Biosafety when Testing Suspected SARS-CoV-2 Samples on the BIOFIRE® FILMARRAY® and BIOFIRE® SPOTFIRE® Systems

Introduction

The purpose of this technical note is to provide the user with guidance regarding handling of suspected severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) respiratory samples during testing on the BIOFIRE® FILMARRAY® and BIOFIRE® SPOTFIRE® Systems.

Safety with Potential SARS-CoV-2 Positive Samples

General Information

SARS-CoV-2 is an enveloped virus with a single-stranded, positive-sense RNA genome. Coronavirus Disease 2019 (COVID-19) is an emerging pandemic respiratory illness caused by SARS-CoV-2 first discovered in China in 2019. The highly pathogenic nature of this virus requires special caution when handling patient samples suspected of containing SARS-CoV-2. The recommendations outlined below do not apply to all respiratory samples, ONLY to potential SARS-CoV-2 positives. When handling potentially positive samples, always follow applicable and recommended guidelines from all applicable regulatory agencies, including the WHO (https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance/laboratory-guidance) and the Centers for Disease Control and Prevention (https://www.cdc.gov/coronavirus/2019-nCoV/lab/lab-biosafety-guidelines.html).

Sample Handling

Patient samples suspected of being positive for SARS-CoV-2 need to be handled appropriately with biosafety laboratory level 2 procedures and associated personal protective equipment. It is recommended that all potential SARS-CoV-2 positive samples be handled in a class II or higher biosafety cabinet. If a biosafety cabinet is unavailable, handing of suspected SARS-CoV-2 positive samples should include additional precautions to provide a protective barrier between specimen manipulation and personnel performing sample processing and BIOFIRE pouch loading.[1,2] According to the WHO, all work surfaces should be decontaminated after use with an appropriate disinfectant with proven activity against enveloped viruses (e.g. hypochlorite (bleach), alcohol, hydrogen peroxide, quaternary ammonium compounds and phenolic compounds)[1] because free SARS-CoV-2 virions have been observed to survive for up to 72 hours on both steel and plastic surfaces.[3]

Organism Inactivation during Sample Manipulation

In general, guanidine salt-based buffers, like BIOFIRE® Sample Buffer, are effective at inactivating enveloped viruses.[4–6] For example, the Qiagen® nucleic acid extraction buffer AVL has been shown to effectively inactivate MERS-CoV in culture media.[7] Rapid inactivation of Ebola virus after contact with the BIOFIRE Sample Buffer has

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also been demonstrated.[8] Based on the available information, once the potential SARS-CoV-2 sample is added to BIOFIRE Sample Buffer, the sample mix is not expected to contain viable virus. This supports the concept that the sample loading workflow of the BIOFIRE FILMARRAY and SPOTFIRE Systems is safe for laboratory personnel as soon as the specimen is in contact with the BIOFIRE Sample Buffer and after specimen injection into the self-contained pouch.

References

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Technical Support Contact Information

bioMérieux is dedicated to providing the best customer support available. If you have any questions or concerns about this process, please contact the Customer and Technical Support team for assistance.

Customer and Technical Support

Web
www.BioFireDX.com

E-mail
BioFireSupport@biomerieux.com

Phone
+1-800-735-6544, toll free
+1-801-736-6354, select Option 5

Or contact the local bioMérieux sales representative or an authorized distributor