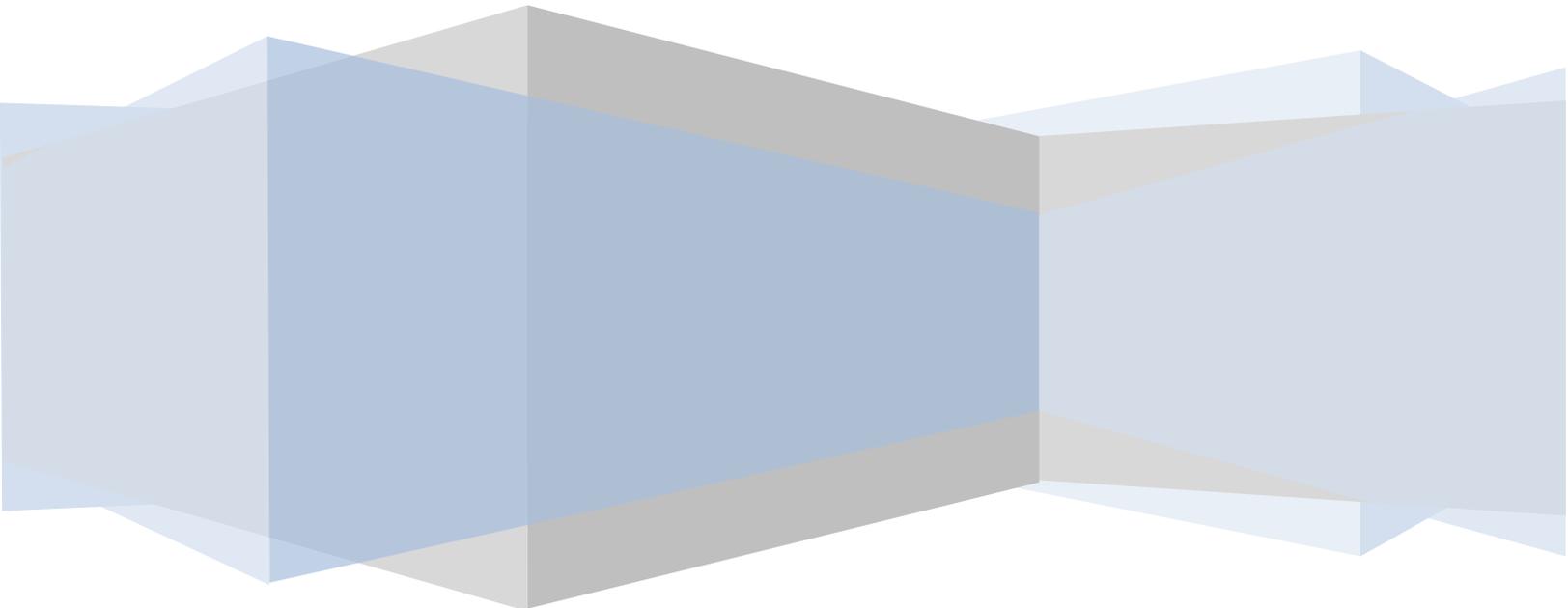




# Sample Submission Guidelines

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### Shipping Address

Research and Testing Laboratory  
4321 Marsha Sharp Fwy. Door #2  
Lubbock, TX 79407  
Contact: Dr. Rick Wolcott  
Phone: (806) 771-1134

### A Note Regarding These Guidelines

Our guidelines are flexible and attempt to answer many of the questions we are asked. Keep in mind that we are here to facilitate your research and we will work with you to obtain the best results at a reasonable cost. If you have any questions regarding these guidelines, or anything else, please do not hesitate to contact us at [lab@researchandtesting.com](mailto:lab@researchandtesting.com).

### Guidelines for Packaging Samples

This section details the guidelines for shipping samples. If you wish to send samples in a container not listed in this section, please contact us at [info@researchandtesting.com](mailto:info@researchandtesting.com) for guidelines pertaining to your exact needs.

Please keep in mind that we would prefer you send your samples in 1.5-ml microcentrifuge or 2-ml screw cap tubes.

### Shipping Samples in 1.5-ml Microcentrifuge / 2-ml Screw Cap Tubes

Clients using the standard DNA sequencing service should submit their DNA samples in 1.5-ml microcentrifuge tubes or 2-ml screw cap tubes.

#### Packaging Guidelines for the Primary Container (Sample Container):

1. For DNA send a volume of at least 20  $\mu\text{L}$ .
  - a. While we are able to work with any concentration, best results occur when your samples have a concentration of 20 ng/ $\mu\text{L}$  and a quality ratio of 1.8.
2. If you expect shipping time will take longer than 1 day, please wrap the lid of each sample tube with parafilm to protect against evaporation during transit.
3. Place sample tubes within a hard protective container (example: 50-ml centrifuge tube or used pipet tip box).

- a. Using a protective container will reduce the risk of your sample tubes being crushed during transport or individual samples being lost within the packing materials (packing peanuts, paper, etc.) when they are received.
4. Reinforce screw caps with adhesive tape, use a metal crimp seal or skirted stopper for metal and glass.
5. Affix or write with permanent marker or other marking method a proper label on primary container (e.g. vial) containing a sample to identify the contents and relate them to the packing list, described below.

#### Packaging Guidelines for the Secondary Container:

1. Use a watertight/leak proof container and reinforce the container using adhesive tape as necessary to contain the individual vials contents (e.g. zip-lock type bag).
2. Surround each primary container (e.g. vial) with sufficient absorbent packing material to completely absorb the contents should the primary container break during transit.
3. Include a packing list with a complete list of the contents including the scientific name and the amount in ml for liquids for each vial/tube. Place this packaging list in a separate (zip lock bag or other water tight package) to prevent it from becoming wet and unreadable. Please email a digital copy of this list to Research and Testing Laboratory to [lab@researchandtesting.com](mailto:lab@researchandtesting.com) to ensure safe arrival.

#### Packaging Guidelines for the Outer Container:

1. Use an outer container (shipping box) of sufficient strength to protect the specimen. We discourage the use of flat shipping envelopes designed for shipping paper documents.
2. Include on the packing slip an accurate address label with the name, complete address and phone number for both the shipper and the recipient.
  - a. Note: Only list the investigator or scientist so the Research and Testing Laboratory scientists and personnel can get you your final analyses without delays. Please avoid using anyone not directly related to your research, such as your secretary, as your contact when possible.
3. Affix the "double up arrows" sticker (example sticker shown below in the section titled "Example Labels") if orientation is important during transit and handling.
4. Clients can typically ship purified DNA samples overnight (next day delivery) at room temperature.
  - a. Research and Testing Laboratory does not recommend using dry ice or liquid nitrogen to ship DNA samples due to cost. However, if you wish to refrigerate your samples during shipping, we recommend using ice packs or dry ice.
  - b. If you plan refrigerate your samples during shipping then please read the section "*Guidelines for Shipping Refrigerated Samples*", found on page 6, as well as following any instructions provided to you by your carrier.

## Shipping Samples in 96-Well Plates

Clients that wish to submit their samples in 96-well plates should submit a minimum of 10  $\mu\text{L}$  per well. We recommend that clients prepare their plates for shipping using the following methods:

### Packaging Guidelines for the Primary Container (Sample Container):

1. For DNA send a volume of at least 10  $\mu\text{L}$  per well.
2. If you are shipping samples unrefrigerated then carefully and securely seal your plates with strip caps and ship the samples at an ambient temperature. However if you prefer to send your samples frozen then good quality foil tape is also acceptable. Do not use clear tape because it pulls loose easily under freezing conditions.
3. Place your plate inside a pipet tip box or similar box to prevent the plate from flexing during shipping as flexing may cause the tape to pull loose. Another option is to pack your plates inside a small box then pack the small box inside a second larger box.
4. If you are mailing custom primers in micro tubes, place them inside of a 50-ml poly tube or other form of protective container. Do not tape primer tubes to the outside of your template plate as this could lead to the tube being smashed, broken, or otherwise damaged during transit.
5. Affix or write with permanent marker or other marking method a proper label on primary container (e.g. plate) containing a sample to identify the contents and relate them to the packing list, described below.

### Packaging Guidelines for the Secondary Container:

1. Use a watertight/leak proof container and reinforce the container using adhesive tape as necessary to contain the sample contents (e.g. zip-lock type bag).
2. Surround each primary container (e.g. plate) with sufficient absorbent packing material to completely absorb the contents should the primary container break during transit.
3. Include a packing list with a complete list of the contents including the scientific name and the amount in ml for liquids for each vial/tube. Place this packaging list in a separate (zip lock bag or other water tight package) to prevent it from becoming wet and unreadable. Please email a digital copy of this list to Research and Testing Laboratory to [lab@researchandtesting.com](mailto:lab@researchandtesting.com) to ensure safe arrival.

### Packaging Guidelines for the Outer Container:

1. Use an outer container (shipping box) of sufficient strength to protect the specimen. We discourage the use of flat shipping envelopes designed for shipping paper documents.

2. Include on the packing slip an accurate address label with the name, complete address and phone number for both the shipper and the recipient.
  - a. Note: Only list the investigator or scientist so the Research and Testing Laboratory scientists and personnel can get you your final analyses without delays. Please avoid using anyone not directly related to your research, such as your secretary, as your contact when possible.
3. Affix the "double up arrows" sticker (example sticker shown below in the section titled "Example Labels") if orientation is important during transit and handling.
4. If you plan to ship your samples frozen then please package your samples in accordance with the guidelines provided in the section "*Guidelines for Shipping Refrigerated Samples*", found on page 6. You must also check with your carrier and follow any guidelines provided to you by them regarding the shipment of refrigerated samples.

### Guidelines for Shipping Refrigerated Samples

The following guidelines are for clients shipping samples to Research and Testing Laboratory using dry ice, ice packs or other means of refrigeration. Due to continuing changes in state and federal regulations, clients should always check with their shipping department to ensure regulatory compliance.

Guidelines for shipping refrigerated samples to Research and Testing are as follows:

1. Place samples in a Styrofoam cooler with cold packs/blue ice or dry ice. Do not use wet ice to ship your samples.
2. Place enough cushioning material (e.g. paper towels) around your samples to prevent movement within the Styrofoam cooler. Failure to provide cushioning material could result in damage or breakage of your sample tubes due to bouncing around of ice packs or dry ice.
3. Place the Styrofoam cooler inside a cardboard box to ensure acceptance by carrier.
  - a. A new outer box without any other labels or excess of tape works best.
  - b. If you must re-use box, then make sure to either remove or black out any other preexisting labels on the shipping box.
4. Packages shipped with dry ice must permit the release of carbon dioxide gas. If you are submitting samples with dry ice, the outer cardboard box must have the following:
  - a. A Miscellaneous Dangerous goods #9 hazard label fixed to the outside of package.
  - b. A label indicating "Carbon Dioxide, solid UN1845" on the outside of the package.
  - c. A label with the net weight of dry ice on the outside of the package.
  - d. An air waybill with the following information:
    - i. Classification (i.e. Carbon Dioxide, solid,9,UN1845),
    - ii. The number of packages, and
    - iii. The net quantity of dry ice per package.

## DNA and Unextracted Sample Preparation

### DNA Samples

Higher quality DNA will result in higher quality results. We cannot guarantee good results when low quality DNA is submitted to the laboratory. Research and Testing Laboratory offers DNA cleanup and normalization services. If you require these services but do not wish to pay for them, please perform them prior to sending your DNA or amplicons.

Be aware of potential hazards that may contaminate your DNA or amplicons:

- Do not extract or manipulate or open the tubes of your DNA in environments where amplicons of any kind are handled.
- Always use strict aseptic techniques and high quality molecular grade materials and reagents.
- Any non-molecular grade reagent has the potential for carrying background genetic material which may be detected by our sensitive methods.

### Genomic DNA Samples

Many customers send us samples that have already been extracted. **Obviously**, not all DNA is of the same quality. We encourage customers to use high quality DNA extraction kits for isolating their DNA. Please inform us of difficult DNA.

1. Qiagen has good extraction kits for a wide variety of sample types. Great tissue and stool kits. ([www.qiagen.com](http://www.qiagen.com))
2. MoBio has good extraction kits for a wide variety of sample types. Great soil kits. ([www.mobio.com](http://www.mobio.com))
3. Mpbio ([www.mpbio.com](http://www.mpbio.com))
4. Promega ([www.promega.com](http://www.promega.com))
5. Invitrogen ([www.invitrogen.com](http://www.invitrogen.com))
6. epibio ([www.epibio.com](http://www.epibio.com))

Regardless of extraction technique we request that, if possible, you determine the concentration and A260/280 ratio to determine if the quality is appropriate. If you determine your DNA quality is low we suggest using a DNA clean up kit (e.g. MoBio) to purify your DNA. If you can barely get your own samples to amplify then they will probably not pass our quality control of amplification. We provide one PCR amplification attempt in the quoted cost/sample. If a significant number of your samples do not amplify, and we determine your DNA quality is low, we will offer to clean up your

DNA, for a small fee. We have extensive experience troubleshooting amplification of DNA from many environmental sources. Please inform your lab scientist if you would like them to troubleshoot your samples for an additional fee.

When shipping your DNA we ask that you provide the volume and concentration (ng/  $\mu$ L) on the submission form. In general we request at least 20  $\mu$ L volume of your sample with a concentration normalized around 20 ng/  $\mu$ L. If this is a problem just let us know we can work with almost anything but again the quality going in to our process reflects on the quality output.

We know that it is not always possible to send that much DNA and this is not a requirement, however pre-normalized samples are generally processed more quickly than non-normalized samples. You can send your samples in any appropriate storage container, but we prefer samples to come in either 96 well plates, or 1.5 ul flip-top tubes. We suggest all samples should be sealed with parafilm to reduce evaporation. Making sure your samples are safely packaged is your responsibility. Research and Testing Laboratory has QC procedures for checking in samples but we might not always catch that 2-3 samples out of 500 leaked or evaporated during shipment.

### PCR Products

With difficult samples (e.g. extreme environments) it may be best to send us purified PCR products. We will need to perform a nested PCR to add linkers and tags. Please communicate with us at [lab@researchandtesting.com](mailto:lab@researchandtesting.com) so we can coordinate assays.

When shipping your PCR amplicon we ask that you provide the volume and concentration (ng/  $\mu$ L) on the submission form. In general we request at least 20  $\mu$ L volume of your sample with a concentration normalized around 20 ng/  $\mu$ L. If this is a problem just let us know we can work with almost anything but again the quality going in to our process reflects on the quality output. We know that it is not always possible to send that much DNA and this is not a requirement, however pre-normalized samples are generally processed more quickly than non-normalized samples. You can send your samples in any appropriate storage container, but we prefer samples to come in either 96 well plates, or 1.5 ul flip-top tubes. We suggest all samples should be sealed with parafilm to reduce evaporation. Making sure your samples are safely packaged is your responsibility. Research and Testing Laboratory has QC procedures for checking in samples but we might not always catch that 2-3 samples out of 500 leaked or evaporated during shipment.

### Samples for Extraction

Our scientists at Research and Testing Laboratory are able to provide extraction from a wide range of sample types. In most cases we require small amounts of sample to perform DNA extraction (< 1gm). We do not have a recommended shipping temperature and will be able to perform extraction whether you send your sample on dry ice or at room temperature. We believe you know the best

storage method for your samples, however if you are unsure which method to use then we suggest going with dry ice. Also, please keep the following advice in mind:

- Please do not suspend samples in buffer, ethanol, etc. It is best to send the sample in a sterile centrifuge tube. This is not a strict requirement but many buffers influence the success of DNA extractions.
- The goal when sending us samples is to send the most representative sample possible. For many heterogeneous samples (e.g. soil, feces, water), you will want to handle everything aseptically as contamination will be detected by our instruments as part of your sample.
- Homogenizing the sample you would like us to analyze is a good way to gain a representative analysis of larger samples. You can then take a few small subsamples, put these together in a safe sterile container (usually 15 or 50 ml screwtop polypropylene), and then ship that to us.
- Feel free to contact us at [lab@researchandtesting.com](mailto:lab@researchandtesting.com) with any questions you may have.

#### Advice for International Customers (Outside the United States)

- Please only ship purified DNA suspended in molecular grade water or appropriate elution buffer.
- If you need to ship a sample to be extracted, please consult with us and allow us to obtain any necessary permits. Purified DNA typically is no problem. Refer to section “DNA Samples” on page 7 for instructions on how to get the best DNA possible from your samples.
- For more detailed information regarding shipping samples to Research and Testing Laboratory from international sources, please see our information packet titled “*Instructions for Shipping Material from Outside the United States*”.
- Feel free to contact us at [lab@researchandtesting.com](mailto:lab@researchandtesting.com) with any questions you may have.

#### Feces/Rumen and Other GI Content Samples

- International customers: Please consult with Research and Testing Laboratory before shipping fecal or other GI material.
- In most cases, fecal material should be homogenized and subsampled prior to shipping. In this way, the representative nature of the sample is in the hands of primary investigators.
- It is vital that samples are adequately contained and packaged for shipping. We prefer to receive fecal samples in screw top 50mL polypropylene tubes (or other safe, non-fragile containers) to prevent tubes from coming open or breaking during shipment.
- Care should be taken to ensure that samples do not break. Breakage of one sample risks contamination of the rest of the containers. Research and Testing Laboratory will screen for damage. If we do find evidence of issues with samples, we will contact the investigators.
- Additional cost may be incurred if extensive decontamination is required due to improperly packaged samples.

### Water Samples

- International customers: Please consult with Research and Testing Laboratory before shipping water samples.
- We recommend sending less than 50 ml of homogenized sample, in a screw top container (preferably a 50 ml tube).
- Volumes in tubes should be 50% of the total capacity of that tube to prevent breakage during freezing or shipping.

### Whole Organism Samples

- International customers: No international shipping of bacterial isolates without consultation. Contact us at [lab@researchandtesting.com](mailto:lab@researchandtesting.com) to allow Research and Testing Laboratory scientists and staff to obtain necessary permits.
- Send frozen in an appropriately sized tube.
- Careful consideration should be given to shipping potentially pathogenic organisms. Permits may be required and Research and Testing Laboratory staff ([lab@researchandtesting.com](mailto:lab@researchandtesting.com)) should be included in consultation before shipping cultures or isolates that are potentially pathogenic.

### Tissue Samples

- International customers: No international shipping of tissue without consultation. Contact us at [lab@researchandtesting.com](mailto:lab@researchandtesting.com) to allow Research and Testing Laboratory scientists and staff to obtain necessary permits.
- We only require a small portion of tissue (about the size of a pen tip), however we request a sample the size of a peanut to account for any trouble shooting.
- Consultation with Research and Testing Laboratory may be necessary.
- Clinical samples that are potentially pathogenic should be shipped using biological substance cat B shipping standards and must include a UN3373 (biological substance cat B) label (example label shown below in the section titled “Example Labels”). Research and Testing Laboratory is happy to provide documentation on how to do this.

### Soil Samples

- International customers: No international shipping of soil samples at all.
- We suggest soil be sent in a screw top 50 ml tube (screw top prevents the tubes from coming open in shipment).
- We do not need more than 1/3 of the tube to be filled.

Example Labels



Example UN3373 (Biological Substance Cat B) Sticker



Example of a Double Up Arrows Sticker