August 19, 2021

Bethany Hills
Morrison & Foerster LLP
Representing: PlexBio Co., Ltd.
250 West 55th Street
New York, NY 10019

Device:	IntelliPlex SARS-CoV-2 Detection Kit
EUA Number:	EUA201563
Company:	PlexBio Co., Ltd.
Indication:	Qualitative detection of nucleic acid from SARS-CoV-2 in nasopharyngeal (NP), oropharyngeal (OP), anterior nasal and mid-turbinate nasal swabs, nasopharyngeal wash/aspirate or nasal aspirates, and bronchoalveolar lavage (BAL) specimens, using the IntelliPlex 1000 πCode Processor and PlexBio 100 Fluorescent Analyzer with DeXipher software, from individuals who are suspected of COVID-19 by their healthcare provider. Emergency use of this test is limited to authorized laboratories.
Authorized Laboratories:	Laboratories certified under the Clinical Laboratory Improvement Amendments of 1988 (CLIA), 42 U.S.C. §263a, that meet the requirements to perform high complexity tests.

Dear Ms. Hills:

On June 25, 2020, based on your[1] request, the Food and Drug Administration (FDA) issued a letter authorizing the emergency use of the IntelliPlex SARS-CoV-2 Detection Kit pursuant to Section 564 of the Federal Food, Drug, and Cosmetic Act (the Act) (21 U.S.C. §360bbb-3) for the qualitative detection of nucleic acid from SARS-CoV-2 in nasopharyngeal (NP), oropharyngeal (OP), anterior nasal and mid-turbinate nasal swabs, nasopharyngeal wash/aspirate or nasal aspirates, and bronchoalveolar lavage (BAL) specimens, using the IntelliPlex 1000 πCode Processor and PlexBio 100 Fluorescent Analyzer with DeXipher software, from individuals who are suspected of COVID-19 by their healthcare provider. Testing was limited to laboratories certified under the Clinical Laboratory Improvement Amendments of 1988 (CLIA), 42 U.S.C. §263a, that meet the requirements to perform high complexity tests. Based on your request, FDA granted updates to the authorized labeling on February 3, 2021.[2]

[1] For ease of reference, this letter will use the term "you" and related terms to refer to PlexBio Co., Ltd.
[2] On February 3, 2021, your request was granted to: (1) add an additional automated extraction platform, (2) add analytical data to support use of the new automated extraction platform, (3) add clinical validation data from a post-

On April 29, 2021, you requested to revise your Emergency Use Authorization (EUA). Based on this request, and having concluded that revising the June 25, 2020, EUA is appropriate to protect the public health or safety under section 564(g)(2)(C) of the Act (21 U.S.C. § 360bbb 3(g)(2)(C)), FDA is reissuing the June 25, 2020, letter in its entirety with the revisions incorporated.[3] Pursuant to section 564 of the Act and the Scope of Authorization (Section II) and Conditions of Authorization (Section IV) of this reissued letter, your product[4] is now authorized for use consistent with the indication described above.

On February 4, 2020, pursuant to Section 564(b)(1)(C) of the Act, the Secretary of the Department of Health and Human Services (HHS) determined that there is a public health emergency that has a significant potential to affect national security or the health and security of United States citizens living abroad, and that involves the virus that causes COVID-19. Pursuant to Section 564 of the Act, and on the basis of such determination, the Secretary of HHS then declared that circumstances exist justifying the authorization of emergency use of in vitro diagnostics for detection and/or diagnosis of the virus that causes COVID-19 subject to the terms of any authorization issued under Section 564(a) of the Act.[5]

FDA considered the totality of scientific information available in authorizing the emergency use of your product for the indication above. A summary of the performance information FDA relied upon is contained in the "IntelliPlex SARS-CoV-2 Detection Kit Instructions for Use," (identified below).

Having concluded that the criteria for issuance of this authorization under Section 564(c) of the Act are met, I am authorizing the emergency use of your product, described in the Scope of Authorization of this letter (Section II), subject to the terms of this authorization.

I. Criteria for Issuance of Authorization

I have concluded that the emergency use of your product meets the criteria for issuance of an authorization under Section 564(c) of the Act, because I have concluded that:

1. The SARS-CoV-2 can cause a serious or life-threatening disease or condition, including severe respiratory illness, to humans infected by this virus;

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authorization study, (4) include testing results of the FDA Reference Panel, and (5) grant an extension to obtain and test additional low positive clinical samples per Condition V of the June 25, 2020 Letter of Authorization.

[3] The revisions to the June 25, 2020, letter and authorized labeling include: (1) updating the Instructions for Use (IFU) to include low positive clinical data and additional inclusivity data, addition of two new limitations related to circulating variants, updates to reflect language used in more recent authorizations, and other minor edits for clarity, (2) revisions to the letter and Conditions of Authorization (Section IV) to remove Condition V (of the June 25, 2020, letter) related to the required clinical testing (fulfilled), the consolidation of Conditions J, and O through T (of the June 25, 2020, letter) into Condition N, the addition of new Conditions related to circulating variants (new Conditions Q and R below) and additional edits to reflect language used in more recent authorizations.

[4] For ease of reference, this letter will use the term "your product" to refer to the IntelliPlex SARS-CoV-2 Detection Kit used for the indication identified above.

[5] U.S. Department of Health and Human Services, *Determination of a Public Health Emergency and Declaration that Circumstances Exist Justifying Authorizations Pursuant to Section 564(b) of the Federal Food, Drug, and Cosmetic Act, 21 U.S.C. § 360bbb-3*. 85 FR 7316 (February 7, 2020).

2. Based on the totality of scientific evidence available to FDA, it is reasonable to believe that your product may be effective in diagnosing COVID-19, and that the known and potential benefits of your product when used for diagnosing COVID-19, outweigh the known and potential risks of your product; and

3. There is no adequate, approved, and available alternative to the emergency use of your product.[6]

II. Scope of Authorization

I have concluded, pursuant to Section 564(d)(1) of the Act, that the scope of this authorization is limited to the indication above.

Authorized Product Details

Your product is a molecular test based on reverse transcription-polymerase chain reaction (RT-PCR) in combination with πCode technology and the IntelliPlex 1000 πCode Processor and PlexBio 100 Fluorescent Analyzer with DeXipher software (includes the "IntelliPlex 1000 πCode Processor User Manual," "PlexBio 100 Fluorescent Analyzer User Manual") for the qualitative detection of nucleic acid from SARS-CoV-2 in nasopharyngeal (NP), oropharyngeal (OP), anterior nasal and mid-turbinate nasal swabs, nasopharyngeal wash/aspirate or nasal aspirates, and bronchoalveolar lavage (BAL) specimens collected from individuals suspected of COVID-19 by their healthcare provider.

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 high complexity tests.

Results are for the identification of SARS-CoV-2 RNA. The SARS-CoV-2 RNA is generally detectable in respiratory specimens during the acute phase of infection. Positive results are indicative of the presence of SARS-CoV-2 nucleic acid; clinical correlation with patient history and other diagnostic information is necessary to determine patient infection status. Positive results do not rule out bacterial infection or co-infection with other viruses. Negative results do not preclude SARS-CoV-2 infection and should not be used as the sole basis for patient management decisions. Negative results must be combined with clinical observations, patient history, and epidemiological information.

To use your product, SARS-CoV-2 nucleic acid is first extracted, isolated and purified from NP, OP, anterior nasal and mid-turbinate nasal swabs, nasopharyngeal wash/aspirate or nasal aspirates, or BAL specimens. The purified nucleic acid is then reverse transcribed into cDNA followed by PCR amplification, using the Thermo Fisher MiniAmp Thermal cycler, or other authorized thermocycler. Detection occurs via endpoint PCR hybridization with fluorescently-labeled MicroDiscs using the IntelliPlex 1000 πCode Processor and PlexBio 100 Fluorescent Analyzer with DeXipher software, or other authorized instruments and/or software. The IntelliPlex SARS-CoV-2 Detection Kit includes the following materials or other authorized materials: SARS-CoV-2 KIT Primer Mix, SARS-CoV-2 KIT RT-PCR Buffer, SARS-CoV-2

[6] No other criteria of issuance have been prescribed by regulation under Section 564(c)(4) of the Act.

KIT RT-PCR Enzyme Mix, SARS-CoV-2 KIT πCode MicroDisc, SARS-CoV-2 KIT POS (Positive) Control, SA-PE Solution, Hy Buffer, 10X Wash Buffer, NEG (Negative) Control, SARS-CoV-2 KIT Extraction Control, ddH2O.

Your product requires the following control materials, or other authorized control materials (as may be requested under Condition N below), that are required to be included with each batch of specimens tested with your product. All controls listed below must generate expected results in order for a test to be considered valid, as outlined in the Instructions for Use submitted as part of the EUA request:

- SARS-CoV-2 KIT POS (Positive) Control – RNA representing SARS-CoV-2 E, N and RdRP gene mixed with human total RNA. It is used to monitor for failures of RT-PCR reagents and reaction conditions.
- NEG (Negative) Control – Nuclease-free, molecular grade water used to monitor non-specific amplification, cross-contamination during experimental setup, and nucleic acid contamination of reagents. No result will be reported if it does not pass.
- Reference Gene Control –The primer and probe set for Human glucuronidase Beta (GUSB) gene mRNA is included in each run. It controls for specimen quality, RNA extraction, and RT-PCR amplification. The internal control is co-purified from each clinical specimen and must pass for a SARS-CoV-2 negative result to be reported; however, a SARS-CoV-2 positive result will be reported even if the internal control is negative/not detected.
- Extraction Control – MS2 bacteriophage genome RNA added to each clinical specimen prior to extraction. It is used to validate RNA extraction, RT-PCR amplification, and all downstream procedures. It must pass for a SARS-CoV-2 negative result to be reported, but a SARS-CoV-2 positive result will be reported even if the extraction control is negative/not detected.
- Blank πCode MicroDiscs – Discs coupled with randomized oligonucleotide sequence confirmed not to bind to SARS-CoV-2, Extraction Control, or Reference Gene Control amplicons. They are added in each well to monitor hybridization and washing conditions and validate to that the background fluorescence level is acceptable.
- SA-PE πCode MicroDiscs –Discs displaying biotin on the surface. Added to each well to validate the fluorescence labeling procedure with SA-PE.
- Lot ID πCode MicroDiscs – Discs used to validate that the lot is not expired.
- Completeness of πCode MicroDiscs – Eight disc types used to validate that five or more MicroDisc types are detected in each well.

Your product also requires the use of additional authorized materials and authorized ancillary reagents that are not included with your product and are described in the Instructions for Use.

The labeling entitled "IntelliPlex SARS-CoV-2 Detection Kit Instructions for Use," (available at https://www.fda.gov/medical-devices/coronavirus-disease-2019-covid-19-emergency-use-authorizations-medical-devices/in-vitro-diagnostics-euas), and the following fact sheets pertaining to the emergency use, are required to be made available as set forth in the Conditions of Authorization ('Section IV), and are collectively referred to as the "authorized labeling":

- Fact Sheet for Healthcare Providers: PlexBio Co., Ltd.- IntelliPlex SARS-CoV-2 Detection Kit
- Fact Sheet for Patients: PlexBio Co., Ltd. - IntelliPlex SARS-CoV-2 Detection Kit

The above described product, when accompanied by the authorized labeling as set forth in the Conditions of Authorization (Section IV), is authorized to be distributed to and used by authorized laboratories under this EUA, despite the fact that it does not meet certain requirements otherwise required by applicable federal law.

I have concluded, pursuant to Section 564(d)(2) of the Act, that it is reasonable to believe that the known and potential benefits of your authorized product, when used consistent with the Scope of Authorization of this letter (Section II), outweigh the known and potential risks of your product.

I have concluded, pursuant to Section 564(d)(3) of the Act, based on the totality of scientific evidence available to FDA, that it is reasonable to believe that your product may be effective in diagnosing COVID-19, when used consistent with the Scope of Authorization of this letter (Section II), pursuant to Section 564(c)(2)(A) of the Act.

FDA has reviewed the scientific information available to FDA, including the information supporting the conclusions described in Section I above, and concludes that your product (as described in the Scope of Authorization of this letter (Section II)) meets the criteria set forth in Section 564(c) of the Act concerning safety and potential effectiveness.

The emergency use of your product under this EUA must be consistent with, and may not exceed, the terms of this letter, including the Scope of Authorization (Section II) and the Conditions of Authorization (Section IV). Subject to the terms of this EUA and under the circumstances set forth in the Secretary of HHS's determination under Section 564(b)(1)(C) of the Act described above and the Secretary of HHS's corresponding declaration under Section 564(b)(1) of the Act, your product is authorized for the indication above.

III. Waiver of Certain Requirements

I am waiving the following requirements for your product during the duration of this EUA:

- Current good manufacturing practice requirements, including the quality system requirements under 21 CFR Part 820 with respect to the design, manufacture, packaging, labeling, storage, and distribution of your product, but excluding Subpart H (Acceptance Activities, 21 CFR 820.80 and 21 CFR 820.86), Subpart I (Nonconforming Product, 21 CFR 820.90), and Subpart O (Statistical Techniques, 21 CFR 820.250).

IV. Conditions of Authorization

Pursuant to Section 564(e) of the Act, I am establishing the following conditions on this authorization:

PlexBio Co., Ltd. (You) and Authorized Distributor(s)[7]

A. Your product must comply with the following labeling requirements under FDA regulations: the intended use statement (21 CFR 809.10(a)(2), (b)(2)); adequate directions for use (21 U.S.C. 352(f)), (21 CFR 809.10(b)(5), (7), and (8)); appropriate limitations on the use of the device including information required under 21 CFR 809.10(a)(4); and any available information regarding performance of the device, including requirements under 21 CFR 809.10(b)(12).

B. You and authorized distributor(s) must make your product available with the authorized labeling to authorized laboratories.

C. You and authorized distributor(s) must make available on your website(s) the authorized labeling.

D. You and authorized distributor(s) must include a physical copy of the authorized Instructions for Use (described above) with each shipped product of the IntelliPlex SARS-CoV-2 Detection Kit to authorized laboratories.

E. You and authorized distributor(s) must inform authorized laboratories and relevant public health authorities of this EUA, including the terms and conditions herein, and any updates made to your product and authorized labeling.

F. Through a process of inventory control, you and authorized distributor(s) must maintain records of the authorized laboratories to which they distribute your product and number they distribute.

G. You and authorized distributor(s) will collect information on the performance of your product. You must report to Division of Microbiology (DMD)/Office of Health Technology 7 (OHT7)-Office of In Vitro Diagnostics and Radiological Health (OIR)/Office of Product Evaluation and Quality (OPEQ)/Center for Devices and Radiological Health (CDRH) (via email: CDRH-EUA- Reporting@fda.hhs.gov) any suspected occurrence of false positive or false negative results and significant deviations from the established performance characteristics of the product of which you become aware.

H. You and authorized distributor(s) are authorized to make available additional information relating to the emergency use of your product that is consistent with, and does not exceed, the terms of this letter of authorization.

PlexBio Co., Ltd. (You)

[7] "Authorized Distributor(s)" are identified by you, PlexBio Co., Ltd., in your EUA submission as an entity allowed to distribute your device.

I. You must notify FDA of any authorized distributor(s) of your product, including the name, address, and phone number of any authorized distributor(s).

J. You must provide authorized distributor(s) with a copy of this EUA and communicate to authorized distributor(s) any subsequent amendments that might be made to this EUA and its authorized accompanying materials (e.g., Fact Sheets).

K. You must comply with the following requirements under FDA regulations: 21 CFR 820 Subpart H (Acceptance Activities, 21 CFR 820.80 and 21 CFR 820.86), Subpart I (Nonconforming Product, 21 CFR 820.90), and Subpart O (Statistical Techniques, 21 CFR 820.250).

L. You must have lot release procedures and the lot release procedures, including the study design and statistical power, must ensure that your product released for distribution has the clinical and analytical performance claimed in the authorized labeling.

M. If requested by FDA, you must submit lot release procedures to FDA, including sampling protocols, testing protocols, and acceptance criteria, that you use to release lots of your product for distribution in the U.S. If such lot release procedures are requested by FDA, you must provide them within 48 hours of the request.

N. You may request changes to this EUA for your product, including to the Scope of Authorization (Section II in this letter) or to the authorized labeling, including requests to make available additional authorized labeling specific to an authorized distributor. Such additional labeling may use another name for the product but otherwise must be consistent with the authorized labeling, and not exceed the terms of authorization of this letter. Any request for changes to this EUA should be submitted to DMD/OHT7-OIR/OPEQ/CDRH and require appropriate authorization from FDA prior to implementation.

O. You must evaluate the analytical limit of detection and assess traceability[8] of your product with any FDA-recommended reference material(s). After submission to and concurrence with the data by FDA you must update your labeling to reflect the additional testing. Such labeling updates will be made in consultation with, and require concurrence of, DMD/OHT7-OIR/OPEQ/CDRH.

P. You must have a process in place to track adverse events, including any occurrence of false results and report to FDA pursuant to 21 CFR Part 803.

Q. You must evaluate the impact of SARS-CoV-2 viral mutations on your product's performance. Such evaluations must occur on an ongoing basis and must include any additional data analysis that is requested by FDA in response to any performance concerns you or FDA identify during routine evaluation. Additionally, if requested by FDA, you must submit records of these evaluations for FDA review within 48 hours of

[8] Traceability refers to tracing analytical sensitivity/reactivity back to an FDA-recommended reference material.

the request. If your evaluation identifies viral mutations that affect the stated expected performance of your device, you must notify FDA immediately.

R. If requested by FDA, you must update your labeling within 7 calendar days to include any additional labeling risk mitigations identified by FDA, such as those related to the impact of viral mutations on test performance. Such updates will be made in consultation with, and require concurrence of, DMD/OHT7-OIR/OPEQ/CDRH.

Authorized Laboratories

S. Authorized laboratories 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.

T. 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.

U. Authorized laboratories that receive your product must notify the relevant public health authorities of their intent to run your product prior to initiating testing.

V. 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.

W. Authorized laboratories must collect information on the performance of your product and report to DMD/OHT7-OIR/OPEQ/CDRH (via email: CDRH-EUA-Reporting@fda.hhs.gov) and you (https://www.plexbio.com/intelliplex%E2%84%A2-sars-cov-2-detection-kit) 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.

X. All laboratory personnel using your product must be appropriately trained in molecular techniques and use appropriate laboratory and personal protective equipment when handling this kit, and use your product in accordance with the authorized labeling.

PlexBio Co., Ltd. (You), Authorized Distributors and Authorized Laboratories

Y. You, 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.

Conditions Related to Printed Materials, Advertising and Promotion

Z. All descriptive printed matter, advertising and promotional materials relating to the use of your product shall be consistent with the authorized labeling, as well as the terms set

forth in this EUA and meet the requirements set forth in section 501(a), (q)(1), and (r) of the Act, as applicable, and FDA implementing regulations.

AA. No descriptive printed matter, advertising or promotional materials relating to the use of your product may represent or suggest that this test is safe or effective for the detection of SARS-CoV-2.

BB. All descriptive printed matter, advertising, and promotional materials, relating to the use of your product shall clearly and conspicuously state that:

- This product has not been FDA cleared or approved, but has been authorized for emergency use by FDA under an EUA for use by authorized laboratories;
- This product has been authorized only for the detection of nucleic acid from SARS-CoV-2, not for any other viruses or pathogens; and
- 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 diagnostics for detection and/or diagnosis of COVID-19 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.

The emergency use of your product as described in this letter of authorization must comply with the conditions and all other terms of this authorization.

V. Duration of Authorization

This EUA will be effective until the declaration that circumstances exist justifying the authorization of the emergency use of in vitro diagnostics for detection and/or diagnosis of COVID-19 is terminated under Section 564(b)(2) of the Act or the EUA is revoked under Section 564(g) of the Act.

Sincerely,

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RADM Denise M. Hinton
Chief Scientist
Food and Drug Administration

Enclosure