CANADA'S MICHAEL SMITH
GENOME SCIENCES CENTRE

From Nobel roots.

RNA

USER GUIDE

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Canada's Michael Smith Genome Sciences Centre
100–570 West 7th Avenue · Vancouver BC V5Z 1B3 · Canada
bcgsc.ca · *info@bcgsc.ca*

ABOUT US

Our **CAP**, **DAP**, **ISO 15189**, and **ISO 27001** certified technology platform is a high-throughput, large-scale DNA and RNA sequencing and analysis facility that has been designed to maximize analytical capacity, diversity, efficiency, scalability and flexibility.

Our state-of-the-art clinical, sequencing, bioinformatics, and proteomics platforms are ready to be put to use for your research or clinic.

We partner with researchers, guide experimental design, execute high quality processing of complex and valuable biological samples and provide extensive bioinformatics analyses with the aim of making genomics research accessible to our partners and collaborators within the scientific community.

Please feel free to contact us at *SOW@bcgsc.ca* if you have any questions about the services we provide.

ABOUT THIS GUIDE

This user guide describes requirements and recommendations for the preparation and submission of **extracted RNA**.

The recommended starting materials and amounts described in this guide work well for human or mouse derived nucleic acids. *For best results, please submit the recommended amount of starting material or more.*

If working with other organisms, please file a **Collaborative Services Inquiry** at *https://bcgsc.ca/services/collaborative-services-inquiries*.

If you are submitting a different sample type, please refer to the other user guides at *bcgsc.ca/services*.

CONTACTS

Submissions
GSC_submissions@bcgsc.ca

Statements of Work
SOW@bcgsc.ca

Data Support and Access
data_support@bcgsc.ca

Shipping
GSC_submissions@bcgsc.ca

General
info@bcgsc.ca

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1. SAMPLE PREPARATION

1.1. SUBMITTING EXTRACTED RNA FOR LIBRARY CONSTRUCTION

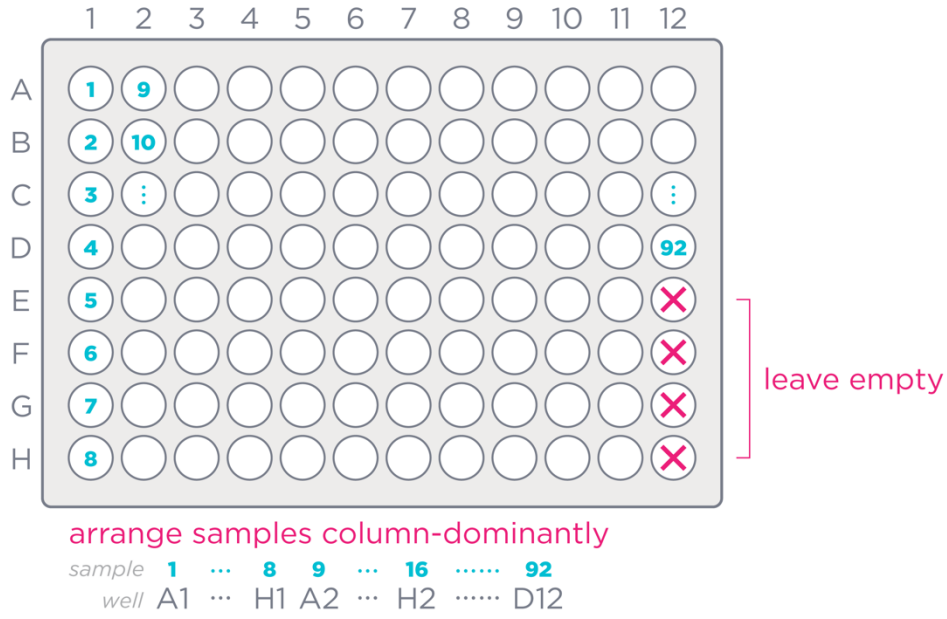
Extracted RNA samples should be submitted frozen, and samples must be normalized by concentration.

RNA samples are accepted in the following formats:

1. *Less than 24 samples:* **1.5 mL snap-top Eppendorf tubes** (or equivalent). Screw cap tubes are not accepted.
2. *24 or more samples:* **Axygen 96 FS-C plates**. If these are not available in your lab, you will be able to request a plate to be sent to you through our online submission system.

    2.1. In special circumstances, *24 or more samples* may be submitted in **tubes**. Please contact *GSC_Submissions@bcgsc.ca* for approval.

If submitting in a 96-well plate format, arrange samples in a column-dominant format with no empty wells between samples (e.g., A1, B1, C1, … H1, A2, B2, …) (see figure below). Wells E12, F12, G12 and H12 **must be left empty** for internal controls.



2. LIBRARY PROTOCOLS

The following requirements apply to all RNA sample submissions.

1. *Quantification method:* Agilent Bioanalyzer RNA nano chip
2. *Quality assessment method:* Agilent Bioanalyzer RNA nano chip
3. *Quality value:* RIN > 7 (not applicable for FFPE)

2.1. TERMS USED

BCR	B-cell receptor
FFPE	formalin-fixed paraffin-embedded
RIN	RNA integrity number
TCR	T-cell receptor

2.2. SUBMISSION REQUIREMENTS

starting material	amount		
	recommended	minimum	concentration
polyA+ mRNA			
total RNA	**750 ng**	**250 ng**	**> 7.2 ng/µL** in **20–35 µL**
rRNA DEPLETED			
total RNA	**200 ng**	**125 ng**	**> 10.4 ng/µL** in **8–12 µL**
rRNA DEPLETED (FFPE)			
FFPE total RNA	**1,000 ng**	**800 ng**	**> 66.6 ng/µL** in **8–12 µL**
rRNA AND GLOBIN DEPLETION			
total RNA	**200 ng**	**125 ng**	**> 10.4 ng/µL** in **8–12 µL**
microRNA			
total RNA/FFPE total RNA	**1,000 ng**	**700 ng**	**> 58.3 ng/µL** in **8–12 µL**
microRNA LOW INPUT			
total RNA	**100 ng**	**50 ng**	**> 5 ng/µL** in **8–10 µL**
microRNA LOW INPUT (FFPE)			
FFPE total RNA	**400 ng**	**250 ng**	**> 25 ng/µL** in **8–10 µL**
TCR/BCR			
total RNA	**500 ng**	**300 ng**	**> 25 ng/µL** in **8–12 µL**

3. SUBMITTING FOR SPECIFIC PLATFORMS

3.1. NANOPORE

The following requirements apply to all sample submissions destined for sequencing on the Nanopore platform:

1. *Quantification method:* Agilent Bioanalyzer RNA nano chip
2. *Quality assessment method:* Agilent Bioanalyzer RNA nano chip
3. *Quality value:* RIN > 7

NANOPORE PLATFORM			
starting material	amount		
	recommended	minimum	concentration
TOTAL RNA DIRECT SEQUENCING			
total RNA	**50,000 ng**	**25,000 ng**	**> 333 ng/µL** in **50–75 µL**
cDNA (polyA+) SEQUENCING			
total RNA	**1,000 ng**	**500 ng**	**> 14.2 ng/µL** in **20–35 µL**
cDNA (rRNA DEPLETED) SEQUENCING			
total RNA	**1,000 ng**	**500 ng**	**> 41.6 ng/µL** in **8–12 µL**

4. ONLINE SAMPLE SUBMISSION

Refer to **Introduction to Our Collaborative Services guide** for instructions on using the **Online Sample Submission System**. We recommend that you fully review this guide to working with us before initiating your submission.

The online sample submission form must be completed and approved prior to submitting your samples to the GSC.

If you have any questions, contact us at *GSC_Submissions@bcgsc.ca*.

5. SAMPLE SHIPPING AND DROP-OFF

Before shipping your sample, please make sure that your sample submission form has been reviewed and approved.

5.1. DRY ICE SHIPPING REQUIREMENTS

If shipping samples on dry ice, please adhere to the requirements listed below.

DO NOT FULLY SEAL	USE ENOUGH DRY ICE	AFFIX UN1845 LABEL
For safety, **dry ice must never be sealed** in a container with an airtight seal. A typical shipping container is an internal foam box with cardboard box exterior. To allow sublimating CO_2 to vent, **DO NOT completely tape the Styrofoam top or the box top**.	Samples must be shipped with a **minimum of 10 lbs (4.54 kg) of dry ice**. Dry ice sublimates at rate of 5–10 lbs per 24 hours. If you anticipate any delays during shipping (more than 24 hours), ensure that there is enough dry ice to sample integrity.	To comply with dangerous goods regulations, the outermost container must be labeled with a **hazard class 9 label** (**UN1845**), and a **net weight of dry ice** (in kilograms). 

5.2. SAMPLE SUBMISSION BY COURIER

5.2.1. BEFORE SHIPPING

Before shipping your sample, please make sure that your sample submission form has been reviewed and approved.

5.2.2. WHERE TO SHIP

We recommend shipping Monday to Wednesday — we cannot accept packages on weekends.

Once your sample submission form is reviewed and approved, ship your samples to:

Dr. Andrew Mungall
Biospecimen Core, Room 508
Canada's Michael Smith Genome Sciences Centre
100 – 570 West 7th Avenue
Vancouver BC V5Z 1B3 Canada

email: amungall@bcgsc.ca
tel: 604-707-5900 ext. 675411

5.2.3. AFTER SHIPPING

Once samples have been shipped, please notify us of your shipment by email to GSC_Submissions@bcgsc.ca.

Make sure to include the shipment tracking number so we can monitor the progress during transit.

5.3. SAMPLE SUBMISSION BY DROP-OFF

5.3.1. BEFORE DROPPING OFF

Before dropping off your sample, please make sure that your sample submission form has been reviewed and approved.

When you are on your way to us with the sample, please email us at GSC_Submissions@bcgsc.ca so that we know when to expect you.

5.3.2. SAMPLE DROP-OFF AND PLATE PICKUP HOURS

9:30 – 11:30 am & 1:30 – 3:30 pm
Monday – Friday

5.3.3. ADDRESS

Canada's Michael Smith Genome Sciences Centre
100 – 570 West 7th Avenue
Vancouver BC V5Z 1B3 Canada

Once you arrive at our location, please call our office directly at 604-707-5900 ext. 675411.

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