OPTIMIZED
COLLOIDAL GOLD ASSAY

BioSynchronicity™

C-SYNC™

COVID-19 ANTIGEN TEST

FAST | EASY | RELIABLE | RESULTS IN 10 MINUTES

For use under the Emergency Use Authorization (EUA) only.
For *in vitro* diagnostic use.
For prescription use only.

Instructions for Use — **Read the complete IFU prior to performing a test**

IVD Rx REF COV9712A

INTENDED USE

The C-Sync™ COVID-19 Antigen Test is a lateral flow immunoassay intended for the qualitative detection of nucleocapsid protein and spike protein antigens from SARS-CoV-2 in direct anterior nasal swab specimens collected from individuals who are suspected of COVID-19 by their healthcare provider within the first seven (7) days of symptoms onset, when tested at least twice over three days with at least 48 hours between tests, and from individuals without symptoms or other epidemiological reasons to suspect COVID-19, when tested at least three times over five days with at least 48 hours between tests.

Testing is limited to laboratories certified under the Clinical Laboratory Improvement Amendments of 1988 (CLIA), 42 U.S.C. §263a, that meet the requirements to perform moderate, high or waived complexity tests. This product is authorized for use at the Point of Care (POC), i.e., in patient care settings operating under a CLIA Certificate of Waiver, Certificate of Compliance, or Certificate of Accreditation.

The C-Sync™ COVID-19 Antigen Test does not differentiate between SARS-CoV or SARS-CoV-2 viruses.

Results are for the identification of SARS-CoV-2 nucleocapsid and spike protein antigens, which are generally detectable in anterior nasal swab specimens during the acute phase of infection. Positive results indicate the presence of viral antigens, but clinical correlation with patient history and other diagnostic information is necessary to fully determine infection status. Positive results do not rule out bacterial infection or coinfection with other viruses. The agent detected may not be the definitive cause of disease.

Laboratories within the United States and its territories are required to report all results to the appropriate public health authorities.

All negative results are presumptive and confirmation with a molecular assay if necessary for patient management, may be performed. Negative results do not rule out SARS-CoV-2 infection and should not be used as the sole basis for treatment or patient management decisions, including infection control measures such as isolating from others and wearing masks. Negative results should be considered in the context of an individual's recent exposures, history, and the presence of clinical signs and symptoms consistent with COVID-19.

The C-Sync™ COVID-19 Antigen Test is intended for use by healthcare professionals or operators who are proficient in performing tests in point of care settings. The C-Sync™ COVID-19 Antigen Test is only for use under the Food and Drug Administration's Emergency Use Authorization. This product has not been FDA cleared or approved.

SUMMARY AND EXPLANATION OF THE TEST

SARS-CoV-2 is a highly contagious virus which emerged at the end of 2019 and is spread primarily through respiratory particles.

The C-Sync™ COVID-19 Antigen Test is a visually read rapid lateral flow immunoassay for the qualitative detection of SARS-CoV-2 directly from nasal swabs, without Viral Transport Media (VTM). Results are available in less than 10 minutes, making it a valuable evaluation tool for use in Point of Care.

PRINCIPLES OF THE TEST

The C-Sync™ COVID-19 Antigen Test is a lateral flow immunochromatographic assay for the detection of nucleocapsid and/or spike protein antigens specific to SARS-CoV-2 in nasal swab specimens, directly collected from individuals with or without symptoms, as described in the intended use

SARS-CoV-2 specific antibodies and a control protein are immobilized onto a membrane support as two distinct lines and combined with other reagents/pads to construct a test strip encased in a plastic cassette with a sample well.

An anterior nasal swab sample collected from the patient is eluted into a vial with an extraction buffer and four drops are added to the sample well. The sample flows along the membrane. Test results are interpreted at 10 minutes. A red/purple Test (T) line and a Control (C) line appearing on the test strip, indicates that SARS-CoV-2 antigen was detected. The presence of one colored line at the C-line indicates that SARS-CoV-2 antigen was not detected. No appearance of a colored line at the C-line indicates an invalid test.

MATERIALS AND SUPPLIES PROVIDED

The C-Sync™ COVID-19 Antigen test kits are available with 20 tests per kit including the following components:

- 20 Test cassettes individually packaged in a foil pouch with a desiccant
- 20 Extraction buffer tubes with dropper cap
- 20 Sterile Nasal Swabs for sample collection
- Instructions for Use (IFU)
- Quick Reference Instructions

MATERIALS REQUIRED BUT NOT PROVIDED

- External Positive and Negative Quality Controls sold separately - BioSynchronicity Product Catalog Number: COV9712ACS available at www.biosynchronicity.com
- Personal Protective Equipment per local recommendations
- Timer
- Tube rack for specimens

WARNINGS AND PRECAUTIONS

- Read all instructions carefully before performing the test. Failure to follow the instructions may result in inaccurate test results.
- For prescription and *in vitro* diagnostic use only.
- In the USA, 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 *in vitro* diagnostic tests for detection and/or diagnosis of COVID-19 under Section 564(b)(1) of the Act, 21 U.S.C. § 360bbb-3(b)(1), unless the declaration is terminated or authorization is revoked sooner.
- This product has not been FDA cleared or approved, but has been authorized by FDA under an EUA for use by authorized laboratories; use by laboratories certified under the Clinical Laboratory Improvement Amendments of 1988 (CLIA), 42 U.S.C §263a, that meet the requirements to perform moderate, high, or waived complexity tests. This product is authorized for use at the Point of Care (POC), i.e., in patient care settings operating under a CLIA Certificate of Waiver, Certificate of Compliance, or Certificate of Accreditation.
- **Serial testing should be performed in individuals with negative results at least twice over three days (with 48 hours between tests) for symptomatic individuals and three times over five days (with at least 48 hours between tests) for asymptomatic individuals. You may need to purchase additional tests to perform this serial (repeat) testing.**
- If the individual has symptoms longer than 7 days, you should consider testing at least three times over five days with at least 48 hours between tests.
- Federal Law restricts this test to sale by or on the order of a licensed practitioner (U.S. only).
- This product has been authorized only for the detection of proteins from SARS-CoV-2, not for any other viruses or pathogens.
- Laboratories within the United States and its territories are required to report all results to the appropriate public health laboratories.
- Do not use the test kit if the cassette pouch is damaged or improperly sealed.
- Do not use the test kit beyond expiration date printed on the outer package.
- Do not open the test cassette pouch until just before use. Once opened, the test card should be used immediately.
- **Do not read test results before 10 minutes or after 15 minutes. Results read before 10 minutes or after 15 minutes may lead to a false positive, false negative, or invalid result.**
- Use only the components supplied with the kit.
- Swabs, vials, and tests are single use only. Do not re-use test components.
- Freshly collected specimens must be tested within an hour.
- Do not interchange the kit components from different lots.
- Inadequate specimen collection can adversely affect results.
- Do not store or test specimens in Viral Transport Media (VTM).
- Temperature extremes and high humidity can adversely affect results.
- Wear appropriate personal protection equipment and gloves when running each test and handling patient specimens. Change gloves between handling of specimens suspected of COVID-19.
- Dispose of test cassette and materials as biohazardous waste in accordance with federal, state, and local requirements.
- Keep testing kit and kit components away from children and pets before and after use. Avoid contact with your skin, eyes, nose, or mouth. Do not ingest any kit components. The reagent solution contains harmful chemicals (see table below). If the solution contacts your skin, eyes, nose, or mouth, flush with large amounts of water. **If irritation persists, seek medical advice: https://poisonhelp.hrsa.gov/ or 1-800-222-1222.**

Hazardous Ingredient for the Reagent Solution		
Chemical Name	**Harms (GHS) code for each ingredient**	**Concentration**
Triton X-100	H302 Acute oral toxicity H315 Skin irritation H318 Serious eye damage H400 Short-term (acute) aquatic hazard H410 Long-term (chronic) aquatic hazard	1%

For more information on EUAs please visit:
https://www.fda.gov/emergency-preparedness-and-response/mcm-legal-regulatory-and-policy-framework/emergency-use-authorization
For the most up to date information on COVID-19, please visit:
https://www.cdc.gov/coronavirus/2019-ncov/index.html

STORAGE AND STABILITY

- Store the kit between 2°C to 30°C (36°F to 86°F).
- Avoid direct exposure to sunlight.
- Do not freeze the content of the kit.
- The shelf life of the kit is indicated on the outer package.
- Do not use the test kit beyond its expiration date.
- The test device must remain in the sealed pouch until use.

QUALITY CONTROL

A built-in control in each test cassette acts as an internal procedural control for the test and is needed to assess if the test is working properly. The appearance of a red/purple Control line (C-line) is used to confirm sufficient flow of the sample along the membrane has occurred and the functional integrity of the test has been maintained. If the Control line does not develop within 10 minutes, the test is considered invalid and should be discarded. Retesting with a new cassette is recommended. If the expected results are not obtained, do not perform a test and contact technical support.

EXTERNAL QUALITY CONTROLS

External Quality controls, required to demonstrate the integrity of the cassette and to ensure the reagents and the assay procedure are working properly, are not included in the C-Sync™ COVID-19 Antigen Test kit but are available from BioSynchronicity Corporation. The External Quality Control kit is composed of one Negative Control swab, one SARS-CoV-2 Nucleocapsid Protein Positive Control swab, and one SARS-CoV-2 Spike Protein Positive Control swab. It is recommended that positive and negative external quality controls be run once with every new lot, every shipment, every new user, or in accordance with Local, State, and Federal regulations, or accreditation requirements.

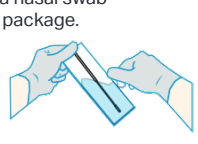
TEST PROCEDURE

A. TEST PREPARATION

1. Allow the kit components to reach a temperature between 15°C - 30°C (59°F - 86°F) prior to testing.
2. Remove a C-Sync™ test from a pouch. Place the C-Sync™ Test Cassette on a flat and clean surface, for the entire duration of test operation.

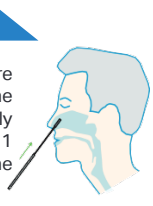
B. SPECIMEN COLLECTION PROCEDURE

Remove a nasal swab from the package.



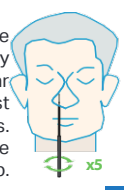
1

Insert the entire collection tip of the swab provided (usually ½ to ¾ of an inch, or 1 to 1.5 cm) inside the nostril.



2

Gently but firmly, collect a sample from the nasal wall by slowly rotating the swab into a circular path against the nasal wall at least 4 times for a total of 15 seconds. Be sure to collect any drainage that may be present on the swab. Slowly remove the swab.



3

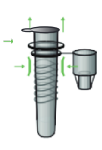
Using the same swab, repeat the same sample collection process in the other nostril.

4

If immediate testing is not possible, and to maintain the best performance and avoid possible contamination, it is highly recommended the nasal swab specimen be plac in a clean, unused plastic tube and capped tightly at room temperature (15°C-30°C) for up to (1) hour prior to testing. Ensure the swab fits securely within the tube and the cap is tightly closed. **If greater than 1 hour delay occurs, dispose of the sample. A new sample must be collected for testing.**

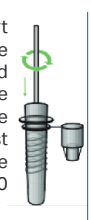
C. SPECIMEN PREPARATION PROCEDURE

Remove the foil seal from the extraction buffer tube.



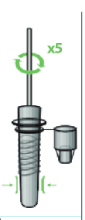
1

Carefully insert the swab inside the tube and plunge it to the bottom. Rotate the swab against the wall of the tube for 10 seconds.



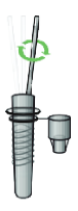
2

Tightly squeeze and release the bottom of the tube against the absorbent part of the swab. This will make the liquid buffer inside the tube rise and fall. Make sure the buffer rises and falls to fully cover and wash the absorbent part of the swab. Twirl the swab while squeezing and washing the swab with the buffer. Repeat this squeezing and twirling technique 5 times.



3

Stop squeezing the bottom of the tube and rotate the swab against the wall of the tube for 10 seconds.

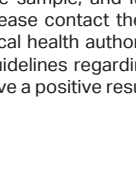


4

Remove the swab slowly while squeezing tightly the top part of the tube against the absorbent part of the swab to extract as much liquid as possible from the swab with the goal of drying the swab. Firmly place the dropper cap attached to the vial onto the top of the tube. Make sure the dropper cap is securely in place.

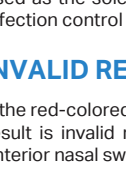
5

D. SPECIMEN TESTING



Set the timer at 10 minutes, but do not start yet.
Invert the extraction tube and squeeze the ridge area of the tube to **dispense 4 drops, drop by drop, into the sample well** of the C-Sync™ Test Cassette. Tap the device if the specimen fluid appears viscous when dropping the buffer into the sample well to aid in the wicking process.

Apply only 4 drops to the sample well. Erroneous results may occur if less/more than 4 drops are applied.



Start the timer for 10 minutes. A visual observation of the red/purple dye entering the evaluation window of the test within 10 to 15 seconds after the test timer has been started shows the test is progressing.
The test must be read within 10 minutes, as indicated below in Reading and Interpretation of Results.

Do not read test results before 10 minutes or after 15 minutes. Erroneous results may occur when reading before 10 minutes or after 15 minutes.

E. READING AND INTERPRETATION OF RESULTS

After dispensing the drops in the sample well, the results will be available as follows:

Positive:

If the Control line (C-line) is red/purple within 10 minutes and the Test line (T-line) is visible within 10 minutes, the test is positive. The color intensity of the Test line (T-line) will depend on the amount of SARS-CoV-2 nucleocapsid and/or spike protein antigens in the sample. Any very faint colored Test line (T-line) should be considered positive. **Tests should not be interpreted past 15 minutes**

Negative:

If the Control line (C-line) is red/purple at 10 minutes, and the Test line (T-line) is not visible at 10 minutes, the test is negative.

Invalid:

If the Control line (C-line) is not visible at 10 minutes, and regardless if the Test line (T-line) is visible or not visible, the test is invalid. Discard the test. A new test should be repeated.

Do not interpret the results before 10 minutes. Results read after 15 minutes may be invalid.

Repeat testing is needed to improve test accuracy. Please follow the table below when interpreting test results for COVID-19.

Status on First Day of Testing	First Result Day 1	Second Result Day 3	Third Result Day 5	Interpretation
With Symptoms	Positive	N/A	N/A	Positive for COVID-19
	Negative	Positive	N/A	Positive for COVID-19
	Negative	Negative	N/A	Negative for COVID-19
Without Symptoms	Positive	N/A	N/A	Positive for COVID-19
	Negative	Positive	N/A	Positive for COVID-19
	Negative	Negative	Positive	Positive for COVID-19
	Negative	Negative	Negative	Negative for COVID-19

Results should be considered in the context of an individual's recent exposures, history, and the presence of clinical signs and symptoms consistent with COVID-19.

POSITIVE RESULT

The presence of both the control line (C) and test line (T) indicates the presence of SARS-CoV-2 antigen. The result suggests current SARS-CoV-2 infection. Samples with low levels of antigen may produce a faint test line. Any visible test line is considered positive.

Repeat testing does not need to be performed if patients have a positive result at any time.

A positive test result means that the virus that causes COVID-19 was detected in the sample, and it is very likely the individual has COVID-19 and is contagious. Please contact the patient's doctor/primary care physician (if applicable) and the local health authority immediately and instruct your patient to adhere to the local guidelines regarding self-isolation. There is a very small chance that this test can give a positive result that is incorrect (a false positive).

Positive results do not rule out bacterial infection or co-infection with other viruses. The agent detected may not be the definitive cause of disease. Individuals who test positive should self-isolate and seek follow up care with their physician or healthcare provider as additional confirmatory testing with a molecular test for positive results may also be necessary, if there is a low likelihood of COVID-19, such as in individuals without known exposures to COVID-19 or residing in communities with low prevalence of infection

NEGATIVE RESULT

The presence of the red-colored control line (C) and no visible test line (T) indicates that SARS-CoV-2 antigen was not detected. **To increase the chance that the negative result for COVID-19 is accurate, you should:**

- **If the individual has symptoms on the first day of testing, test again at least twice over three days with at least 48 hours between tests.**
- **If the individual does not have symptoms on the first day of testing, and from individuals without, test again at least three times over five days with at least 48 hours between tests.**

A negative test result indicates that the virus that causes COVID-19 was not detected in the sample. A negative result does not rule out COVID-19. There is a higher chance of false negative results with antigen tests compared to laboratory-based tests such as PCR tests. If the test is negative but COVID-19-like symptoms, e.g., fever, cough, and/or shortness of breath continue, follow up testing for SARS-CoV-2 with a molecular test or testing for other respiratory disease should be considered. If applicable, seek follow up care with the primary health care provider. All negative results should be treated as presumptive and confirmation with a molecular assay may be necessary if there is a high likelihood of SARS-CoV-2 infection, such as in an individual with a close contact with COVID-19 or with suspected exposure to COVID-19 or in communities with high prevalence of infection. Negative results do not rule out SARS-CoV-2 infection and should not be used as the sole basis for treatment or patient management decisions, including infection control decisions.

INVALID RESULT

If the red-colored control line (C) is not visible, DO NOT interpret the test result. The result is invalid regardless of the appearance of the test line (T). Collect a new anterior nasal swab sample and repeat the assay with a new test.

OPTIMIZED COLLOIDAL GOLD ASSAY

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Limitations

- Test results should be correlated with the clinical history, epidemiological data and other data available to the clinician evaluating the patient.
- The performance of the C-Sync™ COVID-19 Antigen test was evaluated using the procedures provided in this Instructions for Use. Failure to follow the Instructions for Use may adversely affect the performance of the test and invalidate the results of the test.
- This is a qualitative test and the test does not provide information on the viral concentration present in the specimen.
- Positive results do not differentiate between SARS-CoV-1 and SARS-CoV-2.
- Positive test results do not rule out co-infections with other pathogens.
- All COVID-19 antigen test negative results are presumptive and confirmation with a molecular assay may be necessary.
- False negative results may occur if the concentration of the SARS-CoV-2 antigen in the clinical specimen is below the limit of detection of the test or if the sample was collected improperly.
- False negative results may occur if specimens are tested beyond 1 hour after collection.
- The performance of this test has not yet been evaluated in asymptomatic individuals.
- The performance of this test was established based on the evaluation of a limited number of clinical specimens collected between October 22, 2021 and January 24, 2022. Clinical performance has not been established with all circulating variants but is anticipated to be reflective of the prevalent variants in circulation at the time and location of the clinical evaluation. Performance at the time of testing may vary depending on the variants circulating, including newly emerging strains of SARS-CoV-2 and their prevalence, which change over time.
- There is a higher chance of false negative results with antigen tests than with laboratory-based molecular tests due to the sensitivity of the test technology. This means that there is a higher chance this test will give a false negative result in an individual with COVID-19 as compared to a molecular test, especially in samples with low viral load.
- This test is read visually and has not been validated for use by those with impaired vision or color-impaired vision.
- Positive and negative predictive values are highly dependent on prevalence. False-negative test results are more likely during peak activity when the prevalence of the disease is high. False positive results are more likely during the periods of low SARS-CoV-2 activity when prevalence is moderate to low.
- If the patient continues to have symptoms of COVID-19, and both the patient's first and second tests are negative, the patient may not have COVID-19, however additional follow-up may be needed.
- If the test is positive, then proteins from the virus that causes COVID-19 have been found in the sample and the individual likely has COVID-19.
- This test detects both viable (live) and non viable SARS-CoV-2. Test performance depends on the amount of virus (antigens) in the sample and may or may not correlate with viral culture results performed on the same sample.

CONDITIONS of AUTHORIZATION for LABORATORY and PATIENT CARE SETTINGS

The C-Sync™ COVID-19 Antigen Test Letter of Authorization, along with the authorized Fact Sheet for Healthcare Providers, the authorized Fact Sheet for Patients, and authorized labeling are available on the FDA website: https://www.fda.gov/medical-devices/covid-19-emergency-use-authorizations-medical-devices/in-vitro-diagnostics-euas-antigen-diagnostic-tests-sars-cov-2

However, to assist clinical laboratories using the C-Sync™ COVID-19 Antigen Test ("your product" in the conditions below), the relevant Conditions of Authorization are listed below.

A. Authorized laboratories[1] using your product must include with test result reports, all authorized Fact Sheets. Under exigent circumstances, other appropriate methods for disseminating these Fact Sheets may be used, which may include mass media.
B. Authorized laboratories using your product must use your product as outlined in the authorized labeling. Deviations from the authorized procedures, including the authorized instruments, authorized extraction methods, authorized clinical specimen types, authorized control materials, authorized other ancillary reagents and authorized materials required to use your product are not permitted.
C. Authorized laboratories that receive your product must notify the relevant public health authorities of their intent to run your product prior to initiating testing.
D. Authorized laboratories using your product must have a process in place for reporting test results to healthcare providers and relevant public health authorities, as appropriate.
E. Authorized laboratories must collect information on the performance of your product and report to DMD/OHT7/OPEQ/CDRH (via email: CDRH-EUAReporting@fda.hhs.gov) and BioSynchronicity Corporation Support (via email: support@biosynchronicity.com or via phone by contacting BioSynchronicity Corporation technical support at +1 (425) 898-3431) any suspected occurrence of false positive or false negative results and significant deviations from the established performance characteristics of your product of which they become aware.
F. All operators using your product must be appropriately trained in performing and interpreting the results of your product, use appropriate personal protective equipment when handling this kit, and use your product in accordance with the authorized labeling.
G. BioSynchronicity Corporation authorized distributors, and authorized laboratories using your product must ensure that any records associated with this EUA are maintained until otherwise notified by FDA. Such records will be made available to FDA for inspection upon request.

[1] The letter of authorization refers to, "Laboratories certified under the Clinical Laboratory Improvement Amendments of 1988 (CLIA), 42 U.S.C. §263a, that meet the requirements to perform moderate, high or waived complexity tests. This test is authorized for use at the Point of Care (POC), i.e., in patient care settings operating under a CLIA Certificate of Waiver, Certificate of Compliance, or Certificate of Accreditation" as "authorized laboratories."

PERFORMANCE CHARACTERISTICS

Clinical Performance

The clinical performance of the C-Sync™ COVID-19 Antigen Test was evaluated in an enrichment study conducted in 2 different locations of Ochsner Health Campus, New Orleans, between October 2021 and June 2022. A total of 85 direct paired anterior nasal swabs from patients suspected of COVID-19 within the first seven days of symptom onset were randomly and blindly collected by 5 operators representing intended healthcare provider operators. The C-Sync™ COVID-19 Antigen Test results were compared to an FDA authorized RT-PCR comparator assay according to the FDA Reference Panel to determine the test performance.

Performance of the C-Sync™ COVID-19 Antigen Test in subjects within 7 days of symptoms

C-Sync™ COVID-19 Antigen Test *	RT-PCR Comparator		
	Positive	Negative	Total
Positive	48	1**	49
Negative	5*	31	36
Total	53	32	85
Positive Percent Agreement (PPA)	90.57% (95% CI: 79.7% - 95.9%)		
Negative Percent Agreement (NPA)	96.88% (95% CI: 84.3% - 99.4%)		

* Of the 5 false negative results observed, 3 specimens were found to be negative on a second RT-PCR comparator method (i.e., agreeing with the C-Sync™ test results); 2 specimens were found to be positive on a second RT-PCR comparator method.
** Of the 1 false positive result observed, subsequent sequencing of this specimen confirmed it was positive.

Demographics

Age	Comparator Method (n=85)		
	Total	Positives	Prevalence
5 to 24 years	3	3	100%
25 to 40	33	18	55%
41 to 60	27	15	56%
> 60	22	14	64%

Days Since Symptom Onset	Cumulative RT-PCR Test Positives	Cumulative C-Sync™ Test Positives	PPA
1	11	11	100.00%
2	15	14	93.33%
3	6	6	100.00%
4	4	4	100.00%
5	3	3	100.00%
6	4	3	75.00%
7	7	7	100.00%

Clinical Performance (Asymptomatic Population)

A prospective clinical study was conducted between January 2021 and May 2022 as a component of the Rapid Acceleration of Diagnostics (RADx) initiative from the National Institutes of Health (NIH). A total of 7,361 individuals were enrolled via a decentralized clinical study design, with a broad geographical representation of the United States. Per inclusion criteria, all individuals were asymptomatic upon enrollment in the study and at least 14 days prior to it and did not have a SARS-CoV-2 infection in the three months prior to enrollment. Participants were assigned to one of three EUA authorized SARS- CoV-2 OTC rapid antigen tests to conduct serial testing (every 48 hours) for 15 days. If an antigen test was positive, the serial-antigen testing result is considered positive.

At each rapid antigen testing time point, study subjects also collected a nasal swab for comparator testing using a home collection kit (using a 15-minute normalization window between swabs). SARS-CoV-2 infection status was determined by a composite comparator method on the day of the first antigen test, using at least two highly sensitive EUA RT-PCRs. If results of the first two molecular test were discordant a third highly sensitive EUA RT-PCR test was performed, and the final test result was based upon the majority rule.

Study participants reported symptom status throughout the study using the MyDataHelps app. Two-day serial antigen testing is defined as performing two antigen tests 36 - 48 hours apart. Three-day serial antigen testing is defined as performing three antigen tests over five days with at least 48 hours between each test.

Out of the 7,361 participants enrolled in the study, 5,609 were eligible for analysis. Among eligible participants, 154 tested positive for SARS-CoV-2 infection based on RT- PCR, of which 97 (62%) were asymptomatic on the first day of their infection, whereas 57 (39%) reported symptoms on the first day of infection. Pre-symptomatic subjects were included in the positive percent agreement (PPA) of asymptomatic individuals, if they were asymptomatic on the first day of antigen testing, regardless of whether they developed symptoms at any time after the first day of testing.

Performance of the antigen test with serial testing in individuals is described in the following table.

Data establishing PPA of COVID-19 antigen serial testing compared to the molecular comparator single day testing throughout the course of infection with serial testing. Data is from all antigen tests in study combined.

DAYS AFTER FIRST PCR POSITIVE TEST RESULT	ASYMPTOMATIC ON FIRST DAY OF TESTING			SYMPTOMATIC ON FIRST DAY OF TESTING		
	Ag Positive / PCR Positive (Antigen Test Performance % PPA)					
	1 Test	2 Tests	3 Tests	1 Test	2 Tests	3 Tests
0	9/97 (9.3%)	35/89 (39.3%)	44/78 (56.4%)	34/57 (59.6%)	47/51 (92.2%)	44/47 (93.6%)
2	17/34 (50.0%)	23/34 (67.6%)	25/32 (78.1%)	58/62 (93.5%)	59/60 (98.3%)	43/43 (100%)
4	16/21 (76.2%)	15/20 (75.0%)	13/15 (86.7%)	55/58 (94.8%)	53/54 (98.1%)	39/40 (97.5%)
6	20/28 (71.4%)	21/27 (77.8%)	16/18 (88.9%)	27/34 (79.4%)	26/33 (78.8%)	22/27 (81.5%)
8	13/23 (56.5%)	13/22 (59.1%)	4/11 (36.4%)	12/17 (70.6%)	12/17 (70.6%)	7/11 (63.6%)
10	5/9 (55.6%)	5/8 (62.5%)		4/9 (44.4%)	3/7 (42.9%)	

1 Test = one (1) test performed on the noted days after first PCR positive test result. Day 0 is the first day of documented infection with SARS-CoV-2.
2 Tests = two (2) tests performed an average of 48 hours apart. The first test performed on the indicated day and the second test performed 48 hours later.
3 Tests = three (3) tests performance an average of 48 hours apart. The first test performed on the indicated day, the second test performed 48 hours later, and a final test performed 48 hours after the second test.

Limit of Detection (LoD)

A limit of detection (LoD) study was conducted to determine the lowest concentration of inactivated SARS-CoV-2 virus spiked into pooled human negative NP swab matrix at which 95% of all tested replicates were positive with the C-Sync™ COVID-19 Antigen Test.
The LoD of the C-Sync™ COVID-19 Antigen Test in natural NP swab matrix was determined and confirmed to be $2.29x10^3$ $TCID_{50}$/mL or $1.15x10^2$ $TCID_{50}$/swab.

Estimated LOD	No of Positives/ Total	Detectable Rate
$2.29x10^3$ $TCID_{50}$/mL	60 replicates	100% (60/60)

Endogenous Interfering Substances

The following (14) endogenous substances were evaluated with the C-Sync™ COVID-19 Antigen Test to determine if the substances that are naturally present in respiratory specimens or that may be artificially introduced into the nasal cavity cross react or interfere with the C-Sync™ COVID-19 Antigen Test. Based on the results of this study, none of the endogenous substances cross react or interfere with the C-Sync™ COVID-19 Antigen Test.

Substances	Active Ingredients	Concentrations
Human Blood	Blood	4%
Mucin from porcine stomach	Mucin	5 mg/mL
Vicks VapoCool Sore Throat	Benzocaine and Menthol	1.5mg/mL
Naso GEL (NeilMed)	Sodium Chloride, Sodium Bicarbonate	5% v/v
Equate Nasal Spray	Phenylephrine HCL	15% v/v
Afrin Original Nasal Spray	Oxymetazoline	15% v/v
NasalCrom Nasal Spray	Cromolyn	15% v/v
Zicam Cold Remedy Nasal Spray	Galphimia Glauca, Luffa Operculata, Sabadilla	5% v/v
Alkalol Nasal Wash	Alkalol	1:10 Dilution
Equate Sore Throat Phenol Oral Anesthetic Spray (Phenol)	Phenol	15% v/v
Mupirocin Antibiotic	Mupirocin	10 mg/mL
Tobramycin Antibiotic	Tobramycin	5 ug/mL
Fluticasone Propionate	Fluticasone Propionate	5 mg/mL
Tamiflu Oseltamivir Phosphate	Oseltamivir Phosphate	5 mg/mL

Cross Reactivity and Microbial Interference

The Cross-reactivity and potential interference of the C-Sync™ COVID-19 Antigen Test were evaluated by testing microorganisms that may exist within the nasal cavity (16 viruses, 10 bacteria/fungal organisms and pooled human nasal wash). Each of the organisms was tested in triplicate in the absence or presence of UV inactivated SARS-CoV-2 virus ($6.87x10^3$ $TCID_{50}$/mL). No cross-reactivity or interference was seen with the following microorganisms when tested at the concentrations presented in the table below.

	Potential Cross Reactant	Concentration Tested for Cross Reactivity	Concentration Tested for Interference
Virus	Adenovirus Serotype 5,	$1.6x10^8$ $TCID_{50}$/mL	$0.8x10^8$ $TCID_{50}$/mL
	Enterovirus 71/Tainan/4643/98	$1.6x10^7$ $TCID_{50}$/mL	$0.8x10^7$ $TCID_{50}$/mL
	Human coronavirus 229E	$1.6x10^5$ $TCID_{50}$/mL	$3.2x10^5$ $TCID_{50}$/mL
	Human coronavirus OC43	$8.9x10^3$ $TCID_{50}$/mL	$4.45x10^4$ $TCID_{50}$/mL
	Human coronavirus NL63	$1.6x10^4$ $TCID_{50}$/mL	$0.8x10^5$ $TCID_{50}$/mL
	Human Metapneumovirus (hMPV) TN/91-320	$1.6x10^5$ $TCID_{50}$/mL	$3.2x10^5$ $TCID_{50}$/mL
	Influenza A/Puerto Rico/8 MC/1934 (H1N1)	$2.8x10^8$ $TCID_{50}$/mL	$1.4x10^8$ $TCID_{50}$/mL
	Influenza A/Brisbane/10/2007 (H3N2)	$2.2x10^7$ $TCID_{50}$/mL	$1.1x10^7$ $TCID_{50}$/mL
	Influenza B/Florida/4/2006	$1.6x10^8$ $TCID_{50}$/mL	$0.8x10^8$ $TCID_{50}$/mL
	MERS-Coronavirus EMC/2012, Irradiated lysate	$8.9x10^4$ $TCID_{50}$/mL	$2.97x10^5$ $TCID_{50}$/mL
	Human Parainfluenza Virus 1, Strain HPIV1/FRA/29221106/2009	$8.9x10^5$ $TCID_{50}$/mL	$4.45x10^5$ $TCID_{50}$/mL
	Human Parainfluenza Virus 2, Greer	$8.9x10^4$ $TCID_{50}$/mL	$2.97x10^5$ $TCID_{50}$/mL
	Human Parainfluenza Virus 3, NIH 47885	$1.6x10^6$ $TCID_{50}$/mL	$0.8x10^6$ $TCID_{50}$/mL
	Human Parainfluenza Virus 4A, M-25	$1.6x10^3$ $TCID_{50}$/mL	$0.8x10^4$ $TCID_{50}$/mL
	Human respiratory syncytial virus, Strain A1998/3-2	$1.6x10^5$ $TCID_{50}$/mL	$3.2x10^5$ $TCID_{50}$/mL
	Rhinovirus 40 strain 1794 (NIAID V-125-002-021)	$1.6x10^5$ $TCID_{50}$/mL	$3.2x10^5$ $TCID_{50}$/mL
Bacteria	Bordetella pertussis A639	$6.43x10^8$ CFU/mL	$3.21x10^8$ CFU/mL
	Haemophilus influenza Type B: Eagan	$1.35x10^8$ CFU/mL	$0.67x10^8$ CFU/mL
	Chlamydophila pneumoniae	$9.16x10^6$ CFU/mL	$4.55x10^6$ CFU/mL
	Legionella pneumophila Philadelphia	$1.91x10^9$ CFU/mL	$0.95x10^9$ CFU/mL
	Mycoplasma pneumoniae M129	$2.7x10^7$ CFU/mL	$1.35x10^7$ CFU/mL
	Staphylococcus aureus MRSA	$3.5x10^8$ CFU/mL	$1.75x10^8$ CFU/mL
	Staphylococcus epidermidis	$2.9x10^7$ CFU/mL	$1.45x10^7$ CFU/mL
	Streptococcus pneumoniae STREP2	$1.0x10^7$ CFU/mL	$0.5x10^7$ CFU/mL
	Streptococcus pyogenes ABC020060016	$5.0x10^7$ CFU/mL	$2.5x10^7$ CFU/mL
Yeast	Candida albicans	$2.0x10^9$ CFU/mL	$1.0x10^9$ CFU/ml
NP	Pooled Nasal Wash	N/a	N/a

In Silico Study:
The Basic Local Alignment Search Tool (BLAST) managed by the National Center for Biotechnology Information (NCBI) was used to assess the degree of nucleocapsid protein and spike protein sequence homology between SARS-CoV-2 and microorganisms not available for wet testing.

Human Coronavirus HKU1

- The human coronavirus HKU1 nucleocapsid protein showed 36.7% homology across 82% of the SARS-CoV-2 nucleocapsid protein sequence which is relatively low. But cross-reactivity cannot be ruled out.
- The human coronavirus HKU1 spike protein showed 34.2 % homology across 70.3 % of the SARS-CoV-2 spike protein sequence, which is relatively low. But cross-reactivity cannot be ruled out.

SARS-CoV-1

- The homology between the SARS-CoV-2 and SARS-CoV-1 nucleocapsid proteins is high, at 90.5% across 100% of the sequence, therefore cross-reactivity is likely.
- The homology between the SARS-CoV-2 and SARS-CoV-1 spike proteins is high at 76 % across 100% of both sequences, therefore cross-reactivity is likely.

High Dose Hook Effect

No high dose hook effect was observed when UV inactivated SARS-CoV-2 virus at the concentration of $4.57x10^5$ $TCID_{50}$/mL was tested with the C-Sync™ COVID-19 Antigen Test.

EXTERNAL QUALITY CONTROLS

External Positive and Negative Quality Controls are required to demonstrate the integrity of the cassette and to ensure the reagents and the assay procedure are working properly. External Positive and Negative Quality Controls should be used once by each new operator, with each new shipment and each new lot, and as deemed additionally necessary by laboratory internal quality control procedures, and in accordance with local, state and federal regulations or accreditation requirements. If the expected results are not obtained, do not perform patient tests or report patient results. Contact Technical Support.

TECHNICAL SUPPORT

For more information, please visit www.biosynchronicity.com
If you have any questions, please contact customer support at:

Phone: +1 (425) 898-3431
Email: support@biosynchronicity.com

INDEX OF SYMBOLS

Manufacturer	Consult Instructions for Use
CE mark	For prescription use only
Contains sufficient for <n> test	Do not reuse
Store between 2°C and 30°C (36°F and 86°F)	Do not use if package is damaged
In Vitro Diagnostic device	Use by date
Keep dry	Catalog Number
Keep away from sunlight	

C-SYNC™

COVID-19 ANTIGEN TEST

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