



## Thank you for your interest in the RHINOstic "Tiny Swab" usability study!

Please answer the following questions below to determine your eligibility to participate in this sub-study. Your answers will not affect your eligibility to participate in the SCAN study as a whole.

*If answering this survey for someone else, "You" refers to the participant being tested.*

<b>Date of birth</b> <small>* must provide value</small>	<input type="text"/>  M-D-Y
<b>Age of enrollee (years)</b>	<input type="text"/> <a href="#">View equation</a>
<b>today</b>	<input type="text"/>  Today M-D-Y
<b>Have you been sick in the past week with a new fever, new or worsening cough, or new or worsening shortness of breath?</b> <small>* must provide value</small>	<input type="radio"/> Yes <input type="radio"/> No <span style="float: right;"><a href="#">reset</a></span>
<b>Do you have previous laboratory or medical training?</b> <small>* must provide value</small>	<input type="radio"/> Yes <input type="radio"/> No <span style="float: right;"><a href="#">reset</a></span>
<b>Is there at least one parent or guardian in your household who does NOT have previous laboratory or medical training?</b> <small>* must provide value</small>	<input type="radio"/> Yes, at least one parent or guardian in my household does NOT have previous laboratory or medical training. <input type="radio"/> No, every parent or guardian in my household has previous laboratory or medical training. <span style="float: right;"><a href="#">reset</a></span>

**Supplementary Figure 1.** RHINOstic™ Usability Study Enrollment and Illness Questionnaire as presented in REDCap.

### STEP A: Register your kit

A link was emailed or texted to you when we sent your kit for you to register your kit. You will need the barcode that is printed on your kit to register. Write down or use your smartphone to take a photo of this barcode. **You will need to have your kit registered and this barcode saved in order to receive your results.**



*If you are at least 13 years old, you can self-collect your sample. If you are younger than 13 years old, a parent or guardian needs to collect your sample.*

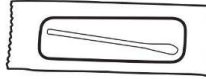
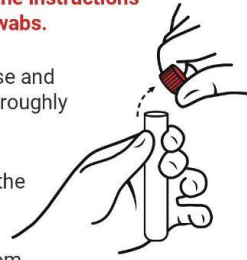
#### If you are swabbing someone else's nose:

- The person being swabbed should be seated in a comfortable position
  - Younger children can sit in another adult's lap, car seat, or highchair
- If needed, offer them a distraction (such as a toy or video)
- Follow the instructions below for collecting the swab
- Write the name of the person whose nose has been swabbed on the tube
- More detailed instructions can be found at [scanpublichealth.org/resources](https://scanpublichealth.org/resources)

### STEP B: Collect your nasal swab

**Please read through all the instructions before collecting your swabs.**

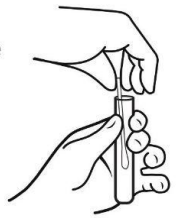
1. Please blow your nose and wash your hands thoroughly before you begin
2. Loosen and remove the cap from the tube
3. Remove the swab from the packaging. Be careful not to touch the tip of the swab with your hands.



4. Insert the swab until there is gentle resistance or until you can no longer see the tip
5. Move the swabs in a circle so they touch all sides of your nostril for 10-15 seconds. This should be at least 5 circles around all sides of your nostril
6. Remove the swab and repeat steps 4 and 5 on the other nostril. **When finished, the swab should have been inserted into both your left and right nostril**



7. Place the swab (cotton-end down) into the provided tube



8. Screw cap on tightly

9. Write your first and last name\* (as written when enrolled in SCAN) and today's date on your tube



\* Your sample **MUST** have your full name and today's date on the tube to be tested



#### HAVE YOU REGISTERED YOUR KIT?

**Before you package your kit, you will need to complete STEP A. Your kit must be registered to receive results.**

CONTINUE ON TO STEP C →

### STEP C: Carefully package and ship your swab

Please follow these instructions carefully; **We will be unable to test your swab if you package your swab incorrectly.**

1. Insert your tube into the specimen transport bag through the opening in the middle of the white sticker at the top of the bag



2. Remove the white adhesive sticker at the top of the bag and discard it.

3. Seal the bag by folding at the slit opening. The star should align inside the box printed on the bag.



4. Please wash your hands again.

5. Place the specimen transport bag back into the box provided.



6. Place the closed box into the prepaid mailer bag.



7. Seal the bag by removing the adhesive strip.

**To return your kit:** Leave your kit in the area you listed during enrollment **BEFORE** your pickup time. Your pickup time can be found in your confirmation email or text message.

A courier will conduct a no-contact pick up of your kit during your pick-up time window.

#### Your test result

Your test result will be available on <https://scanpublichealth.org/results> once it has been processed. **You will need your barcode number and date of birth to check your results.** Please allow 2–3 days after your kit has been returned for the status to update in the online portal.

This study does not replace care you would receive from your doctor. If you get sicker or have trouble breathing, please call your healthcare provider and tell them about your problems. Please follow Public Health—Seattle & King County's recommendations for infection control. Visit: [kingcounty.gov/covid](https://kingcounty.gov/covid)

# SCAN

GREATER SEATTLE CORONAVIRUS  
ASSESSMENT NETWORK STUDY

## Quick Start Guide

**Thank you for your participation!**

Please follow the steps outlined in this guide for taking a swab and mailing it back to us.

If you have any questions, contact us at [support@scanpublichealth.org](mailto:support@scanpublichealth.org) seven days a week or **206-616-5859** Monday through Friday from 8 am to 8 pm PST.

Use this checklist to complete all required steps and ensure you'll receive your results:

- Register your kit
- Check your email/text for scheduled pick up time: \_\_\_\_\_
- Write down your barcode: \_\_\_\_\_
- Collect nasal swab
- Put swab (cotton-side down) into tube
- Write your first and last name and today's date on tube
- Prepare sample for return shipping: "Bag, Box, Bag"
- Put kit outside for no-contact pick up
- Keep this card for your records and to remember your barcode

READ THE ENTIRE CARD BEFORE STARTING →

**Supplementary Figure 2.** Participant instructions for collecting and packaging the US Cotton #3 swab (originally printed on a tri-fold brochure).

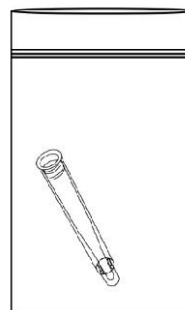
# Quick Start Guide

Thank you for your participation!

Please follow the steps outlined in this guide to activate and complete your **RHINOstic Tiny Swab** test.

## STEP A: Activate your swab

1. **Activate your kit using the “Activate Your Kit” link that we sent by email. You must activate your kit in order for your swab to be tested.**
2. **Once you have reached the question requiring your collection tube’s barcode on the *Kit Registration Form*, sanitize your hands before proceeding.**
3. **Open only the bag containing your collection tube and retrieve the tube without removing the small lid on top.**
4. **Locate the 8-digit barcode on the side of your tube and type each barcode digit into the designated box within your survey.**



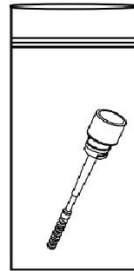
Collection tube with 8-digit barcode.....

5. **Once you have entered your barcode, please ensure it accurately matches the barcode on your tube. The barcode should be an 8-digit combination of numbers and letters, all lowercase.**

## STEP B: Collect Your Nasal Swab

If you are younger than 13 years old, a parent or guardian needs to collect your sample.

1. Blow your nose and wash your hands.
2. Remove the small lid from the collection tube and discard. Keep the tube in your hand while swabbing your nostrils.

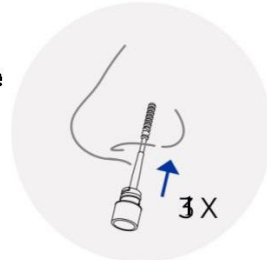


Collection swab

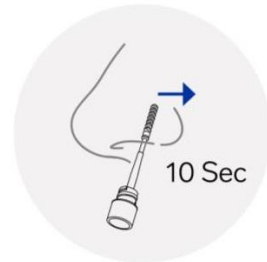
3. Carefully remove the swab portion from your specimen bag, making sure to grab it by the cap without touching the collection end of the swab.
4. Insert the tip of the swab into one (1) nostril until pressure is felt in the nose. The swab should be placed just inside your nostril.
5. Rotate the swab around the inside of the nostril three (3) times being sure you are making firm contact with the inside of your nose.



6. Gently slide the swab up and down against the inside of the nose one (1) time.



7. Firmly hold the swab against the inside of the nostril for ten (10) seconds.

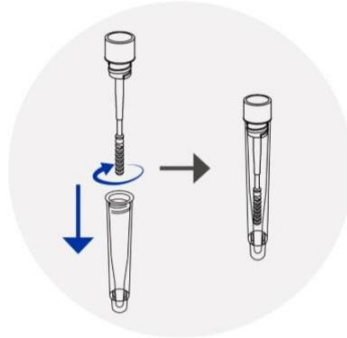


8. Repeat collection steps (4-7) in the second nostril using the same swab.

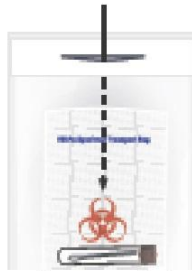
**Supplementary Figure 3.** Participant instructions for collecting and packaging the RHINOstic™ swab (page 2 of 4).

### STEP C: Package Your Kit

1. Insert your completed swab into the open collection tube while still being careful to hold it by the cap.
2. Carefully screw the capped swab into the tube, so that it is completely closed. Make sure the tube is closed tightly.



3. Insert your completed sample tube into the labeled biohazard bag through the opening in the middle of the white sticker at the top of the bag.



4. Remove the white adhesive sticker at the top of the bag and discard it.
5. Seal the bag by folding at the slit opening. The star should align inside the box printed on the bag.
6. Wash your hands again after handling the tube.

**Supplementary Figure 3.** Participant instructions for collecting and packaging the RHINOstic™ swab (page 3 of 4).

7. Place the clear Specimen Transport Bag with your tube back into the box.



8. Place the closed box into the white Prepaid Mailer Bag and seal it closed.

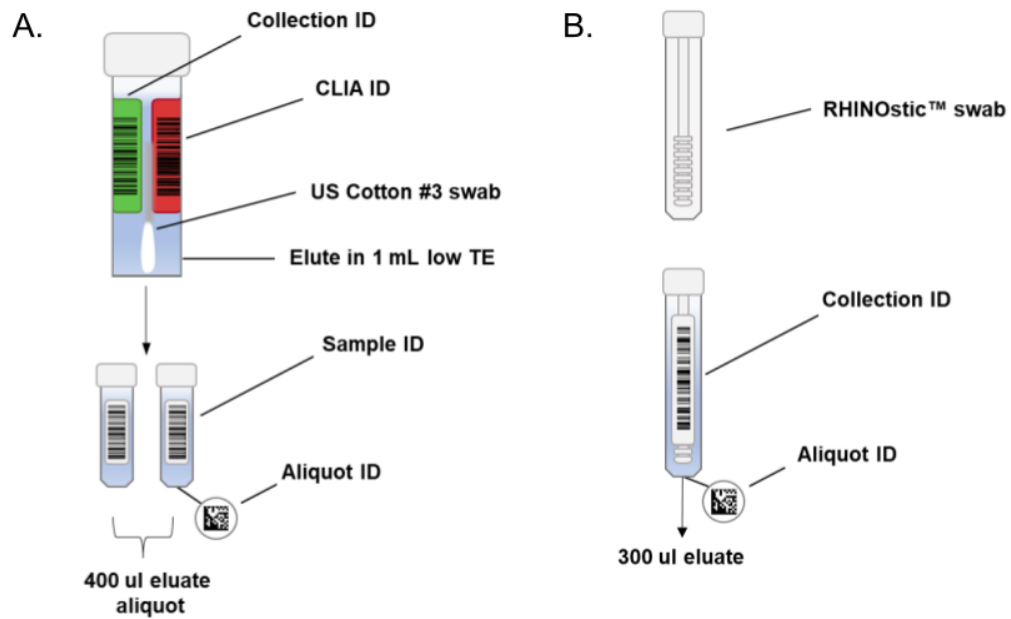


#### STEP D: Leave Kit for Pickup

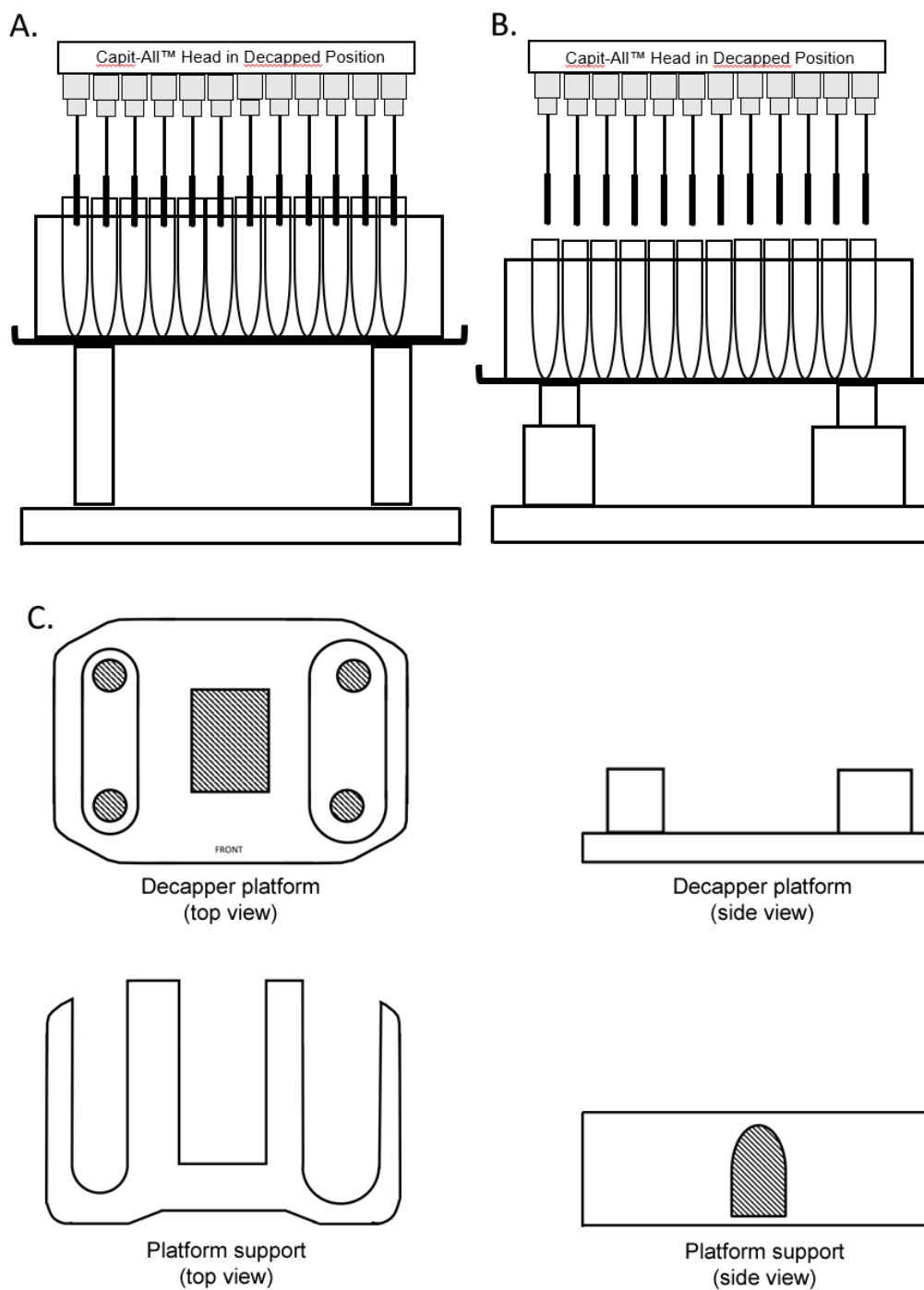
1. Before your scheduled pickup time, place both of your kits in the larger white polymailer bag and leave them in the area you listed when you signed up for SCAN. (The research coordinator will help you schedule a pickup time.)
2. A delivery person will do a no-contact pickup of your kit during your pickup time.
3. You can access the results of your U.S. Cotton Swab at [www.seattleflu.org/results](http://www.seattleflu.org/results) by entering your U.S. Cotton Swab tube barcode and your date of birth. You will not receive results for the RHINOstic Tiny Swab.

*Thank you for your participation in our study!*

**Supplementary Figure 3.** Participant instructions for collecting and packaging the RHINOstic™ swab (page 4 of 4).



**Supplementary Figure 4.** A.) US Cotton #3 elution schematic B.) RHINOstic™ swab elution schematic.

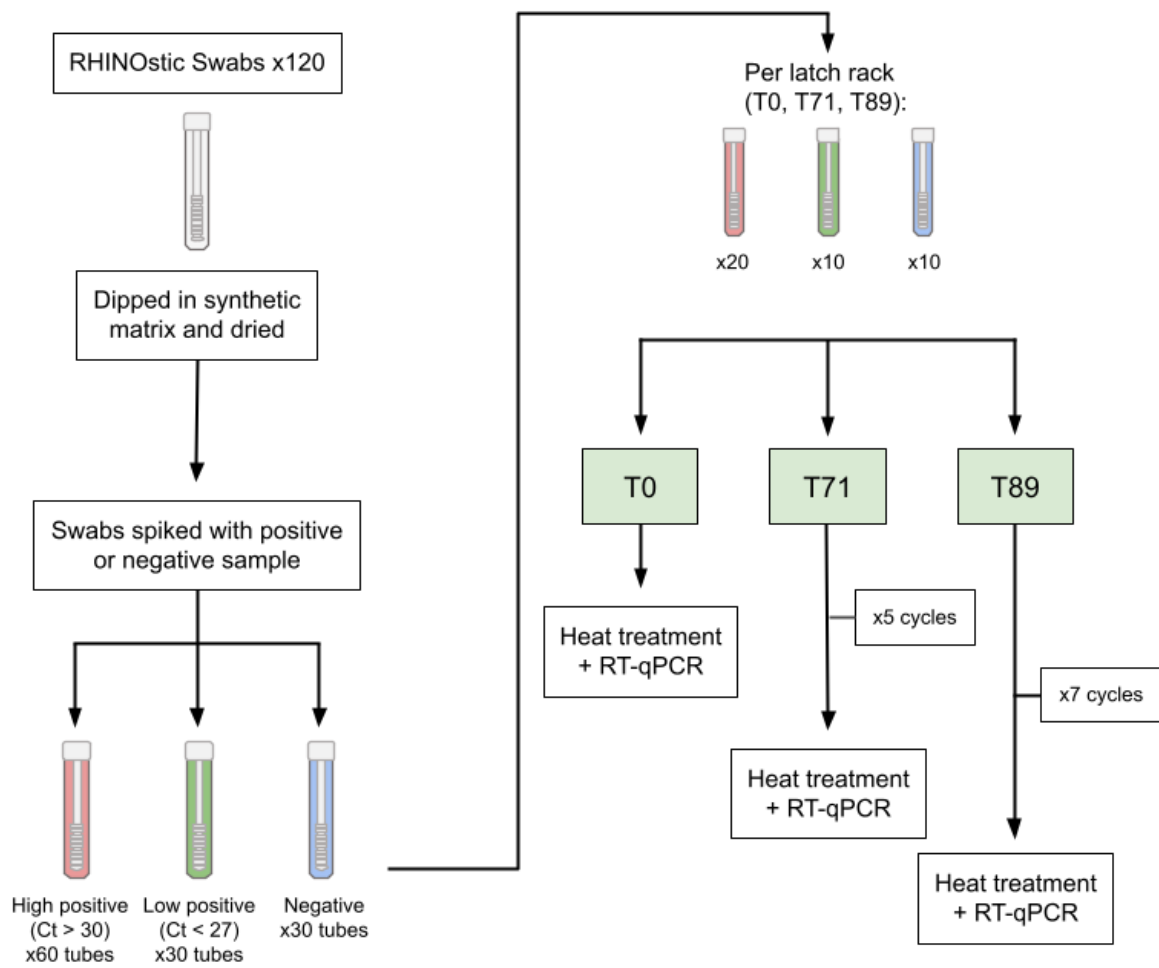


**Supplementary Figure 5.** **A.)** Capit-All™ setup in decapped position using *RHINOstic*™ anterior nares swabs and original decapper platform **B.)** Capit-All™ setup in decapped position using *RHINOstic*™ anterior nares swabs and modified decapper platform in lowered position (shown without jack for clarity). **C.)** Illustrations of the decapper platform and support as viewed from the top and side (shown without jack for clarity).



	starita_bbi_covid_5~TS_checked_decapper_exp_1											
	1	2	3	4	5	6	7	8	9	10	11	12
A	830591	830599	830607	830615	830623	830631	830639	830647	830655	830663	830671	830679
B	830592	830600	830608	830616	830624	830632	830640	830648	830656	830664	830672	830680
C	830593	830601	830609	830617	830625	830633	830641	830649	830657	830665	830673	830681
D	830594	830602	830610	830618	830626	830634	830642	830650	830658	830666	830674	830682
E	830595	830603	830611	830619	830627	830635	830643	830651	830659	830667	830675	830683
F	830596	830604	830612	830620	830628	830636	830644	830652	830660	830668	830676	830684
G	830597	830605	830613	830621	830629	830637	830645	830653	830661	830669	830677	830685
H	830598	830606	830614	830622	830630	830638	830646	830654	830662	830670	830678	830688

**Supplementary Figure 6.** Experimental design for assessment of contamination risk posed by the robotic decapper. Positions of sterile samples (orange), “live” samples (white), and clinical matrix samples spiked with inactivated virus targeting a “strong positive” Ct value of approximately 25 (yellow) in tube racks were alternated. RNase P was not detected in the sterile wells. Blue and green wells are assay plate controls.



Winter Temperatures (°C)	Summer Temperatures (°C)	Cycle Period	Cycle Period Length (Hours)	Total Time (Hours)
RT	RT	0	0	n/a
-20	40	1	18	18
22	22	2	4	22
-20	40	3	2	24
10	30	4	41	65
-20	40	5	6	71
22	22	6	4	75
-20	30	7	14	89

**Supplementary Figure 7.** Schematic of winter and summer stability workflow.

Copies per rxn	COVID-19 Orf1b				RNase P			
	Orf1b Ct	Orf1b reps detected		CV	RNase P Ct	RNase P reps detected		CV
125	32.82 ± 1.21	24/24	100.00%	3.69%	27.66 ± 4.55	24/24	100.00%	16.47%
62.5	34.11 ± 1.13	24/24	100.00%	3.32%	25.86 ± 2.22	24/24	100.00%	8.61%
31.25	35.03 ± 0.89	23/24	95.83%	2.56%	27.34 ± 1.97	24/24	100.00%	7.24%
15.625	35.76 ± 0.92	23/24	95.83%	2.59%	27.61 ± 2.55	24/24	100.00%	9.24%
7.8125	36.74 ± 1.04	22/24	91.67%	2.84%	25.82 ± 2.29	24/24	100.00%	8.89%
3.90625	36.83 ± 0.91	18/24	75.00%	2.49%	26 ± 2.82	24/24	100.00%	10.88%
Totals	35.12 ± 1.75	134/144	93.06%	4.99%	26.71 ± 2.93	144/144	100.00%	11.00%

**Supplementary Table 1.** Sensitivity in detecting the Orf1b target in contrived SARS-CoV-2 positive specimens and establishment of baseline RNase P amplification in confirmed negative clinical matrix.

Copies per rxn	COVID-19 S gene				RNase P			
	S gene Ct	S gene reps detected		CV	RNase P Ct	RNase P reps detected		CV
125	32.31 ± 1.18	24/24	100.00%	3.67%	25.96 ± 2.83	24/24	100.00%	10.92%
62.5	32.9 ± 1.16	24/24	100.00%	3.54%	26.42 ± 2.13	24/24	100.00%	8.07%
31.25	34.22 ± 1.78	24/24	100.00%	5.21%	26.19 ± 2.67	24/24	100.00%	10.19%
15.625	34.67 ± 1.23	19/24	79.17%	3.56%	26.51 ± 2.17	24/24	100.00%	8.21%
7.8125	35.57 ± 0.99	18/24	75.00%	2.80%	26.62 ± 2.42	24/24	100.00%	9.10%
3.90625	35.51 ± 0.96	15/24	62.50%	2.72%	26.28 ± 1.47	24/24	100.00%	5.61%
Totals	34.02 ± 1.75	124/144	86.11%	5.16%	26.33 ± 2.29	144/144	100.00%	8.72%

**Supplementary Table 2.** Sensitivity in detecting the S-gene target in contrived SARS-CoV-2 positive specimens and establishment of baseline RNase P amplification in confirmed negative clinical matrix.

Timepoint	Orf1b			S		
	High positive	Low positive	Negatives	High positive	Low positive	Negatives
Initial Average Ct	30.85 ± 0.34	27.12 ± 0.36	n/a	30.64 ± 0.35	27.07 ± 0.24	n/a
Average Ct after 71 hours	32.02 ± 0.37	27.95 ± 0.74	n/a	31.53 ± 0.53	27.21 ± 1.05	n/a
Average Ct after 89 hours	31.19 ± 0.25	27.35 ± 0.70	n/a	31.05 ± 0.56	26.67 ± 1.01	n/a
Average Delta Ct [71 hours - initial]	1.17	0.83	n/a	0.89	0.14	n/a
Average Delta Ct [89 hours - initial]	0.34	0.23	n/a	0.41	-0.4	n/a

**Supplementary Table 3.** Winter stability SARS-CoV-2 mean and standard deviation by target (Orf1b or S). Sample rack composition included 20 unique high positive samples, 10 unique low positive samples, and 10 composite negative samples, all with two replicates each per target.

Timepoint	Orf 1b Assay Mix			S Assay Mix		
	High positive	Low positive	Negatives	High positive	Low positive	Negatives
<b>Initial Average RNase P Ct</b>	26.62 ± 0.38	27.58 ± 0.92	28.85 ± 0.84	26.95 ± 0.33	28.01 ± 0.47	29.25 ± 0.35
<b>Average RNase P Ct after 71 hours</b>	33.40 ± 1.33	31.49 ± 0.82	31.14 ± 0.44	32.87 ± 1.14	30.99 ± 0.79	30.76 ± 0.48
<b>Average RNase P Ct after 89 hours</b>	32.17 ± 1.26	30.65 ± 0.37	30.92 ± 0.26	32.07 ± 0.65	30.01 ± 0.70	30.84 ± 0.35
<b>Average Delta Ct [71 hours - initial]</b>	6.78	3.91	2.29	5.92	2.98	1.51
<b>Average Delta Ct [89 hours - initial]</b>	5.55	3.07	2.07	5.12	2.00	1.59

**Supplementary Table 4.** Winter stability RNase P mean and standard deviation by assay mix. Sample rack composition included 20 unique high positive samples, 10 unique low positive samples, and 10 composite negative samples. All swabs were assayed in duplicate for the RNase P target in the Orf1b and S assay mixes.

Timepoint	Orf1b			S		
	High positive	Low positive	Negatives	High positive	Low positive	Negatives
Initial Average Ct	31.61 ± 0.35	25.11 ± 0.36	n/a	30.60 ± 0.39	24.96 ± 0.34	n/a
Average Ct after 71 hours	31.73 ± 0.35	25.64 ± 0.45	n/a	31.04 ± 0.52	25.51 ± 0.63	n/a
Average Ct after 89 hours	31.91 ± 0.50	25.86 ± 0.51	n/a	31.39 ± 0.56	25.29 ± 0.90	n/a
Average Delta Ct [71 hours - initial]	0.12	0.53	n/a	0.44	0.55	n/a
Average Delta Ct [89 hours - initial]	0.3	0.75	n/a	0.79	0.33	n/a

**Supplementary Table 5.** Summer stability SARS-CoV-2 mean and standard deviation by target (Orf1b or S). Sample rack composition included 20 unique high positive samples, 10 unique low positive samples, and 10 composite negative samples, all with two replicates each per target.

Timepoint	Orf 1b Assay Mix			S Assay Mix		
	High positive	Low positive	Negatives	High positive	Low positive	Negatives
<b>Initial Average RNase P Ct</b>	31.10 ± 0.58	28.26 ± 0.42	31.71 ± 0.62	30.80 ± 0.59	28.69 ± 0.23	30.68 ± 0.61
<b>Average RNase P Ct after 71 hours</b>	33.42 ± 0.74	30.75 ± 0.59	34.64 ± 1.72	33.18 ± 0.83	31.26 ± 0.76	34.99 ± 1.29
<b>Average RNase P Ct after 89 hours</b>	34.08 ± 1.42	32.62 ± 0.74	All undetermined	32.26 ± 1.31	32.26 ± 0.76	36.65 ± 1.52
<b>Average Delta Ct [71 hours - initial]</b>	2.32	2.49	2.93	2.38	2.57	4.31
<b>Average Delta Ct [89 hours - initial]</b>	2.98	4.36	Incalculable	1.46	1.46	5.97

**Supplementary Table 6.** Summer stability RNase P mean and standard deviation by assay mix. Sample rack composition included 20 unique high positive samples, 10 unique low positive samples, and 10 composite negative samples. All swabs were assayed in duplicate for the RNase P target in the Orf1b and S assay mixes.



<b>Household Income</b>			
<i>“Please choose the range that best represents your household income last year (before taxes). If you are still considered a dependent for tax purposes, choose the range that describes your parent/legal guardian's household income.”</i>			
		<b>Study participants</b>	<b>King County</b>
	<b>n</b>	<b>%</b>	<b>%</b>
Less than or equal to \$25,000	6	8.7%	12%
Between \$25,001 to \$50,000	4	5.8%	14%
Between \$50,001 to \$75,000	7	10.1%	14%
Between \$75,001 to \$100,000	6	8.7%	12%
Between \$100,001 to \$125,000	5	7.2%	19%
Between \$125,001 to \$150,000	5	7.2%	19%
Over \$150,000	23	33.3%	29%
Don't know	4	5.8%	
Prefer not to say	9	13.0%	
<b>TOTAL</b>	<b>69</b>	<b>100.00%</b>	

**Supplementary Table 7.** Reported household income of study participants.

<b>Race</b>			
<i>"How would you describe your race? Check all that apply"</i>			
		<b>Study Participants</b>	<b>King County</b>
	<b>n</b>	<b>%</b>	<b>%</b>
American Indian or Alaska Native	1	1.40%	<1%
Asian	12	17.40%	17%
Native Hawaiian or Pacific Islander	0	0%	1%
Black or African American	2	2.90%	6%
White	52	75.40%	65%
Other	4	5.80%	10%
Prefer Not to Say	2	2.90%	
<b>TOTAL</b>	<b>69</b>		

**Supplementary Table 8.** Reported race of study participants.

<b>Age</b>			
<b>Age Groups</b>	<b>n</b>	<b>%</b>	<b>Average Age (within age group)</b>
<1 yr	2	2.9%	7 months
1 - 5 yrs	3	4.3%	2
6 - 12 yrs	10	14.5%	9.9
13 - 17 yrs	18	26.1%	15
18 - 24 yrs	18	26.1%	21
25 - 44 yrs	10	14.5%	32
45 - 64 yrs	7	10.1%	54
≥65 yrs	1	1.4%	67
<b>TOTAL</b>	<b>69</b>	<b>100.0%</b>	<b>21.8</b>

**Supplementary Table 9.** Age of study participants.

<b>Sex</b>			
		<b>Study Participants</b>	<b>King County</b>
	<b>n</b>	<b>%</b>	<b>%</b>
Male	32	46.4%	50.30%
Female	37	53.6%	49.70%
<b>TOTAL</b>	<b>69</b>	<b>100.00%</b>	

**Supplementary Table 10.** Sex of study participants.

Sample Collection and Packaging Checklist and results		
	Yes	%
Activated their swab.	69	100%
Activated their swab before collecting the sample.	67	97%
Used the name on their consent form when activating the kit.	69	100%
Able to locate and identify RHINOstic™ swab tube.	67	97%
Used correct end of swab.	69	100%
Sampled both nostrils with same swab.	69	100%
Rotated swab 3x in each nostril.	68	99%
Slid swab up and down in each nostril.	66	96%
Held swab for 10 seconds in each nostril.	65	94%
Put tube into biohazard bag.	69	100%

**Supplementary Table 11.** Checklist items used to determine if participants correctly completed specimen collection and packaging.