November 9, 2018

Thomas D. Ippolito
Vice President, Clinical and Regulatory Affairs
Chembio Diagnostic Systems, Inc.
3661 Horseblock Road
Medford, NY 11763

Dear Mr. Ippolito:

This letter is in response to your request that the Food and Drug Administration (FDA) issue an Emergency Use Authorization (EUA) for emergency use of Chembio Diagnostic Systems, Inc.'s ("Chembio") DPP Ebola Antigen System[1] for the presumptive detection of Ebola virus (species *Zaire ebolavirus* and hereafter referred to as Ebola virus)[2] in human capillary ("fingerstick") whole blood, EDTA venous whole blood, and EDTA plasma from individuals with signs and symptoms of Ebola virus disease (EVD) in conjunction with epidemiological risk factors (including geographic locations with high prevalence of EVD), by laboratories and facilities adequately equipped, trained and capable of such testing (including treatment centers and public health clinics)[3], pursuant to section 564 of the Federal Food, Drug, and Cosmetic Act (the Act) (21 U.S.C. § 360bbb-3). The DPP Ebola Antigen System is intended for circumstances when use of a rapid Ebola virus test is determined to be more appropriate than use of an Ebola virus nucleic acid test, which has been demonstrated to be more sensitive in detecting the Ebola virus. The DPP Ebola Antigen System is not intended for use for general EVD screening, such as airport screening or contact tracing of individuals without signs and symptoms of EVD.

On September 22, 2006, then-Secretary of the Department of Homeland Security (DHS), Michael Chertoff, determined, pursuant to section 319F-2 of the Public Health Service (PHS) Act (42 U.S.C. § 247d-6b), that the Ebola virus presents a material threat against the United States population sufficient to affect national security.[4] Pursuant to section 564(b)(1) of the Act

[1] For purposes of this authorization, the term "DPP Ebola Antigen System" includes, in addition to the DPP Ebola Antigen System kit, the DPP Ebola Rapid Test Control Pack (quality control reagents intended for use only with the DPP Ebola Antigen System), and the DPP Micro Reader (used to read and interpret the results of the DPP Ebola Antigen System). While the DPP Ebola Rapid Test Control Pack and DPP Micro Reader are both sold separately, under this authorization they must be used in conjunction with the DPP Ebola Antigen System.
[2] This assay is intended for the qualitative detection of antigens from Ebola virus. Limited cross reactivity studies suggest it does not cross-react with other *Ebolavirus* species.
[3] For ease of reference, this letter will refer to "laboratories and facilities adequately equipped, trained and capable of such testing (including treatment centers and public health clinics)" as "authorized laboratories and facilities."
[4] Pursuant to section 564(b)(1) of the Act (21 U.S.C. § 360bbb-3(b)(1)), the HHS Secretary's declaration that supports EUA issuance must be based on one of four determinations, including the identification by the DHS Secretary of a material threat pursuant to section 319F-2 of the PHS Act sufficient to affect national security or the

(21 U.S.C. § 360bbb-3(b)(1)), and on the basis of such determination, the Secretary of the Department of Health and Human Services (HHS) declared on August 5, 2014, that circumstances exist justifying the authorization of emergency use of *in vitro* diagnostics for detection of Ebola virus, subject to the terms of any authorization issued under section 564(a) of the Act (21 U.S.C. § 360bbb-3(a)).[5]

Having concluded that the criteria for issuance of this authorization under section 564(c) of the Act (21 U.S.C. § 360bbb-3(c)) are met, I am authorizing the emergency use of the DPP Ebola Antigen System (as described in the Scope of Authorization section of this letter (Section II)) in individuals with signs and symptoms of EVD in conjunction with epidemiological risk factors (as described in the Scope of Authorization section of this letter (section II)) for the presumptive detection of Ebola virus.

I. Criteria for Issuance of Authorization

I have concluded that the emergency use of the DPP Ebola Antigen System for the presumptive qualitative detection of Ebola virus in the specified population meets the criteria for issuance of an authorization under section 564(c) of the Act, because I have concluded that:

1. The Ebola virus can cause EVD, a serious or life-threatening disease or condition to humans infected with this virus;

2. Based on the totality of scientific evidence available to FDA, it is reasonable to believe that the DPP Ebola Antigen System may be effective in diagnosing EVD, and that the known and potential benefits of the DPP Ebola Antigen System for diagnosing EVD, outweigh the known and potential risks of such product; and

3. There is no adequate, approved, and available alternative to the emergency use of the DPP Ebola Antigen System for diagnosing EVD.[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 use of the authorized DPP Ebola Antigen System by authorized laboratories and facilities for the presumptive detection of Ebola virus in individuals with signs and symptoms of EVD in conjunction with epidemiological risk factors. The DPP Ebola Antigen System is intended for circumstances when use of a rapid Ebola virus test is determined to be more appropriate than use of an Ebola virus nucleic acid test, which has been demonstrated to be more sensitive in detecting the Ebola virus. The DPP Ebola Antigen System is not intended for

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health and security of United States citizens living abroad (section 564(b)(1)(D) of the Act).

[5] U.S. Department of Health and Human Services. *Declaration Regarding Emergency Use of In Vitro Diagnostics for Detection of Ebola Virus*. 79 Fed. Reg. 47141 (August 12, 2014).

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

use for general EVD screening, such as airport screening or contact tracing of individuals without signs and symptoms of EVD.

The Authorized DPP Ebola Antigen System

The DPP Ebola Antigen System is a single-use immunochromatographic lateral flow assay for the *in vitro* presumptive qualitative detection of VP40 protein antigen specific for Ebola virus in human capillary ("fingerstick") whole blood, EDTA venous whole blood, EDTA plasma and other authorized specimen types from individuals with signs and symptoms of EVD in conjunction with epidemiological risk factors.

The DPP Ebola Antigen System employs a Dual Path Platform (DPP) technology and consists of a sample path that distributes sample onto a reagent strip containing a TEST (T) area and a CONTROL (C) area in the test-control window of the test device. The reagent strip is for the detection of Ebola virus and the test procedure is based on capturing a specific protein antigen, present in Ebola virus, from the patient specimen in the TEST (T) area that is functionalized with protein antigen specific antibodies. Following capture in the TEST (T) area, detection is achieved by the addition of a protein antigen specific antibody conjugated to gold nanoparticles. The test procedure is performed by first collecting the patient specimen and applying to the SAMPLE+BUFFER Well#1, this is immediately followed by addition of the buffer. The specimen migrates along the sample path membrane and is delivered to the TEST (T) area of the reagent strip, where Ebola virus specific antibodies are immobilized. Ebola virus, if present in the sample, binds to the immobilized capture antibodies in the TEST (T) area. Buffer is then added into the BUFFER Well #2, which hydrates the dried antibody-gold nanoparticle conjugate causing it to migrate to the TEST area. Ebola virus bound to the TEST (T) area will capture the antibody-gold nanoparticle conjugate. Any remaining unbound antibody-gold nanoparticle conjugate is captured in the CONTROL (C) area functionalized by specific antibodies. Detection is performed using the Chembio DPP Micro Reader, or other authorized instruments, that uses assay-specific algorithms to verify the presence of the CONTROL (C) area and measure color intensity in the TEST (T) area position; it interprets the results using assay-specific cut-off values, and reports a reactive, nonreactive, or invalid result along with a numerical intensity value for the TEST (T) area.

The DPP Ebola Antigen System includes one kit that is comprised of the following materials, or other authorized materials:

- The DPP Ebola Antigen System kit: contains individually pouched DPP Ebola Antigen Test Devices each with a desiccant pouch, disposable Microsafe tubes, sterile safety lancets, adhesive bandages, sterile alcohol swabs, DPP Ebola Antigen System Buffer - GREEN Cap, product insert (authorized Manufacturer Instructions for Use), Quick Reference Instructions, Fact Sheet for Healthcare Providers and Fact Sheet for Patients.

The DPP Ebola Antigen System requires the following control materials and instruments or other authorized control materials and instruments, which are not provided with the test but must be used in conjunction with the DPP Ebola Antigen System:

- The DPP Ebola Rapid Test Control Pack: contains the DPP Ebola Reactive Control, DPP Ebola Non-Reactive Control and product insert. The assay controls are used to verify and assess the assay performance and verify the user's ability to properly perform the test and to interpret the results.
- The DPP Micro Reader: contains the Chembio DPP Micro Reader with Ebola RFID sticker (includes 3 Lithium-ion, type CR2032 (3V/230 mAh), coin cell batteries), custom power cable (USB), power plug adaptor, DPP Cartridge Holder, microfiber cloth, and DPP Micro Reader user manual.

Quality control requirements should be followed in conformance with local, state, and federal regulations or accreditation requirements and the user laboratory's standard quality control procedures.

The DPP Ebola Antigen System also requires the use of additional materials and ancillary reagents commonly used in clinical laboratories and that are described in the authorized DPP Ebola Antigen System Instructions for Use.

The above described DPP Ebola Antigen System, when labeled consistently with the labeling authorized by FDA entitled "DPP Ebola Antigen System Instructions for Use," "DPP Micro Reader," "DPP Ebola Rapid Test Control Pack," and "DPP Ebola Antigen System: Quick Reference Instructions," (available at http://www.fda.gov/MedicalDevices/Safety/EmergencySituations/ucm161496.htm), is authorized to be distributed to and used by authorized laboratories and facilities under this EUA, despite the fact that it does not meet certain requirements otherwise required by federal law. This labeling may be revised by Chembio in consultation with, and with concurrence of, the Division of Microbiology Devices (DMD)/Office of In Vitro Diagnostics and Radiological Health (OIR)/Center for Devices and Radiological Health (CDRH).

The above described DPP Ebola Antigen System is authorized to be accompanied by the following information pertaining to the emergency use, which is authorized to be made available to healthcare providers and patients:

- Fact Sheet for Healthcare Providers: DPP Ebola Antigen System
- Fact Sheet for Patients: DPP Ebola Antigen System

As described in Section IV below, Chembio is also authorized to make available additional information relating to the emergency use of the authorized DPP Ebola Antigen System that is consistent with, and does not exceed, the terms of this letter of authorization.

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 the authorized DPP Ebola Antigen System in the specified population, when used for presumptive qualitative detection of VP40 antigen protein from Ebola virus and used consistently with the Scope of Authorization of this letter (Section II), outweigh the known and potential risks of such a 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 the authorized DPP Ebola Antigen System may be effective in the diagnosis of EVD, when used consistently 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 the authorized DPP Ebola Antigen System, when used to diagnose EVD in the specified population (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 the authorized DPP Ebola Antigen System 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 DHS's determination described above and the Secretary of HHS's corresponding declaration under section 564(b)(1), the DPP Ebola Antigen System described above is authorized to diagnose EVD in individuals with signs and symptoms of EVD in conjunction with epidemiological risk factors.

This EUA will cease to be effective when the HHS declaration that circumstances exist to justify the EUA is terminated under section 564(b)(2) of the Act or when the EUA is revoked under section 564(g) of the Act.

III. Waiver of Certain Requirements

I am waiving the following requirements for the DPP Ebola Antigen System 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 the DPP Ebola Antigen System.

IV. Conditions of Authorization

Pursuant to section 564 of the Act, I am establishing the following conditions on this authorization:

Chembio and Its Authorized Distributor(s)

A. This device 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)); any 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. Chembio and its authorized distributor(s) will distribute the authorized DPP Ebola

Antigen System with the authorized labeling only to authorized laboratories and facilities adequately equipped, trained and capable of such testing. Chembio may request changes to the authorized labeling. Such requests will be made by Chembio in consultation with, and require concurrence of, DMD/OIR/CDRH.

C. Chembio and its authorized distributor(s) will provide to authorized laboratories and facilities the authorized DPP Ebola Antigen System Fact Sheet for Healthcare Providers and the authorized DPP Ebola Antigen System Fact Sheet for Patients.

D. Chembio and its authorized distributor(s) will make available on their websites the authorized DPP Ebola Antigen System Fact Sheet for Healthcare Providers and the authorized DPP Ebola Antigen System Fact Sheet for Patients.

E. Chembio and its authorized distributor(s) will inform authorized laboratories and facilities and relevant public health authority(ies) of this EUA, including the terms and conditions herein.

F. Chembio and its authorized distributor(s) will ensure that authorized laboratories and facilities using the authorized DPP Ebola Antigen System have a process in place for reporting test results to healthcare providers and relevant public health authorities, as appropriate.

G. Through a process of inventory control, Chembio and its authorized distributor(s) will maintain records of device usage.

H. Chembio and its authorized distributor(s) will collect information on the performance of the assay. Chembio will report to FDA any suspected occurrence of false positive and false negative results and significant deviations from the established performance characteristics of the assay of which Chembio becomes aware.

I. Chembio and its authorized distributor(s) are authorized to make available additional information relating to the emergency use of the authorized DPP Ebola Antigen System that is consistent with, and does not exceed, the terms of this letter of authorization.

J. Chembio and its authorized distributor(s) will make available the DPP Ebola Rapid Test Control Pack or other authorized control materials for purchase at the same time as the DPP Ebola Antigen System.

Chembio

K. Chembio will notify FDA of any authorized distributor(s) of the DPP Ebola Antigen System, including the name, address, and phone number of any authorized distributor(s).

L. Chembio will provide its authorized distributor(s) with a copy of this EUA and

communicate to its authorized distributor(s) any subsequent amendments that might be made to this EUA and its authorized accompanying materials (e.g., Fact Sheets).

M. Chembio may request changes to the authorized DPP Ebola Antigen System Fact Sheet for Healthcare Providers and the authorized DPP Ebola Antigen System Fact Sheet for Patients. Such requests will be made by Chembio in consultation with, and require concurrence of, DMD/OIR/CDRH.

N. Chembio may request the addition of other instruments for use with the authorized DPP Ebola Antigen System. Such requests will be made by Chembio in consultation with, and require concurrence of, DMD/OIR/CDRH.

O. Chembio may request the addition of other ancillary reagents for use with the authorized DPP Ebola Antigen System. Such requests will be made by Chembio in consultation with, and require concurrence of, DMD/OIR/CDRH.

P. Chembio may request the addition of other specimen types for use with the authorized DPP Ebola Antigen System. Such requests will be made by Chembio in consultation with, and require concurrence of, DMD/OIR/CDRH.

Q. Chembio may request the addition of other control materials for use with the authorized DPP Ebola Antigen System. Such requests will be made by Chembio in consultation with, and require concurrence of, DMD/OIR/CDRH.

R. Chembio may request substitution for or changes to the authorized materials used in the detection process of Ebola virus in the specimen. Such requests will be made by Chembio in consultation with, and require concurrence of, DMD/OIR/CDRH.

S. Chembio will track adverse events and report to FDA under 21 CFR Part 803.

T. Chembio will assess traceability[7] of the DPP Ebola Antigen System with any FDA-recommended reference material(s). After submission to FDA and DMD/OIR/CDRH's review of and concurrence with the data, Chembio will update its labeling to reflect the additional testing. Such labeling updates will be made in consultation with, and require concurrence of, DMD/OIR/CDRH.

U. Chembio will finalize the additional agreed upon (November 7, 2018) cross-reactivity and interference analytical studies within 3 months of the date of EUA issuance. After submission to FDA and DMD/OIR/CDRH's review of and concurrence with the data, Chembio will update its labeling to reflect the testing. Such labeling updates will be made in consultation with, and require concurrence of, DMD/OIR/CDRH.

V. Chembio will track the performance of the DPP Ebola Antigen System and report to DMD/OIR/CDRH on a semi-annual basis.

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

Authorized Laboratories and Facilities

W. Authorized laboratories and facilities will include with reports of the results of the DPP Ebola Antigen System the authorized Fact Sheet for Healthcare Providers and the authorized Fact Sheet for Patients. Under exigent circumstances, other appropriate methods for disseminating these Fact Sheets may be used, which may include mass media.

X. Authorized laboratories and facilities will perform the DPP Ebola Antigen System as outlined in the DPP Ebola Antigen System Instructions for Use. Deviations from the authorized procedures, including the authorized instruments, authorized clinical specimen types, authorized control materials, authorized other ancillary reagents and authorized materials required to perform the DPP Ebola Antigen System are not permitted.

Y. Authorized laboratories and facilities must read the results of the DPP Ebola Antigen System on the DPP Micro Reader or on other authorized instruments. Authorized laboratories and facilities must not attempt to interpret the results of the DPP Ebola Antigen System visually.

Z. Authorized laboratories and facilities will have a process in place for reporting test results to healthcare providers and relevant public health authorities, as appropriate.[8]

AA. Authorized laboratories and facilities will collect information on the performance of the DPP Ebola Antigen System and report to DMD/OIR/CDRH (*via* email CDRH-EUA-Reporting@fda.hhs.gov) and Chembio any suspected occurrence of false negative and false positive results and significant deviations from the established performance characteristics of which they become aware.

BB. All personnel using the assay must be appropriately trained in performing and interpreting immunochromatographic techniques, use appropriate laboratory and personal protective equipment when handling this kit, and use the test in accordance with the authorized labeling. All personnel using the assay must also be trained in and be familiar with the interpretation of results of the DPP Ebola Antigen System.

Chembio, Its Authorized Distributor(s), and Authorized Laboratories and Facilities

CC. Chembio, its authorized distributor(s), and authorized laboratories and facilities will ensure that any records associated with this EUA are maintained until notified by FDA. Such records will be made available to FDA for inspection upon request.

Conditions Related to Advertising and Promotion

DD. All advertising and promotional descriptive printed matter relating to the use of the authorized DPP Ebola Antigen System shall be consistent with the authorized Fact

[8] According to CDC, EVD is a nationally notifiable condition (see https://www.cdc.gov/vhf/ebola/index.html).

Sheets and authorized labeling, as well as the terms set forth in this EUA and the applicable requirements set forth in the Act and FDA regulations.

EE. All advertising and promotional descriptive printed matter relating to the use of the authorized DPP Ebola Antigen System shall clearly and conspicuously state that:

- This test has not been FDA cleared or approved;
- This test has been authorized by FDA under an EUA for use by authorized laboratories and facilities adequately equipped, trained and capable of testing for EVD (including treatment centers and public health clinics);
- This test has been authorized only for the detection of Ebola virus, species *Zaire ebolavirus*, and any other *Ebolavirus* species if so authorized; and
- This test is authorized only for the duration of the declaration that circumstances exist justifying the authorization of the emergency use of *in vitro* diagnostics for detection of Ebola virus under section 564(b)(1) of the Act, 21 U.S.C. § 360bbb-3(b)(1), unless the authorization is terminated or revoked sooner.

No advertising or promotional descriptive printed matter relating to the use of the authorized DPP Ebola Antigen System may represent or suggest that this test is safe or effective for the diagnosis of EVD.

The emergency use of the authorized DPP Ebola Antigen System 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 of Ebola virus 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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Rachel E. Sherman, M.D., M.P.H.
Principal Deputy Commissioner

Enclosures