

**EMERGENCY USE AUTHORIZATION (EUA) SUMMARY  
FOR THE SALIVADIRECT DTC SALIVA COLLECTION KIT**

For *In vitro* Diagnostic Use

For use under Emergency Use Authorization (EUA) only

For individuals 18 years or older

**INTENDED USE**

The SalivaDirect DTC Saliva Collection Kit is a direct to consumer (DTC) product for self-collection of saliva specimens at home (which includes in a community-based setting) from individuals aged 18 years and older, including individuals without symptoms or other reasons to suspect COVID-19, sent for testing with an in vitro diagnostic (IVD) molecular test that is indicated for use with the SalivaDirect DTC Saliva Collection Kit.

Testing is limited to laboratories designated by Yale School of Public Health Department of Epidemiology of Microbial Diseases, that includes the Clinical Molecular Diagnostics Laboratory, Department of Pathology, Yale School of Medicine, located at 310 Cedar St., New Haven, CT 06510, certified under the Clinical Laboratory Improvement Amendments of 1988 (CLIA), 42 U.S.C. §263a, that meet requirements to perform high complexity tests.

Negative test results are provided to the user via text, email and/or online portal. Individuals with positive, or invalid test results will be contact by a healthcare provide by phone. The direct to consumer home collection system is intended to enable users to access information about their COVID-19 infection status that could aid with determining if self-isolation or quarantine is appropriate and to assist with healthcare decisions after discussion with a healthcare provider.

The SalivaDirect DTC Saliva Collection Kit is not a substitute for visits to a healthcare provider. The information provided by this kit when combined with an authorized test should not be used to start, stop, or change any course of treatment unless advised by your healthcare provider.

The SalivaDirect DTC Saliva Collection Kit is only for use under the Food and Drug Administration’s Emergency Use Authorization.

**SPECIAL CONDITIONS OF USE STATEMENTS**

For Emergency Use Authorization (EUA) only.

For in vitro diagnostic use only.

For individuals 18 years or older.

The SalivaDirect DTC Saliva Collection Kit is only authorized for use in conjunction with an in vitro diagnostic (IVD) test for the detection of SARS-CoV-2 that has been issued an EUA and is authorized for use with this collection kit.

**DEVICE DESCRIPTION AND TEST PRINCIPLE**

The SalivaDirect DTC Saliva Collection Kit consists of a saliva collection device (either a Funnel or Bulb Pipette), sterile plastic collection tube, biohazard bag, absorbent sheet, alcohol

pad, return shipping box, instructions for use, patient identifier sticker, activation card, UN 3373 Pak, and return label.

## REAGENTS AND MATERIALS

Components supplied with the home collection kit include:

**Table 1. SalivaDirect At-Home Collection Kit (5 mL tube + Funnel)**

| Supplier  | Product  | Product Number            |
|---|--|---------------------------|
| Medline   | Round collection funnel,<br>Sterile, 500/bg, 4000/cs | Kingston Mfg<br>KICFUNNEL |
| Thomas Scientific                                     | Empty Nest 5.0mL Tube with<br>Concave-Convex Cap     | 20A00M344                 |
| Thomas Scientific                                     | 3x5 Biohazard Bags                                   | 1150H29                   |
| Thomas Scientific                                     | 3x3 Absorbent Sheets                                 | 1233R56                   |
| Thomas Scientific                                     | Alcohol Prep Pad                                     | 2904T41                   |
| ULINE   | 6 x 7" 1 Mil Poly Bags                               | S-10869                   |
| Federal Industries                                    | Box - 9x6x2  |                           |
| ALOM  | Date of Birth Sticker                                |                           |
| ALOM  | Activation Card                                      |                           |
| ALOM  | Instructions for Use                                 |                           |
| ALOM  | Collection Brochure                                  |                           |
| FedEx or UPS  | UN 3373 Pak (FedEx) or<br>Category B Pak (UPS)       |                           |
| Lab Fulfillment Center                                | Return Label   |                           |
| Apollo Renal Therapeutics<br>(DBA - Artemis Plastics) | Artemis  | V-2021-5                  |
| Ningbo Dasky Life Science                             | Dasky  | 8011923                   |

**Table 2. SalivaDirect At-Home Collection Kit (1 mL tube + Bulb Pipette)**

| Supplier           | Product                                  | Product Number |
|--------------------|--|----------------|
| VWR                | disposable individually wrapped pipettes | 76285-390      |
| Hamilton           | 1.0 mL Internal thread with Lid          | SDR-096-03     |
| Thomas Scientific  | 3x5 Biohazard Bags                       | 1150H29        |
| Thomas Scientific  | 3x3 Absorbent Sheets                     | 1233R56        |
| Thomas Scientific  | Alcohol Prep Pad                         | 2904T41        |
| ULINE              | 6 x 7" 1 Mil Poly Bags                   | S-10869        |
| Federal Industries | Box - 8x6x1                              |                |
| ALOM               | Date of Birth Sticker                    |                |
| ALOM               | Activation Card                          |                |
| ALOM               | Instructions for Use                     |                |
| ALOM               | Collection Brochure                      |                |

|                        |   |  |
|------------------------|---|--|
| FedEx or UPS           | UN 3373 Pak (FedEx) or Category B Pak (UPS) |  |
| Lab Fulfillment Center | Return Label                                |  |

**Home Collection Kit Ordering and Processing:**

Individuals may request the SalivaDirect DTC Saliva Collection Kit via one of these workflows:

1. Patient-Initiated
  - a. The individual can request a test on the Authorized Laboratory’s website via a secure online portal.
  - b. The individual will enter personal information and shipping details. The Authorized Laboratory (via a fulfillment center) ships the SalivaDirect DTC Saliva Collection Kit to the individual. Individuals exhibiting severe COVID warning symptoms should seek emergency medical care.
  - c. The individual provides the sample and return-ships it to the lab.
  - d. Results are sent to the individual via email/Authorized Laboratory secure online portal. An HCP will directly contact individuals with positive or invalid/inconclusive test results.
2. Organization-Initiated
  - a. A client (e.g., employer, school, summer camp) requests tests to and enters patient information on the Authorized Laboratory’s website via a secure online portal.
  - b. The patient provides consent to testing and to release medical information.
  - c. The SalivaDirect DTC Saliva Collection Kit can be sent to the patient’s home or to a central location (e.g., office) for pick-up or on-site use.
  - d. The individual provides the sample and return-ships it to the lab, returns it to the central location for bulk-shipment, or if collected on-site, hands it in to the personnel overseeing the testing for bulk-shipment.
  - e. Results are sent to both the client and the individual patients. An HCP will directly contact individuals with positive or invalid/inconclusive test results.

The individual receives the SalivaDirect DTC Saliva Collection Kit and proceeds with unsupervised saliva collection following the Instructions for Use (IFU) provided inside the kit, and ships the sample to an Authorized SalivaDirect Laboratory.

The SalivaDirect DTC Saliva Collection Kit collects virus RNA in a saliva specimen; it can also be used for the transportation and short-term room temperature storage of a sample. The SalivaDirect DTC Saliva Collection Kit is a non-invasive alternative for collecting viral RNA by/from individuals for use with a SARS-CoV-2 test authorized for use with the SalivaDirect DTC Saliva Collection Kit.

The SalivaDirect DTC Saliva Collection Kit includes one of two saliva collection devices: a Funnel with a 5 mL transport tube, or a Bulb Pipette with a 1 mL transport tube. The kit also includes a biohazard specimen bag with absorbent material, alcohol prep pad, patient identifier sticker, activation card, return box and pre-labeled FedEx UN 3373 Pak or UPS Category B Pak along with Instructions for Use and Collection Brochure.

After opening the SalivaDirect DTC Saliva Collection Kit containing the Funnel and 5 mL transport tube, the patient is first instructed to activate their kit online at the Authorized Laboratory's website, following the instructions on the web page to fill in the necessary registration information and sample collection date and time. Next, the patient is instructed to pick up the funnel and tube, and swallow once to clear their mouth. Then, the patient holds the funnel up so that it surrounds their mouth, then gently release the saliva that has collected in their mouth into the funnel. The patient is instructed to collect enough saliva, so the tube is half-filled. The patient repeats the same process until the tube is half-full. Once the patient has collected enough saliva, they are instructed to remove the funnel from the sample tube and tightly screw the cap back onto the tube. The patient then uses the alcohol wipe to wipe their hands and the sample tube, then places the closed sample tube into the biospecimen bag. Finally, the patient is instructed to drop off the sealed collected specimen at a FedEx or UPS drop off location on the same day it was collected.

After opening the SalivaDirect DTC Saliva Collection Kit containing the Bulb Pipette and 1 mL transport tube, the patient is first instructed to activate their kit online at the Authorized Laboratory's website, following the instructions on the web page to fill in the necessary registration information and sample collection date and time. Next, the patient is instructed to swallow once to clear their mouth, then pick up the bulb pipette and press the bulb end between their index finger and thumb to push out all the air. The patient is then instructed to keep their lips mostly closed and insert the tip of the bulb pipette into their mouth where saliva is collecting. Then they are instructed to release their finger and thumb to allow the bulb pipette to fill with saliva, then remove the bulb pipette from their mouth and pick up the sample tube with their other hand. The patient is then instructed to insert the tip of the bulb pipette into the sample tube, then gently push down on the bulb to slowly empty the saliva into the tube. The patient repeats these steps until the sample tube is about half filled. Once the patient has collected enough saliva, they are instructed to tightly screw the cap back onto the sample tube. The patient then uses the alcohol wipe to wipe their hands and the sample tube, then places the closed sample tube into the biospecimen bag. Finally, the patient is instructed to drop off the sealed specimen at a FedEx or UPS drop off location on the same day it was collected.

The SalivaDirect DTC Saliva Collection Kit Instructions for Use provides an outline of the kit handling procedures, the self-collection process, and step-by-step instructions to ship samples on the same day of collection for next day delivery to the laboratory. Specimens are shipped at ambient temperature and received at the clinical laboratory for testing with the SalivaDirect test within 56 hours of sample collection.

Negative test results are provided to the user via text, email and/or online portal. Individuals with positive, or invalid test results will be contact by a healthcare provide by phone. In addition, a link to the fact sheets for both HCP and patient for the test is included in the test report that goes back to the patient via the online portal.

## INSPECTION OF SPECIMENS

Specimens received at the clinical laboratory authorized for testing specimens collected using the SalivaDirect DTC Saliva Collection Kit undergo the following accessioning prior to acceptance for testing:

- Date of shipment received must be less than or equal to 56 hours from the time of sample collection
- Tubes that are leaking, open, damaged or empty are rejected
- Tubes with missing or damaged identifiers are rejected
- Non-SalivaDirect tubes are rejected

## CONTROLS TO BE USED WITH THE SARS-COV-2 ASSAY

### *Specimen Collection Control:*

Sample collection control will be monitored by the detection of the human sample control, RNase P, to determine that an acceptable sample was collected by the user. Alternatively, sample collection visually observed by a healthcare provider through a telemedicine visit could also serve as this control.

The following controls (at a minimum) should be included in the in vitro diagnostic (IVD) molecular test for the detection of SARS-CoV-2 RNA that is indicated for use with saliva specimens collected with the SalivaDirect DTC Saliva Collection kit:

1. A negative (no template) control is needed to eliminate the possibility of sample contamination and is used on every assay plate.
2. A negative extraction control is needed to eliminate the possibility of sample contamination during nucleic acid extraction and is used with every extraction run.
3. A positive template control is needed to verify that the assay run is performing as intended and is used on every assay plate
4. An internal control targeting RNase P is needed to verify that nucleic acid is present in every sample and is used for every sample processed. This ensures that saliva of a sufficient quantity and quality was tested.

## PERFORMANCE EVALUATION

**The performance of the SalivaDirect DTC Saliva Collection Kit (EUA210507) is the same data used to support the previous authorization of SalivaDirect At-Home Collection Kits (EUA210243)– which represent the same collection kits used for different indications of use.**

### ***1) SalivaDirect At-home Collection Kit Shipping Stability Studies:***

To evaluate the stability of SARS-CoV-2 RNA detection by the SalivaDirect test when collected using the SalivaDirect At-Home Collection kit, a simulated shipping study was performed. The sample stability study was designed to evaluate the effect of temperature variation on the stability of SARS-CoV-2 RNA detection following transport of saliva specimens in the saliva

collection tubes of the SalivaDirect At-Home Collection Kit. The shipping study simulated shipping at temperature conditions that could be experienced during the summer and winter months. Tables 3 and 4 detail the summer and winter thermal profiles evaluated in this study.

**Table 3: Summer Profile\***

| Temperature  | Cycle Period | Cycle Period Hours | Total Time Hours |
|--------------|--------------|--------------------|------------------|
| 40°C         | 1            | 8                  | 8                |
| RT (19-20°C) | 2            | 4                  | 12               |
| 40°C         | 3            | 2                  | 14               |
| 28°C         | 4            | 36                 | 50               |
| 40°C         | 5            | 6                  | 56               |

**Table 4. Winter Profile\***

| Temperature  | Cycle Period | Cycle Period Hours | Total Time Hours |
|--------------|--------------|--------------------|------------------|
| -20°C        | 1            | 8                  | ■8               |
| RT (19-20°C) | 2            | 4                  | ■12              |
| -20°C        | 3            | 2                  | 14               |
| 4°C          | 4            | 36                 | 50               |
| -20°C        | 5            | 6                  | 56               |

\*Shipping conditions for cycle periods 2 through 5 are modeled after ISTA 7D 2007 shipping standard (48-hour domestic freight transport) where for cycle period 3 and 5 the temperature has been increased from 35°C to 40°C. The cycle period 1 (8 hours) has been included for the time delay between collection of the sample and shipment of the sample. The remaining time (48 hours) covers the domestic shipment within the continental U.S. Cycle periods are sequential with the "cycle period hours" required per cycle listed in the table. After each cycle period, the "total time hours" increments by the number of hours in the cycle period.

For these sample stability studies, a positive saliva specimen from a confirmed COVID-19 healthcare worker with a known virus concentration ( $3.7 \times 10^4$  copies/ $\mu$ L) was spiked into saliva collected from healthcare workers who tested negative for SARS-CoV-2 using the CDC assay. Stability of SARS-CoV-2 detection was determined in 10 weakly positive specimens spiked at 2x LoD (12 copies/ $\mu$ L) and 20 moderate positive specimens spiked at 8x LoD (50 copies/ $\mu$ L) through the two different temperature profiles before testing with the SalivaDirect test; following the temperature profiles, samples were treated with the ThermoFisher Scientific proteinase K and tested with the NEB Luna (2x) RT-qPCR kit on the Bio-Rad CFX96 Touch.

Ten out of 10 weak positive samples (100%) and 20/20 moderate positive samples (100%) were positive after the summer and winter temperature cycles. On average, NI Ct values remained within 3.0 Cts as compared to when tested fresh, indicating acceptable specimen stability under the tested conditions. A summary of the mean Ct values obtained is provided in Table 5.

**Table 5. Shipping stability**

| Concentration      | Condition      | n  | Average Ct<br>NI | Average Ct<br>RP |
|--------------------|----------------|----|------------------|------------------|
| 50 copies/ $\mu$ L | Fresh (t=0h)   | 20 | 33.66            | 27.60            |
|                    | Summer (t=56h) | 20 | 31.44            | 29.00            |
|                    | Winter (t=56h) | 20 | 33.23            | 27.41            |
| 12 copies/ $\mu$ L | Fresh (t=0)    | 10 | 35.67            | 26.46            |
|                    | Summer (t=56h) | 10 | 36.45            | 29.76            |
|                    | Winter (t=56h) | 10 | 35.47            | 27.42            |

**2) Human Usability Studies for the SalivaDirect At-Home Collection kit**

A total of 60 participants between the ages of 19 and 81 years who represented a range of racial and educational backgrounds were enrolled in this study to evaluate the usability of the SalivaDirect At-Home Collection Kit for mailing a saliva sample to a CLIA-certified lab for SARS-CoV-2 testing by the SalivaDirect test. Further study demographics are presented below:

| Category         | n (%)   | Funnel<br>(n=31) | Bulb<br>Pipette<br>(n=29) |
|------------------|---------|------------------|---------------------------|
| <b>Sex</b>       |         |                  |                           |
| Male             | 28 (46) | 14 (45)          | 14 (48)                   |
| Female           | 32 (54) | 17 (55)          | 15 (52)                   |
| <b>Age</b>       |         |                  |                           |
| 18-29            | 13 (21) | 7 (23)           | 6 (21)                    |
| 30-39            | 28 (46) | 11 (35)          | 16 (16)                   |
| 40-49            | 5 (8)   | 4 (13)           | 1 (3)                     |
| 50-59            | 5 (8)   | 3 (10)           | 2 (7)                     |
| 60-69            | 5 (9)   | 4 (13)           | 2 (7)                     |
| 70+              | 4 (7)   | 2 (6)            | 2 (7)                     |
| <b>Education</b> |         |                  |                           |
| High School/GED  | 14 (25) | 9 (29)           | 6 (21)                    |
| Bachelors        | 22 (36) | 11 (35)          | 10 (34)                   |

| Category                  | n (%)   | Funnel<br>(n=31) | Bulb<br>Pipette<br>(n=29) |
|---------------------------|---------|------------------|---------------------------|
| Masters                   | 10 (16) | 7 (23)           | 4 (14)                    |
| PhD/MD                    | 14 (23) | 4 (13)           | 9 (31)                    |
| <b>Race</b>               |         |                  |                           |
| Black/African<br>American | 10 (16) | 6 (19)           | 4 (14)                    |
| Hispanic/Latino           | 10 (16) | 5 (16)           | 5 (17)                    |
| Asian/South Asian         | 8 (13)  | 4 (13)           | 3 (10)                    |
| White                     | 32 (54) | 16 (52)          | 17 (59)                   |
| Native American           | 0       | 0                | 0                         |

Once informed consent was provided via an online form, selected study participants were alerted by a brief email and shipped a SalivaDirect At-Home Collection Kit containing either a Funnel or a Bulb Pipette via FedEx. A total of 31 individuals were evaluated for use with the Funnel, and 29 individuals were evaluated for use with the Bulb Pipette. There was minimal contact with study participants to replicate the official ordering process as closely as possible. Following the Instructions for Use in the SalivaDirect At-Home Collection Kit, participants self-collected a saliva sample and returned this to the Yale School of Public Health for testing by the SalivaDirect test. Participants completed a survey about their experience following the collection, scoring responses on a scale of 1 (strongly disagree) to 5 (strongly agree). All of the samples (n = 60) were tested for SARS-CoV-2 using the SalivaDirect test. A laboratory survey assessing the sample quality was completed by the technician during testing.

Study participants reported understanding the instructions and 100% understood that they could not eat/drink/smoke prior to collecting the sample. Results regarding the sample collection, compiled from all 60 participants, are summarized below:

| Collection feed-back (1 = strongly disagree, 5 = strongly agree)                                       | Average | SD   | %      |
|--|---------|------|--------|
| I read all of the instructions   | 4.59    | 1.12 | 91.80  |
| I understood all of the instructions   | 4.39    | 1.13 | 90.16  |
| I knew what to do if I had any questions   | 3.61    | 1.52 | 73.77  |
| Did the instructions clearly describe how to collect the sample?                                       | 4.67    | 1.11 | 91.80  |
| Did you understand that you could not eat/drink/smoke prior to collecting the sample                   | 5.00    | 0.00 | 100.00 |
| Did you understand that eating/drinking/smoking prior to collecting the sample might get false results | 4.54    | 1.29 | 88.52  |

When looking at responses for each collection device type (funnel or bulb pipette), responses remained similar and are summarized below:



| <b>Collection device feed-back (1 = strongly disagree, 5 = strongly agree)</b>                         | <b>Funnel</b> | <b>Bulb Pipette</b> |
|--|---------------|---------------------|
| I read all of the instructions   | 4.62          | 4.55                |
| I understood all of the instructions   | 4.48          | 4.26                |
| I knew what to do if I had any questions   | 4.00          | 3.35                |
| Did the instructions clearly describe how to collect the sample?                                       | 4.59          | 4.74                |
| Did you understand that you could not eat/drink/smoke prior to collecting the sample                   | 5.00          | 5.00                |
| Did you understand that eating/drinking/smoking prior to collecting the sample might get false results | 4.45          | 4.61                |
| I knew how much saliva to put in the tube  | 4.45          | 4.84                |
| It was easy to put the appropriate amount of saliva into the tube                                      | 3.69          | 3.90                |
| I feel confident that I collected the sample properly  | 4.41          | 4.58                |
| I needed help collecting the sample  | 1.28          | 1.26                |
| Sample collection was difficult  | 1.90          | 1.87                |
| Sample collection was comfortable  | 4.14          | 4.48                |
| Did you get any saliva on the outside of the collection tube   | 1.69          | 2.03                |
| Did you know what to do if saliva came into contact with the outside of the collection tube?           | 3.34          | 3.84                |
| Did you understand that if you did not follow the procedure exactly, you might get a false result?     | 4.59          | 4.74                |

The internal control, human RNaseP was detected in 100% of the samples collected with each of the devices, indicating an adequate specimen was collected. Laboratory survey responses confirmed that 100% of the samples were easy to pipette and of sufficient volume. No sample tested positive for SARS-CoV-2. Results for the questions in the laboratory survey are summarized below:

| <b>Lab questions (1 = strongly disagree, 5 = strongly agree)</b>                              | <b>Funnel</b> | <b>Bulb Pipette</b> | <b>Average</b> |
|---|---------------|---------------------|----------------|
| The sample was of sufficient volume (200-500 ul)  | 5.0           | 4.0                 | 4.50           |
| The sample was easy to pipette  | 4.8           | 5.0                 | 4.91           |
| The sample was normal, true saliva  | 4.8           | 5.0                 | 4.89           |
| The sample was free from food particles   | 5.0           | 5.0                 | 5.00           |
| The sample was not unusually discolored   | 4.9           | 5.0                 | 4.95           |
| The sample tested positive for human RNase P  | 5.0           | 5.0                 | 5.00           |
| The sample tested positive for SARS-CoV-2   | 0.0           | 0.0                 | 0              |
| If the sample tested positive for SARS-CoV-2, this was reported back to the study participant | NA            | NA                  | NA             |

The results from this study demonstrate that users are able to comprehend the instructions for both of the SalivaDirect At-Home Collection Kits as well as collect an adequate specimen for SARS-CoV-2 testing with the SalivaDirect test.

### Warnings

- This product has not been FDA cleared or approved, but has been authorized for emergency use by FDA under an EUA;
- This product has been authorized only for the collection and maintenance of saliva specimens as an aid in the detection of nucleic acid from SARS-CoV-2, not for any other viruses or pathogens;
- The emergency use of this product is only authorized for the duration of the declaration that circumstances exist justifying the authorization of emergency use of medical devices under Section 564(b)(1) of the Federal Food, Drug and Cosmetic Act, 21 U.S.C. § 360bbb-3(b)(1), unless the declaration is terminated or authorization is revoked sooner.