples classified as "non-regulated materials" to our facility. At the time this document was prepared, gDNA/total RNA was not defined as a diagnostic specimen in the International Air Transport Association (IATA) packing instructions, and therefore no special packaging requirements are listed. Due to continuing changes in regulations, customers should always check with their safety office and/or shipping department to ensure regulatory compliance.

1. Ensure that all samples conform to our quality standards and that they are prepared and packaged according to the guidelines given above.

2. Please make sure to notify a Novogene representative and to send the required documents before shipping your samples.

3. Select a reliable courier and choose the priority option for international shipments. Novogene recommends FedEx (http://fedex.com/), UPS (www.ups.com), DHL (www.dhl.com), TNT (www.tnt.com), USPS (www.usps.com), and World Courier (www.worldcourier.com). Whichever courier you choose, please make sure that the carrier can facilitate the importation of DNA or RNA samples, and dry ice packing (if applicable), into Hong Kong.

4. Sample transportation options:

DNA	Lyophilize the DNA for shipping at ambient temperature
	Pack with ice packs/blue ice (2-8 ° C)
	Use the cold-chain transportation system (2-8 ° C) of the courier
	DNA Stable (Liquid format, Biomatrica)
	Pack in dry ice (-60 ° C – -80 ° C)
RNA	Lyophilize the RNA for shipping at 2-8 ° C or ambient temperature
	Suspend RNA in 75% ethanol and ship on dry ice
	RNAstable (Biomatrica)
	Pack in dry ice (-60 ° C – -80 ° C)

Note:

1) It is highly recommended that RNA samples be shipped in dry ice packaging. Other packaging/transportation methods may add impurities or cause slight degradation of the RNA.

2) The quantity of dry ice and ice bags needed varies with seasons (i.e., room temperature), transit time, and the thickness of Styrofoam box and receptacle. Please contact your local courier office for estimated transit time. Normally, dry ice is consumed (sublimates) at a rate of 5 kg per day.

5. Sample shipping address

1) Shipping samples to US sample collection site (highly recommended for US customers)

Contact your local courier and package the samples with (1) a completed and detailed Sample Information Form; and (2) include any QC data for the samples if available (Qubit/Nanodrop/agarose gel electrophoresis/Agilent 2100). Our US sample collection address is as follows.

ATTN: Sample Receiving Department

Novogene Corporation

2921 Stockton Blvd, Suite 1810

Sacramento CA 95817

Phone: 916-701-5130

2) Shipping samples to HK sample collection site \\

Contact your local international courier and complete an INVOICE (commercial invoice, customs invoice, or pro-forma invoice) as required for customs, and include it with the shipment. Please complete the INVOICE as below:

- 1) RNA or DNA Samples for Research Use Only
- 2) Non-Dangerous, Non-Infectious
- 3) No Commercial Value, Value for Customs Only
- 4) Declare the value of the goods for customs [i.e. $1.00 (USD) or € 1.00 (EUR)]
- 5) Number of samples and volumes [the # of samples, and the estimated volume]
- 6) Type of container

Fig. 14. Courier INVOICE Example

Note:
Please DO NOT include any other information about the source or about how you packed it. DO NOT include words such as "Human, Tissue, Cell, blood, blue ice, dry ice, etc." on the airway bill. Just write "RNA or DNA Samples for Research Use Only" (Please refer to the airway bill in the above picture). DO NOT write our company name on the airway bill.

6. Package the samples with (1) a completed and detailed Sample Information Form; and (2) include any QC data for the samples if available (Qubit/Nanodrop/agarose gel

electrophoresis/Agilent 2100). Pack the DNA and RNA samples according to the above options, and send the package to the address below: (Note: there is no zip code/postal code system in Hong Kong), Hong Kong sample collection address is as follows,

Gary Chan
Novogene (HK) . Co., Ltd
Lot NO.3719, DD104, Kam Pok West Road, Tai Sun Wai, Yuen Long, N.T, Hong Kong
+852 34859221，26121032，26121828

7. Email the Sample Information Form and Purchase Order (PO) to the Novogene sales representative/project manager assigned to your project (indicated in the official
quotation). Use the Sample Tracking Quote# xxx as the subject line in the email, and include the tracking information (courier name and tracking number) in the body of the email to help ensure that the samples arrive safely and without any delay.

8. After arriving at the Novogene site, samples will be stored in -80°C freezer. The Project Manager will be responsible for providing timely feedback to you on the progress of your project.

Note:
Qubit is a trademark of Life Technologies and Thermo Fisher Scientific.
NanoDrop is a trademark of NanoDrop Technologies LLC.
Agilent 2100 Bioanalyzer is a trademark of Agilent Technologies.
Trans2K Plus is a trademark of TransGen Biotech.