VITEK® MS

SARAMIS®
Knowledge Base
V4.16

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For Research Use Only - Not for *in vitro* diagnostic use - EN

General Information

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Note: *The screens and figures shown are intended as illustrations only and must not be interpreted as actual representations of data, results or equipment.*
Screens and equipment are not shown to scale.

IMPORTANT: Please read this document carefully before using the VITEK® MS Plus / RUO system.

Limited Warranty

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Intellectual Property

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1 Preparation Protocols

IMPORTANT: The following protocols are for research use only (RUO) and not for use in diagnostic procedures with clinical specimens.

Note: *For general sample set up information, please refer to the VITEK® MS Plus Workflow User Manual.*

Preparation of the *Escherichia coli* ATCC® 8739™ Calibration Strain

Note: xA1, xB1, xC1 *are the 3 spots used to deposit the calibrant on the VITEK® MS-DS target slide.*

The *E. coli* ATCC® 8739™ strain for the calibration should be incubated for 18 to 24 hours at 35°C ± 2°C on blood agar under aerobic atmosphere.

The *E. coli* ATCC® 8739™ strain has to be deposited on positions: xA1, xB1, xC1, depending on the number of samples tested (one calibrant per acquisition group of 16 spots).

1. Using a loop, collect cells of *E. coli* ATCC® 8739™ onto the calibration spot of each acquisition group being used on the VITEK® MS-DS target slide.
2. Immediately add 1 µL of VITEK® MS-CHCA matrix to each calibration spot using a pipette. Replace pipette tips after each individual addition of matrix.
3. Allow each spot to dry completely.

For more information about the E. coli ATCC® 8739™ calibration strain preparation protocol, see Appendix - Protocol to Use and Store E. coli ATCC® 8739™ for Calibration on page A-1.

Preparation of Bacteria

WARNING

Powder-free gloves should be used when handling VITEK® MS-DS target slides.

IMPORTANT: Do not use loops that may have come into contact with anything other than the sample strain to be tested.

Avoid collecting any agar when picking up cells from the agar plate as this may lead to poor identification results.

Some microorganisms, such as streptococci, grow in very small colonies. In such cases, pick up several similar colonies and deposit them on the same spot.

Do not deposit more than 1 (Single Deposit Mode) or 2 (Duplicate Deposit Mode) samples at a time before adding the VITEK® MS-CHCA matrix to the target slide spots.

Make sure that only fresh, sterile loops are used. Discard the loop after each sample preparation.

Make sure that only fresh, sterile pipette tips come into contact with the VITEK® MS-CHCA matrix. Change the pipette tip after each individual deposit to avoid contamination of the matrix.

Note: *The VITEK® MS-CHCA matrix contains organic solvents. It is recommended to close the tube after dispensing to avoid evaporation.*

IMPORTANT: If you spill any E. coli ATCC® 8739™ or VITEK® MS-CHCA matrix on a sample spot, skip that specific spot to avoid cross contamination between calibrator and sample.

1. Spot the *E. coli* ATCC® 8739™ control organism and the VITEK® MS-CHCA matrix on the calibration spot prior to spotting the sample.
2. Collect a portion of an isolated colony using a 1 µL loop.
3. Apply the sample to the center of the spot.

   The appropriate amount on a spot is shown in the pictures below.

Too much

Not enough

OK

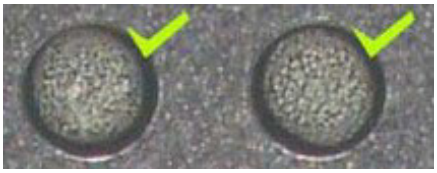
Note: *Take special care not to apply too much.*

4. Smear a thin layer of the sample on the spot using the 1 µL loop and discard the used loop.

5. Add 1 µL of VITEK® MS-CHCA matrix to the center of the spot using a pipette and cover the entire deposit.
6. Discard the pipette tip.
7. Allow the spot to dry completely.
8. Repeat the procedure using fresh loops and pipette tips to deposit other samples (if any).
9. Approximately five minutes later, depending on air humidity, check for crystal formation on the spots.

   Inexperienced users may want to use a magnifying glass.

   A sign of successful measurement is only if matrix crystals have become visible as a yellowish film. Ideally, most of the spot's surface will be coated with crystals.



10. Run the target slide in the **VITEK® MS** instrument according to the instructions included in the *VITEK® MS Plus Workflow User Manual* or in the *VITEK® MS Instrument User Manual*.

Note: *It is possible to deposit samples or sample preparations for all types of microorganisms on the same VITEK® MS-DS target slide.*

IMPORTANT: Once the VITEK® MS-DS target slide is prepared, it must be tested within 72 hours. Before spectra acquisition, it must be stored at room temperature in its original packaging.

If the sample deposit is of optimum quality, acquisition can be performed up to 3 times on the same spot.

IMPORTANT: If a result of Mycobacterium is obtained by direct deposit, it must be confirmed by retesting the strain using the extraction kit and protocol (refer to Preparation of Mycobacterium and Nocardia from a Solid Medium (page 1-6)).

If all the acquisition groups have not been used, store the VITEK® MS-DS target slide in its original packaging for future use with the unused acquisition groups before the target slide expiry date.

Preparation of Yeasts

WARNING

Powder-free gloves should be used when handling VITEK® MS-DS target slides.

IMPORTANT: Do not use loops that may have come into contact with anything other than the sample strain to be tested.

Avoid collecting any agar when picking up the cells from the agar plate as this may lead to poor identification results.

Do not deposit more than 1 (Single Deposit Mode) or 2 (Duplicate Deposit Mode) samples at a time before adding the VITEK® MS-CHCA matrix to the target slide spots.

Make sure that only fresh, sterile loops are used. Discard the loop after each sample preparation.

Make sure that only fresh, sterile pipette tips come into contact with the VITEK® MS-CHCA matrix and the VITEK® MS-FA. Change the pipette tip after each individual deposit to avoid contamination of the reagents.

Note: *The VITEK® MS-CHCA matrix contains organic solvents. It is recommended to close the tube after dispensing to avoid evaporation.*

The preparation of yeasts differs from the standard procedure in that VITEK® MS-FA is applied to the sample prior to adding the VITEK® MS-CHCA matrix.

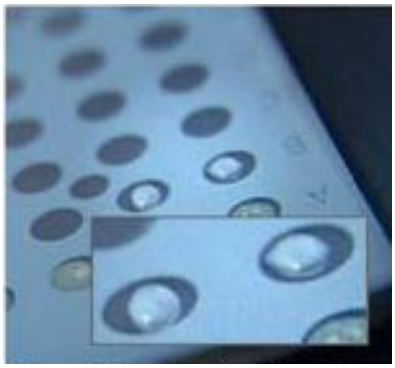


Figure 1-1: Yeast immediately after VITEK® MS-FA treatment

1. Spot the *E. coli* ATCC® 8739™ control organism and the VITEK® MS-CHCA matrix on the calibration spot prior to spotting the sample.

IMPORTANT: If you spill any E. coli ATCC® 8739™ or VITEK® MS-CHCA matrix on a sample spot, skip that specific spot to avoid cross contamination between calibrator and sample.

2. Collect a portion of an isolated colony using a 1 µL loop.
3. Apply the sample to the center of the spot. See Preparation of Bacteria on page 1-2 to deposit the correct amount of sample.
4. Smear a thin layer of the sample on the spot using the 1 µL loop.
5. Discard the used loop.
6. Add 0.5 µL of VITEK® MS-FA to the spot using a pipette.
7. Discard the pipette tip.

CAUTION: Do not treat the *E.coli* calibration strains on positions xA1, xB1, xC1 with VITEK® MS-FA.

8. Repeat the procedure using fresh loops and pipette tips to deposit other samples (if any).
9. For efficient extraction, it is important to allow for evaporation of the VITEK® MS-FA before adding the matrix.

Note: *Evaporation usually takes between 1 and 3 minutes or longer depending on the air humidity and others factors like temperature.*

10. Add 1 µL of VITEK® MS-CHCA matrix as described in the section about Preparation of Bacteria on page 1-2.
11. Allow the spot to dry completely.
12. Run the target slide in the VITEK® MS instrument according to the instructions included in the *VITEK® MS Plus Workflow User Manual* or in the *VITEK® MS Instrument User Manual*.

Note: *It is possible to deposit samples or sample preparations for all types of microorganisms on the same VITEK® MS-DS target slide.*

IMPORTANT: Once the VITEK® MS-DS target slide is prepared, it must be tested within 72 hours. Before spectra acquisition, it must be stored at room temperature in its original packaging.

If the sample deposit is of optimum quality, acquisition can be performed up to 3 times on the same spot.

If all the acquisition groups have not been used, store the VITEK® MS-DS target slide in its original packaging for future use with the unused acquisition groups before the target slide expiry date.

Preparation of *Mycobacterium* and *Nocardia* from a Solid Medium

WARNING

Powder-free gloves should be used when handling VITEK® MS-DS target slides.

WARNING

To reduce the risks of accidental exposure to infectious agents, additional precautions should be taken when manipulating *Mycobacterium*.

All manipulations of *Mycobacterium* must be performed using a Biological Safety Cabinet (Type IIA) with certified HEPA filters while wearing appropriate protective equipment to comply with safety standards set forth by your institution or CDC/NIH or WHO for Biosafety Level 3 Practices.

For activities involving the propagation and manipulation of *M. tuberculosis* or *Mycobacterium* sp. grown in culture, Biosafety Level 3 Practices, containment equipment, and facilities are recommended.

Wear a laboratory coat, powder-free gloves and oversleeves.

CAUTION: It is recommended to use Environmental Protection Agency (EPA) registered tuberculocidal disinfectant solution to clean the Biological Safety Cabinet and soak the plastic-backed absorbent cloth inside the BSC.

IMPORTANT: Do not use loops or cytology brushes that may have come into contact with anything other than the sample strain to be tested.

Avoid collecting any agar when picking up the cells from the agar plate as this may lead to poor identification results.

Make sure that only fresh, sterile loops or cytology brushes are used. Discard the loop or cytology brush after each sample preparation.

Make sure that only fresh, sterile pipette tips come into contact with the VITEK® MS-CHCA matrix and the VITEK® MS Mycobacterium/Nocardia kit reagents. Change the pipette tip after each individual deposit to avoid contamination of the reagents.

Note: *The VITEK® MS-CHCA matrix and the VITEK® MS Mycobacterium/Nocardia kit reagents contain organic solvents. It is recommended to close all packaging after dispensing to avoid evaporation.*

If Nocardia strains are not embedded in the agar, direct deposit is also possible (refer to Preparation of Bacteria on page 1-2*).*

1. For each organism to be tested, transfer 500 µL of 70% ethanol to a 2 mL microcentrifuge tube containing approximately 200 µL of 0.5 mm glass beads.
2. **For *Mycobacterium***, use a 1 µL loop to pick up and transfer one loopful of the cells to the tube and cap securely.

   For *Nocardia*, use a 1 µL loop (one loopful) or a curved cytology brush (in case of an embedded strain) to gently pick up and transfer cells to the tube and cap securely.
3. Use a vortex-type mixer with adaptor to disrupt the cells for 15 minutes
   or a bead beater-type homogenizer for 5 minutes (maximum speed).

Note: *When working with BSL-3 Mycobacterium, it is recommended to place the bead beater-type homogenizer inside the Biological Safety Cabinet.*

If the mechanical disruption is performed outside the Biological Safety Cabinet, seal the tube top with parafilm or equivalent to avoid aerosolization or spills.

4. Remove from the mixer or the bead beater-type homogenizer and incubate the tube at room temperature for 10 minutes to complete the inactivation. Keep the tube upright.

Note: *The following steps can be performed outside the Biological Safety Level 3 Cabinet.*

5. Mix for 5 to 10 seconds using a vortex-type mixer and immediately transfer the suspension into an empty 2 mL round-bottomed tube using a pipette. Avoid transferring any glass beads. Discard the pipette tip.

Note: *Before the centrifugation steps, note the position of the expected pellet. This could be helpful in case of a small pellet.*

6. Centrifuge the sample at 10,000 to 14,000 g for 2 minutes to create a pellet.
7. Discard all the supernatant using a pipette.

Note: *If liquid remains and cannot be removed with the pipette, the sample can be air dried to allow ethanol to evaporate.*

8. Add 10 µL of 70% formic acid to the pellet. Resuspend by aspiration/dispensing using a pipette until the pellet is uniformly dispersed, or directly with a vortex-type mixer.
9. Add 10 µL of 100% acetonitrile and mix using a vortex-type mixer.
10. Centrifuge the sample at 10,000 to 14,000 g for 2 minutes to create a pellet.

IMPORTANT: If you are working inside the Biological Safety Cabinet, make sure you replace the previously used plastic-backed absorbent pad with a fresh one soaked in tuberculocidal disinfectant.

11. Spot the *E. coli* ATCC® 8739™ control organism and the VITEK® MS-CHCA matrix on the calibration spot prior to spotting samples.

IMPORTANT: If you spill any E. coli ATCC® 8739™ or VITEK® MS-CHCA matrix on a sample spot, skip that specific spot to avoid cross contamination between calibrator and protein extraction.

12. For each sample, transfer 1 µL of the supernatant on the designated target slide spot.

13. Allow each spot to dry completely.

Note: *If the spots are not completely dry before adding the VITEK® MS-CHCA matrix, optimal crystallization of the samples may not be achieved and could potentially interfere with the VITEK® MS results (No Identification).*

14. Add 1 µL of VITEK® MS-CHCA matrix to each target slide spot using a pipette.
15. Discard the pipette tip.
16. Allow each spot to dry completely.
17. Run the target slide in the **VITEK® MS** instrument according to the instructions included in the *VITEK® MS Plus Workflow User Manual* or in the *VITEK® MS Instrument User Manual*.

Note: *It is possible to deposit samples or sample preparations for all types of microorganisms on the same VITEK® MS-DS target slide.*

IMPORTANT: Extracts supernatants can be stored at -20°C for up to 14 days. Before spotting, extract must be thawed and then centrifuged at 10,000 to 14,000 g for 2 minutes.

Once the VITEK® MS-DS target slide is prepared and the matrix is fully dried, it must be tested within 72 hours. Before spectra acquisition, it must be stored at room temperature in its original packaging.

If the sample deposit is of optimum quality, acquisition can be performed up to 3 times on the same spot.

If all the acquisition groups have not been used, store the VITEK® MS-DS target slide in its original packaging for future use with the unused acquisition groups before the target slide expiry date.

CAUTION: If you are working inside the BSL-3 laboratory and the **VITEK® MS** instrument is located outside the laboratory, apply tuberculocidal disinfectant to an absorbent disposable paper towel and wipe the bottom of the slide before putting it in the transport case and exiting the BSL-3 laboratory.

Preparation of *Mycobacterium* from a Liquid Medium

WARNING

Powder-free gloves should be used when handling VITEK® MS-DS target slides.

WARNING

To reduce the risks of accidental exposure to infectious agents, additional precautions should be taken when manipulating *Mycobacterium*.

All manipulations of *Mycobacterium* must be performed using a Biological Safety Cabinet (Type IIA) with certified HEPA filters while wearing appropriate protective equipment to comply with safety standards set forth by your institution or CDC/NIH or WHO for Biosafety Level 3 Practices.

For activities involving the propagation and manipulation of *M. tuberculosis* or *Mycobacterium* sp. grown in culture, Biosafety Level 3 Practices, containment equipment, and facilities are recommended.

Wear a laboratory coat, powder-free gloves and oversleeves.

CAUTION: It is recommended to use Environmental Protection Agency (EPA) registered tuberculocidal disinfectant solution to clean the Biological Safety Cabinet and soak the plastic-backed absorbent cloth inside the BSC.

IMPORTANT: Make sure that only fresh, sterile pipette tips come into contact with the VITEK® MS-CHCA matrix and the VITEK® MS Mycobacterium/Nocardia kit reagents. Change the pipette tip after each individual deposit to avoid contamination of the reagents.

Note: *The VITEK® MS-CHCA matrix and the VITEK® MS Mycobacterium/Nocardia kit reagents contain organic solvents. It is recommended to close all packaging after dispensing to avoid evaporation.*

1. Test positive BACT/ALERT® MP bottles, BACTEC™ MGIT™ 960 or VersaTREK® Myco bottles between 24-72 hours post-positivity as determined by the detection instrument.

Note: *If the bottles or tubes are removed from the instrument for other tests, continue to incubate them at 35°-37°C in an incubator until they have been incubated for 24-72 hours post-positivity.*

2. Between 24-72 hours post-positivity, mix the bottle or tube for 5 to 10 seconds using a vortex-type mixer.
3. Transfer immediately, and, aseptically, 3 mL of sample into the 5 mL centrifuge tube. When testing BACT/ALERT® MP bottles, use an 18 G (or larger) needle for sample aspiration.

Note: *After the aliquot is removed, place the positive bottle or tube at 35-37°C in an incubator for further testing, if needed.*

4. Use a swing bucket centrifuge with a 15 mL adaptor to centrifuge the 5 mL centrifuge tube at 3,000 g for 10 minutes to create a pellet.
5. Decant the medium into a waste container and completely blot dry onto a plastic-backed absorbent pad.

WARNING

The medium may contain viable mycobacteria and should be handled as biologically hazardous waste.

6. Add 500 µL of 70% ethanol to the 5 mL microcentrifuge tube and use a pipette to gently mix up and down to resuspend the pellet.
7. Transfer the suspension to a tube containing glass beads.
8. Use a vortex-type mixer with adaptor to disrupt the cells for 15 minutes **or** a bead beater-type homogenizer for 5 minutes (maximum speed).

Note: *When working with BSL-3 Mycobacteria, it is recommended to place the vortex mixer with adaptor, or bead beater-type homogenizer, inside the Biological Safety Cabinet.*

If the mechanical disruption is performed outside the Biological Safety Cabinet, seal the tube top with parafilm or equivalent to avoid aerosolization or spills.

9. Remove from the mixer or the bead beater-type homogenizer and incubate the tube at room temperature for 10 minutes to complete the inactivation. Keep the tube upright.

Note: *The following steps can be performed outside the Biological Safety Level 3 Cabinet.*

10. Mix the content for 5 to 10 seconds using a vortex-type mixer
11. Transfer immediately the suspension into an empty 2 mL round-bottomed tube using a pipette. Avoid transferring any glass beads.
12. Discard the pipette tip.

Note: *Before the centrifugation steps, note the position of the expected pellet. This could be helpful in case of a small pellet.*

13. Centrifuge the tube at 14,000 g for 2 minutes to create a pellet.
14. Aspirate and discard all the supernatant using a pipette and carefully to remove all visible liquid without disturbing the pellet.

Note: *If liquid remains and cannot be removed with the pipette, the sample can be air dried to allow for ethanol evaporation.*

15. Add 10 µL of 70% formic acid to the 2 mL round-bottomed tube and gently resuspend the pellet.

Note: *If the pellet is not visible, wash the sides of the tube with 70% formic acid to ensure resuspension.*

16. Mix for 5 to 10 seconds using a vortex-type mixer.
17. Add 10 µL of 100% acetonitrile.
18. Mix for 5 to 10 seconds using a vortex-type mixer.
19. Centrifuge the tube at 14,000 g for 2 minutes to create a pellet.

IMPORTANT: If you are working inside the Biological Safety Cabinet, make sure you replace the previously used plastic-backed absorbent cloth with a fresh one soaked in tuberculocidal disinfectant.

20. Spot the *E. coli* ATCC® 8739™ control organism and the VITEK® MS-CHCA matrix on the calibration spot prior to spotting samples.

IMPORTANT: If you spill any E. coli ATCC® 8739™ or VITEK® MS-CHCA matrix on a sample spot, skip that specific spot to avoid cross contamination between calibrator and protein extraction.

21. For each sample, transfer 1 µL of the supernatant from step 19 on the designated target slide spots.
22. Allow each spot to dry completely.

Note: *If the spots are not completely dry before adding the VITEK® MS-CHCA matrix, optimal crystallization of the samples may not be achieved and could potentially interfere with the VITEK® MS results (No Identification).*

23. Add 1 µL of VITEK® MS-CHCA matrix to each target slide spot using a pipette.
24. Discard the pipette tip.
25. Allow each spot to dry completely.
26. Run the target slide in the **VITEK® MS** instrument according to the instructions included in the *VITEK® MS Plus Workflow User Manual* or in the *VITEK® MS Instrument User Manual*..

Note: *It is possible to deposit samples or sample preparations for all types of microorganisms on the same VITEK® MS-DS target slide.*

IMPORTANT: Extract supernatants can be stored at -20°C for up to 14 days. Before spotting, extract supernatant must be thawed and then centrifuged at 14,000 g for 2 minutes.

IMPORTANT: Once the VITEK® MS-DS target slide is prepared and the matrix is fully dried, it must be tested within 72 hours. Before spectra acquisition, it must be stored at room temperature in its original packaging.

If the sample deposit is of optimum quality, acquisition can be performed up to 3 times on the same spot.

If all the acquisition groups have not been used, store the VITEK® MS-DS target slide in its original packaging for future use with the unused acquisition groups before the target slide expiry date.

CAUTION: If you are working inside the BSL-3 laboratory and the **VITEK® MS** instrument is located outside the laboratory, apply tuberculocidal disinfectant to an absorbent disposable paper towel and wipe the bottom of the slide before putting it in the transport case and exiting the BSL-3 laboratory.

Preparation of Moulds

WARNING

Use a safety cabinet, wear a laboratory coat, powder-free gloves and oversleeves.

CAUTION: Use the appropriate procedure/product to clean the material.

IMPORTANT: Be careful not to pick any agar when picking up the colonies from the agar plate as this may lead to poor identification results.

Make sure that only fresh, sterile pipette tips come into contact with the VITEK® MS-CHCA matrix and the VITEK® MS Mould kit reagents. Change the pipette tip after each individual deposit to avoid contamination of the reagents.

Note: *The VITEK® MS-CHCA matrix and the VITEK® MS Mould Kit reagents contain organic solvents. It is recommended to close all packaging after dispensing to avoid evaporation.*

1. Add 900 µL of 70% ethanol in a 2 mL round-bottomed tube.
2. Wet a sterile cotton swab using suspension medium or sterile deionized water.
3. Press the swab against the side of the tube to remove excess liquid.
4. Collect a 1 to 2 cm diameter circle (approx.) of mould from the agar plate using the swab, selecting spores (conidia) and hyphae if possible.
5. Suspend the collected material in the tube prepared in the first step.
6. Mix the suspension using a vortex-type mixer.
7. Centrifuge the round-bottomed tube at 10,000 to 14,000 g for at least 2 minutes.

Note: *If you need to remove the tubes from the safety cabinet for the centrifugation steps, make sure you clean them with sporicidal agent in order to avoid laboratory contamination.*

8. Discard all the supernatant using a pipette and without dislodging the pellet.
9. Add 40 µL of 70% formic acid and completely resuspend using a vortex-type mixer.
10. Add 40 µL of acetonitrile and mix using a vortex-type mixer.

Note: *Before the centrifugation steps, note the position of the expected pellet. This could be helpful in case of a small pellet.*

11. Centrifuge for at 10,000 to 14,000 g at least 2 minutes.

    After this step, the inactivation is complete.

Note: *The following steps can be performed outside the Biological Safety Cabinet.*

12. Spot the *E. coli* ATCC® 8739™ control organism and the VITEK® MS-CHCA matrix on the calibration spot prior to spotting the protein extraction.

IMPORTANT: If you spill any E. coli ATCC® 8739™ or VITEK® MS-CHCA matrix on a sample spot, skip that specific spot to avoid cross contamination between calibrator and protein extraction.

13. Deposit 1 µL of the sample supernatant on the designated target slide spot.
14. Allow the spot to dry completely.
15. Add 1 µL of VITEK® MS-CHCA matrix to each target slide spot using the pipette and replacing the pipette tip after each addition of matrix.
16. Allow the spot to dry completely.
17. Run the target slide in the **VITEK® MS** instrument according to the instructions included in the *VITEK® MS Plus Workflow User Manual* or in the *VITEK® MS Instrument User Manual*.

Note: *It is possible to deposit samples or sample preparations for all types of microorganisms on the same VITEK® MS-DS target slide.*

IMPORTANT: Once the VITEK® MS-DS target slide is prepared and the matrix is fully dried, it must be tested within 72 hours. Before spectra acquisition, it must be stored at room temperature in its original packaging.

If the sample deposit is of optimum quality, acquisition can be performed up to 3 times on the same spot.

If all the acquisition groups have not been used, store the VITEK® MS-DS target slide in its original packaging for future use with the unused acquisition groups before the target slide expiry date.

Preparation of *Mycoplasma*

WARNING

Use a safety cabinet, wear a laboratory coat, powder-free gloves and oversleeves.

IMPORTANT: ***Make sure that only fresh, sterile pipette tips come into contact with the VITEK® MS-CHCA matrix and the 0.45% NaCl sterile aqueous solution. Change the pipette tip after each individual deposit to avoid contamination of the reagents.***

Note: *The VITEK® MS-CHCA matrix contains a high concentration of organic solvents. It is recommended to close all packaging after dispensing, to avoid evaporation.*

1. From positive liquid culture, transfer 1 mL of the sample into a 1.5 mL conical microcentrifuge tube.

Note: *Before the centrifugation steps, note the position of the expected pellet. This could be helpful in case of a small pellet.*

2. Centrifuge the tube at 14,000 to 20,000 g for 30 minutes to create a pellet.
3. Discard the supernatant using a pipette.
4. Add 500 µL of 0.45% NaCl sterile aqueous solution.
5. Use a pipette to gently mix up and down to resuspend the pellet.
6. Centrifuge the tube at 14,000 to 20,000 g for 30 minutes to create a pellet.
7. Discard the supernatant using a pipette.

8. Depending on the presence of a pellet:

If the pellet is visible:	If the pellet is not visible:
1.Add 5 µL (for small pellet) to 10 µL (for large pellet) of 0.45% NaCl sterile aqueous solution to gently resuspend the pellet.	1.Add 3 µL of VITEK® MS-CHCA matrix to gently resuspend the pellet.
2.Spot the *E. coli* ATCC® 8739™ control organism and the VITEK® MS-CHCA matrix on the calibration spot prior to spotting the samples.	
IMPORTANT: If you spill any E. coli ATCC® 8739™ or VITEK® MS-CHCA matrix on a sample spot, skip that specific spot to avoid cross contamination between calibrator and sample.	
3.Deposit 1 µL of the suspension on the designated target slide spot. 4.Allow the spot to dry completely. 5.Add 1 µL of VITEK® MS-CHCA matrix to the target slide spot using a pipette. 6.Discard the pipette tip. 7.Allow the spot to dry completely.	3.Deposit 1.5 µL of the suspension on the designated target slide spot. 4.Allow the spot to dry completely. **Note:** *There is no need to add VITEK® MS-CHCA matrix.*

5. Run the target slide in the **VITEK® MS** instrument according to the instructions included in the *VITEK® MS Plus Workflow User Manual* or in the *VITEK® MS Instrument User Manual*.

Note: *It is possible to deposit samples or sample preparations for all types of microorganisms on the same VITEK® MS-DS target slide.*

*If the pellet is not visible and the **VITEK® MS** instrument gives NoID result, the growth may have been insufficient. In this case, re-incubate the culture broth and re-analyze the Mycoplasma sample following the same protocol.*

IMPORTANT: Once the VITEK® MS-DS target slide is prepared and the matrix is fully dried, it must be tested within 2 hours. Before spectra acquisition, it must be stored at room temperature in its original packaging.

If the sample deposit is of optimum quality, acquisition can be performed up to 3 times on the same spot.

If all the acquisition groups have not been used, store the VITEK® MS-DS target slide in its original packaging for future use with the unused acquisition groups before the target slide expiry date.

Preparation of *Brucella, Burkholderia mallei and Burkholderia pseudomallei*

WARNING

Powder-free gloves should be used when handling VITEK® MS-DS target slides.

WARNING

To reduce the risks of accidental exposure to infectious agents, additional precautions should be taken when manipulating *Brucella, Burkholderia mallei* and *Burkholderia pseudomallei*.

All manipulations of those BSL-3 species must be performed using a Biological Safety Cabinet (Type IIA) with certified HEPA filters while wearing appropriate protective equipment to comply with safety standards set forth by your institution or CDC/NIH or WHO for Biosafety Level 3 Practices.

For activities involving the propagation and manipulation of those BSL-3 species grown in culture, Biosafety Level 3 Practices, containment equipment, and facilities are recommended.

Wear a laboratory coat, powder-free gloves and oversleeves.

IMPORTANT: Do not use loops that may have come into contact with anything other than the sample strain to be tested.

Avoid collecting any agar when picking up the cells from the agar plate as this may lead to poor identification results.

Make sure that only fresh, sterile loops are used. Discard the loop after each sample preparation.

Make sure that only fresh, sterile pipette tips come into contact with the VITEK® MS-CHCA matrix and the inactivation solvent mixture. Change the pipette tip after each individual deposit to avoid contamination of the matrix.

Note: *The VITEK® MS-CHCA matrix and the inactivation solvent mixtures contain organic solvents. It is recommended to close all packaging after dispensing to avoid evaporation.*

1. Prepare a fresh inactivation solvent mixture as described below. This solvent mixture must be prepared on the day of use.

   The quantities shown below can accommodate approximately 100 extractions; the formula should be scaled down accordingly.

   - First mix:
     - 7 mL of suspension medium or sterile deionized water
     - 7 mL of absolute ethanol (HPLC grade)
     - 7 mL of acetonitrile (HPLC grade)
   - Homogenize.
   - Add 630 µL of trifluoroacetic acid (TFA) (HPLC grade).
   - Homogenize.
2. For each organism to test transfer 200 µL of solvent mixture in a 2 mL round-bottomed tube.
3. Use a sterile 1 µL loop to suspend 2 full loops of test organism in the tube and mix using a vortex-type mixer.
4. Mix for 5 minutes at maximum speed using a vortex-type mixer with adaptor.
5. Remove from the vortex-type mixer and incubate the tube at room temperature for 10 minutes to complete the inactivation. **Keep the tube upright.**

Note: *Before the centrifugation steps, note the position of the expected pellet. This could be helpful in case of a small pellet.*

6. Centrifuge the sample at 14,000 g for 2 minutes to create a pellet.
7. Discard the supernatant using a pipette.
8. Add 10 µL of VITEK® MS-CHCA matrix directly on the pellet **without disturbing the pellet**.

Note: *The following steps can be performed outside the Biological Safety Level 3 Cabinet.*

9. Spot the *E.* coli ATCC® 8739™ control organism and the VITEK® MS-CHCA matrix on the calibration spot prior to spotting the sample preparation.

IMPORTANT: If you spill any E. coli ATCC® 8739™ or VITEK® MS-CHCA matrix on a sample spot, skip that specific spot to avoid cross contamination between calibrator and sample preparation.

IMPORTANT: DO <u>NOT</u> use a vortex-type mixer or resuspend the pellet by pipetting.

10. Deposit 1 µL of the final sample preparation onto the designated target slide spot.
11. Allow each spot to dry completely.

Note: *There is no need to add VITEK® MS-CHCA matrix.*

12. Run the target slide in the **VITEK® MS** instrument according to the instructions included in the *VITEK® MS Plus Workflow User Manual* or in the *VITEK® MS Instrument User Manual*.

Note: *It is possible to deposit samples or sample preparations for all types of microorganisms on the same VITEK® MS-DS target slide.*

IMPORTANT: The sample preparation can be stored in a clean tube at refrigerated temperature for up to 1 day.

Once the VITEK® MS-DS target slide is prepared and the matrix is fully dried, it must be tested within 72 hours. Before spectra acquisition, it must be stored at room temperature in its original packaging.

If the sample deposit is of optimum quality, acquisition can be performed up to 3 times on the same spot.

If all the acquisition groups have not been used, store the VITEK® MS-DS target slide in its original packaging for future use with the unused acquisition groups before the target slide expiry date.

CAUTION: If you are working inside the BSL-3 laboratory and the **VITEK® MS** instrument is located outside the laboratory, apply a bactericidal disinfectant to an absorbent disposable paper towel and wipe the bottom of the slide before putting it in the transport case and exiting the BSL-3 laboratory.

Preparation of *Streptomyces*

WARNING

Powder-free gloves should be used when handling VITEK® MS-DS target slides.

IMPORTANT: ***Do not use loops or cytology brushes that may have come into contact with anything other than the sample strain to be tested.***

Be careful not to pick any agar when picking up the colonies from the agar plate as this may lead to poor identification results.

Make sure that only fresh, sterile loops or cytology brushes are used. Discard the loop or cytology brush after each sample preparation.

Make sure that only fresh, sterile pipette tips come into contact with the VITEK® MS-CHCA matrix and the different reagents. Change the pipette tip after each individual deposit to avoid contamination of the reagents.

Note: *The VITEK® MS-CHCA matrix and the different reagents contain organic solvents. It is recommended to close all packaging after dispensing to avoid evaporation.*

If Streptomyces strains are not embedded in the agar, direct deposit is also possible (refer to Preparation of Bacteria on page 1-2*).*

1. Prepare fresh reagents as described below. These solvent mixtures must be prepared on the day of use.

   The quantities shown below can accommodate approximately 1,000 extractions for formic acid and 20 for ethanol; the formula should be scaled down accordingly.

   To prepare Formic Acid 70%

   - Mix:
     - 3 mL of suspension medium or sterile deionized water
     - 7 mL of formic acid (100% HPLC grade)
   - Homogenize.

   To prepare Ethanol 70%

   - Mix:
     - 3 mL of suspension medium or sterile deionized water
     - 7 mL of ethanol (100% HPLC grade)
   - Homogenize.

   Acetonitrile (100%): Acetonitrile (HPLC grade) must be used pure.

2. For each sample to test, transfer 500 µL of 70% ethanol to a 2 mL microcentrifuge round-bottomed tube containing approximately 200 µL of 0.5 mm glass beads.
3. Use a 1 µL loop (one loopful) or a curved cytology brush (in case of an embedded strain) to gently pick up and transfer cells from the medium to the tube and cap securely.

Note: *If you do not manage to pick up enough material to fill the loop completely, use the curved cytology brush.*

4. Use a vortex-type mixer with adaptor to disrupt the cells for 15 minutes **or** a bead beater-type homogenizer for 5 minutes (maximum speed).
5. Remove from the mixer or the bead beater-type homogenizer and incubate the tube at room temperature for 10 minutes to complete the inactivation. **Keep the tube upright.**
6. Mix for 5 to 10 seconds using a vortex-type mixer and immediately transfer the suspension into an empty 2 mL round-bottomed tube using a pipette. Avoid transferring any glass beads. Discard the pipette tip.

Note: *Before the centrifugation steps, note the position of the expected pellet. This could be helpful in case of a small pellet.*

7. Centrifuge the sample at 10,000 to 14,000 g for 2 minutes to create a pellet.
8. Discard all the supernatant using a pipette.

Note: *If liquid remains and cannot be removed with the pipette, the sample can be air dried to allow ethanol to evaporate.*

9. Add 10 µL of 70% formic acid to the pellet. Resuspend by aspiration/dispensing using a pipette until the pellet is uniformly dispersed, or directly with a vortex-type mixer.
10. Add 10 µL of 100% acetonitrile and mix using a vortex-type mixer.

11. Centrifuge for 2 minutes at 10,000 to 14,000 g to create a pellet.
12. Spot the *E. coli* ATCC® 8739™ control organism and the VITEK® MS-CHCA matrix on the calibration spot prior to spotting the sample preparation.

IMPORTANT: If you spill any E. coli ATCC® 8739™ or VITEK® MS-CHCA matrix on a sample spot, skip that specific spot to avoid cross contamination between calibrator and sample.

13. For each organism to be tested, immediately transfer 1 µL of the supernatant onto the designated target slide spots.
14. Allow each spot to dry completely.

Note: *If the spots are not completely dry before adding the VITEK® MS-CHCA matrix, optimal crystallization of the samples may not be achieved and could potentially interfere with the VITEK® MS results (No Identification).*

15. Add 1 µL of VITEK® MS-CHCA matrix to each target slide spot using a pipette and replacing the pipette tip after each addition of matrix.
16. Allow each spot to dry completely.
17. Run the target slide in the **VITEK® MS** instrument according to the instructions included in the *VITEK® MS Plus Workflow User Manual* or in the *VITEK® MS Instrument User Manual*.

Note: *It is possible to deposit samples or sample preparations for all types of microorganisms on the same VITEK® MS-DS target slide.*

IMPORTANT: Once the VITEK® MS-DS target slide is prepared and the matrix is fully dried, it must be tested within 72 hours. Before spectra acquisition, it must be stored at room temperature in its original packaging.

If the sample deposit is of optimum quality, acquisition can be performed up to 3 times on the same spot.

If all the acquisition groups have not been used, store the VITEK® MS-DS target slide in its original packaging for future use with the unused acquisition groups before the target slide expiry date.

2 Species included in the SARAMIS® Database

IMPORTANT: The VITEK® MS Plus / RUO SARAMIS® database is for research use only (RUO) and not for use in diagnostic procedures with clinical specimens or mixed cultures.

Note: *The names of certain organisms may differ to the ones in the IVD version due to recent taxonomy updates.*

As species names may change over time, please refer to the official taxonomy for the latest updates.

"Amended in V4.16" in the species table means that spectra and/or super spectra for this taxon have been revised.

*To search a species in the **Search** tab of SARAMIS® Premium, use the [*] wildcard character to replace any number of characters, or use *speciesname* to search the species name:*
*For example: Type *Lichtheimia* to search Lichtheimia species.*

This document lists all species of bacteria, moulds, fungi, yeasts and algae that are available in the VITEK® MS Plus / RUO SARAMIS® V4.16 database.

The SARAMIS® V4.16 database includes the following taxa, spectra and super spectra:

Knowledge Base V4.16	**Taxa**	**Reference Spectra**	**Super Spectra**
Total	2043	32,413	4,578
Bacteria (including *Mycobacteria*)	1550	23,293	3,338
Mycobacteria	61	931	108
Yeasts	144	2,663	443
Moulds	347	6,416	794
Algae	2	41	3

List of Species - Moulds, Fungi, Yeasts and Algae

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Acremonium curvulum	●	
		Acremonium implicatum	●	
		Acremonium murorum	●	●
		Acremonium persicinum	●	●
		Acremonium polychromum	●	●
		Acremonium sclerotigenum	●	●
		Actinomucor elegans	●	●
		Alternaria alternata	●	●
		Alternaria infectoria	●	●
		Alternaria spp	●	●
		Alternaria tenuissima	●	
		Arthroderma benhamiae	●	●
		Arthroderma fulvum	●	●
		Arthrographis kalrae	●	●
		Aspergillus aculeatus	●	●
		Aspergillus alabamensis	●	●
		Aspergillus allahabadii	●	●
●		*Aspergillus arachidicola*	●	
		Aspergillus brasiliensis	●	●
	●	*Aspergillus calidoustus*	●	
●		*Aspergillus calidoustus/pseudodeflectus/ustus*		●
	●	*Aspergillus candidus*	●	●
	●	*Aspergillus carbonarius*	●	●
●		*Aspergillus chevalieri* (Synonym: *Eurotium chevalieri*)	●	●
		Aspergillus creber	●	

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Aspergillus ellipticus	●	
●		*Aspergillus fennelliae*	●	●
		Aspergillus flavipes	●	●
	●	*Aspergillus flavus*	●	
●		*Aspergillus flavus* complex (Included: *A. arachidicola, A. flavus, A. minisclerotigenes, A. novoparasiticus, A. oryzae, A. parasiticus*)		●
●		*Aspergillus foetidus*	●	
		Aspergillus fumigatiaffinis	●	●
	●	*Aspergillus fumigatus*	●	●
●		*Aspergillus fumigatus* complex (Included: *A. fumigatus, A. thermomutatus*)		●
	●	*Aspergillus glaucus* (Synonym: *Eurotium herbariorum*)	●	●
●		*Aspergillus hiratsukae*	●	●
		Aspergillus ibericus	●	
●		*Aspergillus intermedius*	●	●
		Aspergillus japonicus	●	
	●	*Aspergillus lacticoffeatus*	●	
		Aspergillus lentulus	●	●
●		*Aspergillus minisclerotigenes*	●	
	●	*Aspergillus montevidensis* (Synonym: *Eurotium amstelodami*)	●	●
	●	*Aspergillus nidulans*	●	●
●		*Aspergillus nidulans* complex (Included: *A. nidulans, A. versicolor*)		●
●		*Aspergillus niger*	●	
	●	*Aspergillus niger* complex (Included: *A. brasiliensis, A. foetidus, A. lacticoffeatus, A. niger, A. tubingensis*)	●	●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Aspergillus niveus	●	
●		*Aspergillus novoparasiticus*	●	
	●	*Aspergillus ochraceus*	●	●
	●	*Aspergillus ochraceus/westerdijkiae*		●
		Aspergillus oryzae	●	
	●	*Aspergillus parasiticus*	●	●
●		*Aspergillus penicilloides*	●	●
		Aspergillus phoenicis	●	
●		*Aspergillus proliferans*	●	●
	●	*Aspergillus pseudodeflectus*	●	
●		*Aspergillus reptans* (Synonym: *Aspergillus repens*)	●	●
	●	*Aspergillus restrictus*	●	●
	●	*Aspergillus rubrobrunneus*	●	●
	●	*Aspergillus sclerotioniger*	●	●
		Aspergillus spp	●	●
	●	*Aspergillus sydowii*	●	●
	●	*Aspergillus tamarii*	●	●
	●	*Aspergillus terreus* complex (Included: *A. terreus)*	●	●
		Aspergillus tetrazonus	●	●
	●	*Aspergillus thermomutatus* (Synonym: *Neosartorya pseudofischeri*)	●	●
	●	*Aspergillus tubingensis*	●	●
		Aspergillus unguis	●	●
		Aspergillus vadensis	●	
	●	*Aspergillus versicolor*	●	●
●		*Aspergillus wentii*	●	●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
	●	*Aspergillus westerdijkiae*	●	
		Aureobasidium pullulans	●	●
		Aureobasidium pullulans var *pullulans*	●	●
		Barnettozyma californica	●	
		Beauveria bassiana	●	●
		Bipolaris cynodontis	●	●
		Bjerkandera adusta	●	●
		Blastobotrys adeninivorans	●	●
		Blastomyces dermatitidis	●	●
		Boeremia exigua	●	
●		*Botrytis cinerea*	●	●
		Brettanomyces anomalus	●	●
		Brettanomyces bruxellensis	●	●
		Brettanomyces naardenensis	●	●
		Candida aaseri	●	●
		Candida africana	●	
		Candida africana/albicans		●
		Candida africana/albicans/dubliniensis		●
		Candida albicans	●	●
		Candida auris	●	●
		Candida blankii	●	●
		Candida boidinii	●	●
		Candida bracarensis	●	●
		Candida cariosilignicola	●	
		Candida catenulata	●	●
		Candida ciferrii	●	●
		Candida colliculosa	●	●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Candida cylindracea	●	●
		Candida dattila	●	●
		Candida deserticola	●	
		Candida dubliniensis	●	●
		Candida duobushaemulonii	●	●
		Candida edax	●	
		Candida fabianii	●	●
		Candida famata	●	●
		Candida fermentati	●	
		Candida freyschussii	●	●
		Candida glabrata	●	●
		Candida globosa	●	●
		Candida guilliermondii	●	●
		Candida haemulonii	●	●
●		*Candida hellenica*	●	●
		Candida holmii	●	●
		Candida inconspicua	●	●
		Candida intermedia	●	●
		Candida ishiwadae	●	●
		Candida kefyr	●	●
		Candida krusei	●	●
		Candida lambica	●	●
		Candida lipolytica	●	●
		Candida lusitaniae	●	●
		Candida magnoliae	●	●
		Candida melibiosica	●	●
●		*Candida membranifaciens*	●	●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Candida metapsilosis	●	●
		Candida nivariensis	●	●
		Candida norvegensis	●	●
		Candida norvegica	●	●
		Candida orthopsilosis	●	●
		Candida palmioleaphila	●	●
		Candida parapsilosis	●	●
		Candida pararugosa	●	●
		Candida pelliculosa	●	●
●		*Candida pseudoglaebosa*	●	●
		Candida pulcherrima	●	●
		Candida quercitrusa	●	●
		Candida rugosa	●	●
		Candida sake	●	●
		Candida silvicola	●	●
		Candida slooffiae	●	●
		Candida sorbosa	●	●
		Candida spherica	●	●
		Candida spp		●
		Candida steatolytica	●	
		Candida thermophila	●	●
		Candida tropicalis	●	●
		Candida utilis	●	●
		Candida valida	●	●
		Candida variabilis	●	●
		Candida viswanathii	●	●
		Candida zeylanoides	●	●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Cephaliophora irregularis	●	●
		Cephalotheca foveolata	●	●
		Cephalotheca purpurea	●	●
	●	*Chaetomium globosum*	●	●
		Chaetomium spp	●	●
●		*Chrysonilia sitophila*	●	●
		Chrysosporium indicum	●	●
		Chrysosporium keratinophilum	●	
		Chrysosporium spp	●	
		Chrysosporium tuberculatum	●	
		Cladophialophora bantiana	●	●
		Cladophialophora mycetomatis	●	●
	●	*Cladosporium cladosporioides*	●	●
●		*Cladosporium dominicanum*	●	●
●		*Cladosporium fusiforme*	●	●
●		*Cladosporium halotolerans*	●	●
●		*Cladosporium herbarum*	●	
●		*Cladosporium herbarum/macrocarpum*		●
●		*Cladosporium inversicolor*	●	●
●		*Cladosporium langeronii*	●	●
●		*Cladosporium macrocarpum*	●	
●		*Cladosporium oxysporum*	●	●
●		*Cladosporium psychrotolerans*	●	●
	●	*Cladosporium ramotenellum*	●	●
	●	*Cladosporium sphaerospermum*	●	●
		Cladosporium spp	●	●
●		*Cladosporium velox*	●	●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Coccidioides immitis	●	
		Coccidioides posadasii	●	●
		Coccidioides spp		●
		Colletotrichum gloeosporioides	●	
		Coprinellus radians	●	●
		Coriolopsis polyzona	●	●
		Cryptococcus albidus	●	●
		Cryptococcus aureus	●	●
		Cryptococcus curvatus	●	●
		Cryptococcus gattii	●	●
		Cryptococcus humicola	●	
		Cryptococcus laurentii	●	●
		Cryptococcus magnus	●	
		Cryptococcus neoformans	●	●
		Cryptococcus terreus	●	●
		Cryptococcus uniguttulatus	●	●
		Cunninghamella bertholletiae	●	●
		Cunninghamella elegans	●	●
		Curvularia hawaiiensis	●	●
		Curvularia lunata	●	●
		Curvularia spicifera	●	●
		Cyberlindnera rhodanensis (Synonym: *Lindnera rhodanensis*)	●	
		Cyberlindnera saturnus (Synonym: *Lindnera saturnus*)	●	●
		Cyphellophora europaea	●	
		Debaryomyces spp	●	●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Diatrype stigma	●	●
		Duddingtonia flagrans	●	●
		Epicoccum nigrum	●	
		Epidermophyton floccosum	●	●
		Eutypella scoparia	●	●
		Exophiala aquamarina	●	
		Exophiala dermatitidis	●	●
		Exophiala jeanselmei	●	
		Exophiala lecanii-corni	●	
		Exophiala phaeomuriformis complex	●	●
		Exophiala spinifera	●	●
		Exophiala spp	●	●
		Exophiala xenobiotica	●	●
		Exserohilum rostratum	●	●
		Fonsecaea monophora	●	●
●		*Fusarium acuminatum*	●	
●		*Fusarium arthrosporioides*	●	
●		*Fusarium avenaceum*	●	
●		*Fusarium cerealis*	●	
●		*Fusarium cerealis/culmorum/graminearum*		●
		Fusarium chlamydosporum	●	●
●		*Fusarium culmorum*	●	
		Fusarium dimerum	●	●
●		*Fusarium domesticum*	●	●
●		*Fusarium equiseti*	●	
●		*Fusarium equiseti/incarnatum*		●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
●		*Fusarium fujikuroi* complex (Included: *F. subglutinans, F. temperatum, F. verticilloides*)		●
	●	*Fusarium graminearum*	●	
	●	*Fusarium incarnatum*	●	
●		*Fusarium langsethiae*	●	
●		*Fusarium langsethiae/sporotrichoides*		●
●		*Fusarium latericium*	●	●
		Fusarium nygamai	●	
	●	*Fusarium oxysporum*	●	●
		Fusarium oxysporum fsp *aechmeae*	●	
		Fusarium oxysporum fsp *cyclaminis*	●	
		Fusarium oxysporum/proliferatum		●
●		*Fusarium poae*	●	●
	●	*Fusarium proliferatum*	●	●
		Fusarium proliferatum var *minus*	●	
●		*Fusarium sambucinum*	●	●
		Fusarium scirpi	●	●
		Fusarium solani	●	●
●		*Fusarium sporotrichioides*	●	
	●	*Fusarium* spp	●	●
●		*Fusarium subglutinans*	●	
●		*Fusarium temperatum*	●	
		Fusarium thapsinum	●	●
		Fusarium tricinctum	●	
●		*Fusarium tricinctum* complex (Included: *F. acuminatum, F. arthrosporioides, F. avenaceum, F. tricinctum*)		●
●		*Fusarium venenatum*	●	●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
	●	*Fusarium verticillioides*	●	●
		Geotrichum candidum	●	
		Geotrichum candidum/klebahnii		●
		Geotrichum fermentans	●	●
		Geotrichum klebahnii	●	
		Geotrichum spp	●	●
		Gliocladium spp	●	
		Histoplasma capsulatum	●	●
		Hypocrea spp	●	
		Irpex lacteus	●	●
		Kloeckera apiculata	●	●
		Kloeckera apis	●	●
		Kloeckera japonica	●	●
		Kloeckera spp		●
		Knufia spp	●	
		Kodamaea ohmeri	●	●
		Komagataella pastoris	●	●
		Lachancea fermentati	●	●
		Lachancea kluyveri	●	●
		Lecanicillium spp	●	●
		Lecythophora fasciculata	●	●
		Lecythophora hoffmannii	●	●
		Lecythophora lignicola	●	
		Lecythophora mutabilis	●	●
		Lichtheimia corymbifera	●	●
		Lodderomyces elongisporus	●	●
		Malassezia furfur	●	

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Malassezia globosa	●	●
		Malassezia pachydermatis	●	
		Metarhizium anisopliae	●	●
		Microsporum audouinii	●	●
		Microsporum canis	●	●
		Microsporum cookei	●	●
		Microsporum ferrugineum	●	●
		Microsporum fulvum	●	●
		Microsporum gallinae	●	
		Microsporum gypseum	●	●
		Microsporum persicolor	●	●
		Microsporum praecox	●	●
		Microsporum racemosum	●	●
		Microsporum spp	●	●
		Millerozyma farinosa	●	●
		Monascus pilosus/Basipetospora rubra	●	
		Monascus purpureus	●	●
	●	*Mucor circinelloides*	●	●
		Mucor circinelloides ssp *circinelloides*	●	
●		*Mucor fragilis*	●	●
●		*Mucor hiemalis*	●	●
		Mucor irregularis	●	●
	●	*Mucor lanceolatus*	●	●
	●	*Mucor plumbeus*	●	●
	●	*Mucor racemosus*	●	●
		Mucor spp		●
		Mucor velutinosus	●	●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Mycoleptodiscus indicus	●	●
		Mycotypha microspora	●	●
		Myriodontium keratinophilum	●	
		Myrmecridium schulzeri	●	●
		Myrothecium spp	●	●
		Neosartorya fischeri	●	●
		Neoscytalidium dimidiatum	●	
		Nigrospora spp	●	
		Nodulisporium spp	●	
		Ochroconis humicola	●	●
		Oxyporus corticola	●	●
		Paecilomyces formosus	●	●
		Paecilomyces fulvus	●	
		Paecilomyces fulvus/niveus		●
		Paecilomyces niveus	●	
		Paecilomyces variotii	●	●
		Paracoccidioides brasiliensis	●	
		Penicillium aculeatum	●	
●		*Penicillium adametzioides*	●	●
●		*Penicillium antarcticum*	●	●
		Penicillium aurantiacum	●	●
	●	*Penicillium aurantiogriseum*	●	●
●		*Penicillium aurantiogriseum* var *polonicum*	●	
●		*Penicillium bialowiezense*	●	●
	●	*Penicillium brevicompactum*	●	●
	●	*Penicillium camemberti*	●	●
		Penicillium capsulatum	●	

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
	●	*Penicillium carneum*	●	●
●		*Penicillium chermesinum*	●	●
	●	*Penicillium chrysogenum*	●	●
		Penicillium cinnamopurpureum	●	
●		*Penicillium citreonigrum*	●	●
	●	*Penicillium citrinum*	●	●
	●	*Penicillium commune*	●	
●		*Penicillium corylophilum*	●	●
	●	*Penicillium crustosum*	●	●
	●	*Penicillium decumbens*	●	●
●		*Penicillium dierckxii*	●	●
●		*Penicillium digitatum*	●	●
●		*Penicillium discolor*	●	●
	●	*Penicillium expansum*	●	●
		Penicillium funiculosum	●	●
●		*Penicillium fuscoglaucum*	●	
	●	*Penicillium glabrum*	●	●
		Penicillium griseofulvum	●	●
	●	*Penicillium italicum*	●	●
		Penicillium janthinellum	●	●
		Penicillium marneffei	●	
●		*Penicillium nalgiovense*	●	●
●		*Penicillium nordicum*	●	
	●	*Penicillium oxalicum*	●	●
●		*Penicillium palitans*	●	
●		*Penicillium paneum*	●	●
		Penicillium pinophilum	●	

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Penicillium purpurogenum	●	●
		Penicillium resedanum	●	●
	●	*Penicillium roqueforti*	●	●
		Penicillium rugulosum	●	●
●		*Penicillium salamii*	●	●
●		*Penicillium simplicissimum*	●	●
●		*Penicillium solitum*	●	●
	●	*Penicillium* spp	●	●
		Penicillium sumatraense	●	
		Penicillium toxicarium	●	●
		Penicillium vermiculatum	●	●
●		*Penicillium verrucosum*	●	
●		*Penicillium viridicatum*	●	●
		Peniophora spp	●	●
		Phaeoacremonium fuscum	●	●
		Phaeoacremonium venezuelense	●	●
		Phanerochaete spp	●	
		Phellinus spp	●	
		Phialemonium obovatum	●	●
		Phialophora americana	●	
		Phialophora richardsiae	●	●
		Phlebia brevispora	●	●
		Phlebia spp	●	●
		Phoma glomerata	●	
		Phoma herbarum	●	●
		Phoma pomorum	●	●
		Phoma sorghina	●	●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Pichia cactophila	●	●
		Pichia spp		●
		Pleosporaceae		●
		Priceomyces carsonii	●	●
		Prototheca wickerhamii	●	●
		Prototheca zopfii	●	●
		Pseudallescheria boydii	●	●
		Pseudallescheria minutispora	●	●
		Purpureocillium lilacinum	●	●
		Pyrenochaeta corni	●	●
		Pythium aphanidermatum	●	
		Rasamsonia argillacea	●	●
		Rhizomucor miehei	●	
		Rhizomucor pusillus	●	●
		Rhizopus microsporus	●	●
	●	*Rhizopus oryzae* (Synonym: *Rhizopus arrhizus*)	●	●
		Rhizopus schipperae	●	●
		Rhizopus spp	●	●
●		*Rhizopus stolonifer*	●	●
		Rhodotorula glutinis	●	●
		Rhodotorula graminis	●	
		Rhodotorula minuta	●	●
		Rhodotorula mucilaginosa	●	●
		Rhodotorula spp	●	●
		Saccharomyces cerevisiae	●	●
		Saccharomyces pastorianus	●	

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Sagenomella oligospora	●	
		Saksenaea erythrospora	●	●
		Saksenaea spp	●	●
		Saksenaea vasiformis	●	
		Saprochaete capitata (Synonym: *Geotrichum capitatum*)	●	●
		Saprochaete clavata (Synonym: *Geotrichum clavatum*)	●	●
		Sarocladium kiliense	●	●
		Sarocladium zeae	●	
		Scedosporium apiospermum	●	●
		Scedosporium prolificans	●	●
		Scedosporium spp	●	
		Schizophyllum commune	●	●
		Schwanniomyces etchellsii	●	●
		Schwanniomyces polymorphus	●	●
		Scopulariopsis brevicaulis	●	●
		Scopulariopsis cinerea	●	●
		Scopulariopsis spp		●
		Simplicillium spp	●	
		Sporobolomyces salmonicolor	●	●
		Sporothrix pallida	●	●
		Sporothrix schenckii	●	●
		Sporothrix variecibatus	●	
		Stachybotrys chartarum	●	●
		Stachybotrys chlorohalonata	●	
		Syncephalastrum racemosum	●	●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Trametes lactinea	●	●
		Trichoderma asperellum		●
		Trichoderma brevicompactum	●	●
		Trichoderma ghanense	●	●
	●	*Trichoderma harzianum*	●	●
		Trichoderma longibrachiatum	●	●
		Trichoderma reesei	●	●
	●	*Trichoderma* spp	●	●
●		*Trichoderma viride*	●	
		Trichomonascus farinosus	●	
		Trichophyton ajelloi	●	
		Trichophyton balcaneum	●	
		Trichophyton concentricum	●	
		Trichophyton eboreum	●	●
		Trichophyton equinum	●	●
		Trichophyton erinacei	●	●
		Trichophyton interdigitale	●	●
		Trichophyton mentagrophytes	●	●
		Trichophyton rubrum	●	●
		Trichophyton schoenleinii	●	●
		Trichophyton spp	●	●
		Trichophyton terrestre	●	●
		Trichophyton thuringiense	●	
		Trichophyton tonsurans	●	●
		Trichophyton verrucosum	●	●
		Trichophyton violaceum	●	●
		Trichosporon asahii	●	●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Trichosporon asteroides	●	●
		Trichosporon coremiiforme	●	
	●	*Trichosporon cutaneum*	●	●
		Trichosporon debeurmannianum	●	
		Trichosporon dermatis	●	
	●	*Trichosporon dermatis/mucoides*	●	●
●		*Trichosporon domesticum*	●	●
		Trichosporon inkin	●	●
●		*Trichosporon loubieri*	●	●
		Trichosporon mucoides	●	●
		Trichosporon ovoides	●	●
		Trichosporon spp	●	●
●		*Trichothecium roseum*	●	●
●		*Umbelopsis isabellina*	●	●
		Verticillium leptobactrum	●	●
●		*Wallemia sebi*	●	●
		Xenoacremonium recifei	●	●
		Zygosaccharomyces bailii	●	●
		Zygosaccharomyces bisporus	●	●
		Zygosaccharomyces rouxii	●	●
		Zygosaccharomyces spp	●	●

List of Species - Bacteria

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Abiotrophia defectiva	●	●
		Acetobacter aceti	●	●
		Achromobacter denitrificans	●	●
		Achromobacter denitrificans/xylosoxidans	●	●
		Achromobacter insolitus	●	●
		Achromobacter insolitus/piechaudii		●
		Achromobacter marplatensis	●	
		Achromobacter piechaudii	●	
		Achromobacter piechaudii/spanius	●	●
		Achromobacter ruhlandii	●	
		Achromobacter spanius	●	
		Achromobacter spp	●	●
		Achromobacter xylosoxidans	●	●
		Acidipropionibacterium acidipropionici	●	●
		Acidipropionibacterium jensenii	●	●
		Acidovorax spp		●
		Acidovorax temperans	●	●
		Acinetobacter baumannii	●	●
		Acinetobacter beijerinckii	●	●
		Acinetobacter bereziniae	●	
		Acinetobacter calcoaceticus	●	●
		Acinetobacter courvalinii	●	
		Acinetobacter guillouiae	●	
		Acinetobacter gyllenbergii	●	●
		Acinetobacter haemolyticus	●	●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Acinetobacter johnsonii	●	●
		Acinetobacter junii	●	●
		Acinetobacter lwoffii	●	●
		Acinetobacter nosocomialis	●	●
		Acinetobacter pittii	●	●
		Acinetobacter radioresistens	●	●
		Acinetobacter schindleri	●	●
		Acinetobacter seifertii	●	●
		Acinetobacter spp	●	●
		Acinetobacter ursingii	●	●
		Acinetobacter variabilis	●	
		Actinobacillus anseriformium		●
		Actinobacillus arthritidis	●	
	●	*Actinobacillus capsulatus*	●	●
●		*Actinobacillus equuli*	●	
	●	*Actinobacillus equuli* ssp *haemolyticus*	●	●
●		*Actinobacillus lignieresii*	●	
●		*Actinobacillus lignieresii/pleuropneumoniae*		●
		Actinobacillus minor		●
	●	*Actinobacillus pleuropneumoniae*	●	●
●		*Actinobacillus rossii*	●	●
	●	*Actinobacillus seminis*	●	●
	●	*Actinobacillus* spp		●
●		*Actinobacillus suis*	●	
	●	*Actinobacillus ureae*	●	●
		Actinobaculum suis	●	●
		Actinomyces bovis	●	●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Actinomyces denticolens	●	●
		Actinomyces europaeus	●	●
		Actinomyces gerencseriae	●	●
		Actinomyces graevenitzii	●	●
		Actinomyces israelii	●	●
		Actinomyces meyeri	●	●
		Actinomyces naeslundii	●	●
		Actinomyces neuii	●	●
		Actinomyces neuii ssp *anitratus*	●	●
		Actinomyces neuii ssp *neuii*	●	●
		Actinomyces odontolyticus	●	●
		Actinomyces oris	●	●
		Actinomyces radingae	●	●
		Actinomyces spp	●	●
		Actinomyces turicensis	●	●
		Actinomyces urogenitalis	●	●
		Actinomyces viscosus	●	●
		Actinotignum schaalii	●	●
		Advenella incenata	●	
		Aeribacillus pallidus	●	●
		Aerococcus sanguinicola	●	●
		Aerococcus spp	●	
		Aerococcus urinae	●	●
		Aerococcus viridans	●	●
	●	*Aeromonas bestiarum*	●	●
●		*Aeromonas dhakensis*	●	
		Aeromonas encheleia		●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
	●	*Aeromonas enteropelogenes*	●	●
		Aeromonas eucrenophila	●	●
	●	*Aeromonas hydrophila*	●	●
		Aeromonas hydrophila ssp *hydrophila*	●	
●		*Aeromonas jandaei*	●	●
	●	*Aeromonas media*	●	●
		Aeromonas molluscorum		●
	●	*Aeromonas popoffii*	●	●
	●	*Aeromonas punctata (caviae)*	●	●
●		*Aeromonas rivuli*	●	●
	●	*Aeromonas salmonicida*	●	●
		Aeromonas salmonicida ssp *masoucida*	●	
		Aeromonas salmonicida ssp *salmonicida*	●	
	●	*Aeromonas schubertii*	●	●
		Aeromonas sharmana		●
		Aeromonas simiae		●
	●	*Aeromonas sobria*	●	●
	●	*Aeromonas* spp	●	●
	●	*Aeromonas tecta*	●	●
		Aeromonas veronii	●	●
		Aggregatibacter actinomycetemcomitans	●	●
		Aggregatibacter aphrophilus	●	●
		Aggregatibacter segnis	●	●
		Aggregatibacter spp	●	●
		Alcaligenaceae		●
		Alcaligenes faecalis	●	●
		Alcaligenes faecalis ssp *faecalis*	●	

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Alcaligenes spp	●	●
		Alicyclobacillus acidocaldarius	●	●
		Alicyclobacillus acidoterrestris	●	●
		Alistipes putredinis		●
		Alloiococcus otitis	●	
		Aminobacter spp	●	
		Anaerobiospirillum succiniciproducens	●	●
		Anaerococcus hydrogenalis	●	●
		Anaerococcus lactolyticus	●	●
		Anaerococcus lactolyticus/murdochii	●	●
		Anaerococcus murdochii	●	●
		Anaerococcus prevotii	●	●
		Anaerococcus spp	●	●
		Anaerococcus tetradius	●	●
		Anaerococcus vaginalis	●	●
		Aneurinibacillus aneurinilyticus	●	●
		Aneurinibacillus migulanus	●	
		Aneurinibacillus spp		●
		Aneurinibacillus thermoaerophilus	●	●
		Anoxybacillus flavithermus	●	●
		Arcanobacterium haemolyticum	●	●
		Arcanobacterium hippocoleae	●	
		Arcanobacterium spp	●	●
		Arcobacter butzleri	●	●
		Arcobacter cryaerophilus	●	●
		Arthrobacter agilis	●	●
		Arthrobacter castelli	●	

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Arthrobacter citreus	●	
		Arthrobacter crystallopoietes	●	
		Arthrobacter flavus	●	●
		Arthrobacter gandavensis	●	
		Arthrobacter globiformis	●	●
		Arthrobacter luteolus	●	
		Arthrobacter methylotrophus	●	
		Arthrobacter monumenti	●	
		Arthrobacter nasiphocae	●	
		Arthrobacter nitroguajacolicus	●	
		Arthrobacter parietis	●	
		Arthrobacter pascens	●	
		Arthrobacter pigmenti	●	
		Arthrobacter psychrolactophilus	●	
		Arthrobacter ramosus	●	
		Arthrobacter rhombi	●	
		Arthrobacter roseus	●	
		Arthrobacter russicus	●	●
		Arthrobacter spp	●	●
		Arthrobacter stackebrandtii	●	
		Arthrobacter tecti	●	
		Arthrobacter tumbae	●	
		Arthrobacter woluwensis	●	
	●	*Atopobium parvulum*	●	●
●		*Atopobium rimae*	●	●
●		*Atopobium vaginae*	●	●
		Avibacterium gallinarum	●	●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Bacillus altitudinis	●	●
		Bacillus amyloliquefaciens	●	
		Bacillus anthracis	●	●
		Bacillus atrophaeus	●	
		Bacillus atrophaeus/subtilis		●
		Bacillus badius	●	
		Bacillus beringensis	●	
		Bacillus butanolivorans	●	
		Bacillus cereus	●	●
		Bacillus cereus group (Included: *B. anthracis, B. cereus, B.cytotoxicus, B. mycoides, B. thuringensis*)	●	●
		Bacillus circulans	●	●
		Bacillus clausii	●	●
		Bacillus coagulans	●	●
		Bacillus coagulans/megaterium		●
		Bacillus cytotoxicus	●	●
		Bacillus endophyticus	●	
		Bacillus firmus	●	●
		Bacillus fordii	●	
		Bacillus fordii/fortis		●
		Bacillus fortis	●	
		Bacillus galactosidilyticus	●	
		Bacillus gibsonii	●	
		Bacillus ginsengihumi	●	
		Bacillus horneckiae	●	●
		Bacillus idriensis	●	●
		Bacillus infantis	●	

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Bacillus lentus	●	●
		Bacillus licheniformis	●	●
		Bacillus megaterium	●	●
		Bacillus megaterium/coagulans/amyloliquefaciens		●
		Bacillus mycoides	●	●
		Bacillus oleronius	●	●
		Bacillus pseudofirmus	●	
		Bacillus pseudomycoides	●	
		Bacillus psychrosaccharolyticus	●	●
		Bacillus pumilus	●	●
		Bacillus simplex	●	●
		Bacillus smithii	●	●
		Bacillus sporothermodurans	●	●
		Bacillus spp	●	●
		Bacillus subtilis	●	●
		Bacillus subtilis ssp *spizizenii*	●	●
		Bacillus thermoamylovorans	●	●
		Bacillus thuringiensis	●	
		Bacillus weihenstephanensis		●
		Bacteroidaceae		●
		Bacteroides acidifaciens	●	
		Bacteroides caccae	●	●
		Bacteroides cellulosilyticus	●	●
		Bacteroides coprophilus	●	
		Bacteroides coprosuis	●	
		Bacteroides dorei	●	
		Bacteroides dorei/vulgatus		●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Bacteroides eggerthii	●	●
		Bacteroides finegoldii/nordii/salyersiae		●
		Bacteroides fragilis	●	●
		Bacteroides gallinarum	●	
		Bacteroides helcogenes	●	
		Bacteroides intestinalis	●	
		Bacteroides massiliensis	●	
		Bacteroides nordii	●	
		Bacteroides ovatus	●	
		Bacteroides ovatus/xylanisolvens		●
		Bacteroides plebeius	●	
		Bacteroides pyogenes	●	●
		Bacteroides salyersiae	●	
		Bacteroides spp	●	●
		Bacteroides stercoris	●	●
		Bacteroides thetaiotaomicron	●	●
		Bacteroides uniformis	●	●
		Bacteroides vulgatus	●	●
		Bacteroides xylanisolvens	●	
		Bergeyella spp		●
		Bergeyella zoohelcum	●	
		Bifidobacterium adolescentis	●	
		Bifidobacterium adolescentis/dentium		●
		Bifidobacterium angulatum	●	
		Bifidobacterium animalis ssp *animalis*	●	
		Bifidobacterium animalis ssp *lactis*	●	
		Bifidobacterium asteroides	●	

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Bifidobacterium bifidum	●	●
		Bifidobacterium boum	●	
		Bifidobacterium breve	●	
		Bifidobacterium catenulatum	●	
		Bifidobacterium catenulatum/pseudocatenulatum		●
		Bifidobacterium choerinum	●	
		Bifidobacterium coryneforme	●	
		Bifidobacterium cuniculi	●	
		Bifidobacterium dentium	●	●
		Bifidobacterium gallicum	●	
		Bifidobacterium gallinarum	●	
		Bifidobacterium gallinarum/saeculare		●
		Bifidobacterium longum	●	●
		Bifidobacterium magnum	●	
		Bifidobacterium merycicum	●	●
		Bifidobacterium minimum	●	
		Bifidobacterium pseudocatenulatum	●	
		Bifidobacterium pseudolongum ssp *globosum*	●	
		Bifidobacterium pseudolongum ssp *pseudolongum*	●	
		Bifidobacterium pullorum	●	
		Bifidobacterium ruminantium	●	●
		Bifidobacterium saeculare	●	
		Bifidobacterium scardovii	●	
		Bifidobacterium spp	●	●
		Bifidobacterium thermacidophilum		●
		Bifidobacterium thermacidophilum ssp *porcinum*	●	
		Bifidobacterium thermacidophilum ssp *thermacidophilum*	●	

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Bifidobacterium thermophilum	●	
		Bilophila spp	●	
		Bilophila wadsworthia	●	●
		Bisgaard Taxa Bisgaard Taxon 14		●
		Bisgaard Taxa Bisgaard Taxon 16		●
		Blastomonas ursincola	●	●
		Bordetella avium	●	●
		Bordetella bronchiseptica	●	
		Bordetella bronchiseptica/parapertussis/pertussis		●
		Bordetella hinzii	●	●
		Bordetella holmesii	●	●
		Bordetella parapertussis	●	
		Bordetella pertussis	●	
		Bordetella petrii	●	●
		Bordetella spp	●	●
		Bordetella trematum	●	●
		Brachybacterium spp	●	●
		Brachyspira hyodysenteriae		●
		Brachyspira intermedia	●	●
		Brachyspira pilosicoli	●	●
		Brachyspira spp		●
		Brevibacillus agri	●	●
		Brevibacillus borstelensis	●	●
		Brevibacillus brevis	●	●
		Brevibacillus centrosporus	●	●
		Brevibacillus choshinensis	●	●
		Brevibacillus invocatus	●	●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Brevibacillus laterosporus	●	●
		Brevibacillus parabrevis	●	●
		Brevibacillus spp		●
		Brevibacillus thermoruber	●	●
		Brevibacterium casei	●	
		Brevibacterium luteolum	●	
		Brevibacterium spp	●	●
		Brevundimonas diminuta	●	●
		Brevundimonas spp	●	●
		Brevundimonas vesicularis	●	●
		Brochothrix thermosphacta	●	●
		Brucella abortus	●	●
		Brucella abortus biovar 1	●	
		Brucella abortus biovar 2	●	
		Brucella abortus biovar 3	●	
		Brucella abortus biovar 4	●	
		Brucella abortus biovar 5	●	
		Brucella abortus biovar 6	●	
		Brucella abortus biovar 7	●	
		Brucella abortus biovar 9	●	
		Brucella canis	●	
		Brucella ceti	●	
		Brucella ceti/pinnipedialis		●
		Brucella inopinata	●	●
		Brucella melitensis	●	
		Brucella melitensis biovar 1	●	
		Brucella melitensis biovar 2	●	

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Brucella melitensis biovar 3	●	
		Brucella microti	●	●
		Brucella neotamae	●	●
		Brucella ovis	●	●
		Brucella papionis	●	●
		Brucella pinnipedialis	●	
		Brucella spp		●
		Brucella suis	●	
		Brucella suis biovar 1	●	
		Brucella suis biovar 2	●	
		Brucella suis biovar 3	●	
		Brucella suis biovar 4	●	
		Brucella suis biovar 5	●	
		Budvicia aquatica	●	●
		Burkholderia ambifaria	●	●
		Burkholderia anthina	●	●
		Burkholderia arboris	●	●
		Burkholderia cenocepacia	●	●
		Burkholderia cepacia	●	●
		Burkholderia cepacia/multivorans		●
		Burkholderia contaminans	●	●
		Burkholderia diffusa	●	●
		Burkholderia dolosa	●	●
		Burkholderia gladioli	●	●
		Burkholderia lata	●	●
		Burkholderia latens	●	●
●		*Burkholderia mallei*	●	●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
●		*Burkholderia mallei/pseudomallei*		●
		Burkholderia metallica	●	●
		Burkholderia multivorans	●	●
	●	*Burkholderia pseudomallei*	●	●
		Burkholderia pyrrocinia	●	●
		Burkholderia seminalis	●	
		Burkholderia spp	●	●
		Burkholderia stabilis	●	●
		Burkholderia thailandensis	●	●
		Burkholderia ubonensis	●	●
		Burkholderia vietnamiensis	●	●
		Buttiauxella agrestis	●	●
		Caldibacillus debilis	●	●
		Campylobacter coli	●	●
●		*Campylobacter curvus*	●	●
		Campylobacter fetus		●
		Campylobacter fetus ssp *fetus*	●	●
		Campylobacter fetus ssp *venerealis*	●	
●		*Campylobacter gracilis*	●	
		Campylobacter hyointestinalis	●	●
		Campylobacter jejuni	●	●
		Campylobacter jejuni ssp *doylei*	●	
		Campylobacter jejuni ssp *jejuni*	●	
		Campylobacter lari	●	●
●		*Campylobacter mucosalis*	●	●
●		*Campylobacter rectus*	●	●
		Campylobacter spp	●	●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Campylobacter sputorum	●	●
		Campylobacter upsaliensis	●	●
		Campylobacter ureolyticus	●	●
		Capnocytophaga canimorsus	●	●
		Capnocytophaga canimorsus/cynodegmi		●
		Capnocytophaga gingivalis	●	●
		Capnocytophaga granulosa	●	●
		Capnocytophaga ochracea	●	
		Capnocytophaga ochracea/sputigena		●
		Capnocytophaga spp	●	●
		Capnocytophaga sputigena	●	
		Cardiobacterium hominis	●	●
		Carnobacterium divergens	●	●
		Carnobacterium maltaromaticum	●	●
		Cedecea davisae	●	
		Cedecea lapagei	●	●
		Cedecea neteri	●	
		Cedecea spp		●
		Cellulomonas uda	●	●
		Chlorobium clathratiforme		●
		Chlorobium phaeobacteroides	●	
		Chlorobium spp		●
		Chromobacterium violaceum	●	●
		Chryseobacterium daecheongense	●	
		Chryseobacterium defluvii	●	
		Chryseobacterium gleum	●	●
		Chryseobacterium indologenes	●	●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Chryseobacterium spp	●	●
		Citrobacter amalonaticus	●	●
		Citrobacter amalonaticus/farmeri	●	●
		Citrobacter braakii	●	●
		Citrobacter farmeri	●	●
		Citrobacter freundii	●	●
		Citrobacter freundii/braakii	●	
		Citrobacter koseri	●	●
		Citrobacter rodentium	●	
		Citrobacter sedlakii	●	
		Citrobacter spp		●
		Citrobacter werkmanii	●	
		Citrobacter youngae	●	
●		*Clostridium acetobutylicum*	●	●
●		*Clostridium arbusti*	●	
		Clostridium baratii	●	●
		Clostridium beijerinckii	●	●
		Clostridium botulinum		●
		Clostridium butyricum	●	●
		Clostridium cadaveris	●	●
	●	*Clostridium chauvoei*	●	●
	●	*Clostridium clostridioforme*	●	●
●		*Clostridium cochlearium*	●	
●		*Clostridium colicanis*	●	●
		Clostridium difficile	●	●
●		*Clostridium fallax*	●	●
●		*Clostridium haemolyticum*	●	●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
●		*Clostridium innocuum*	●	●
●		*Clostridium moniliforme*	●	
●		*Clostridium novyi*	●	●
		Clostridium paraputrificum	●	●
●		*Clostridium pasteurianum*	●	●
		Clostridium perfringens	●	●
		Clostridium ramosum	●	●
		Clostridium scatologenes	●	
		Clostridium septicum	●	●
	●	*Clostridium spiroforme*	●	●
		Clostridium sporogenes	●	●
		Clostridium spp	●	●
●		*Clostridium subterminale*	●	●
●		*Clostridium symbiosum*	●	●
		Clostridium tertium	●	●
		Clostridium tetani	●	●
		Clostridium tetanomorphum	●	●
●		*Clostridium tyrobutyricum*	●	●
		Coenonia anatina	●	●
		Comamonadaceae		●
		Comamonas aquatica	●	●
		Comamonas spp	●	●
		Comamonas testosteroni	●	●
	●	*Corynebacterium accolens*	●	●
●		*Corynebacterium afermentans*	●	
●		*Corynebacterium afermentans* ssp *afermentans*	●	
●		*Corynebacterium afermentans* ssp *lipophilum*	●	

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
	●	*Corynebacterium amycolatum*	●	●
		Corynebacterium amycolatum/xerosis		●
●		*Corynebacterium argentoratense*	●	●
	●	*Corynebacterium aurimucosum*	●	●
	●	*Corynebacterium auris*	●	●
●		*Corynebacterium auriscanis*	●	●
	●	*Corynebacterium bovis*	●	●
●		*Corynebacterium confusum*	●	●
●		*Corynebacterium coyleae*	●	●
●		*Corynebacterium cystitidis*	●	●
		Corynebacterium diphtheriae	●	●
●		*Corynebacterium durum*	●	●
●		*Corynebacterium falsenii*	●	●
	●	*Corynebacterium freneyi*	●	●
	●	*Corynebacterium glucuronolyticum*	●	●
●		*Corynebacterium glutamicum*	●	●
●		*Corynebacterium glyciniphilum*	●	●
●		*Corynebacterium imitans*	●	●
		Corynebacterium jeikeium	●	●
●		*Corynebacterium kroppenstedtii*	●	●
	●	*Corynebacterium kutscheri*	●	●
	●	*Corynebacterium macginleyi*	●	●
●		*Corynebacterium mastitidis*	●	●
●		*Corynebacterium matruchotii*	●	●
	●	*Corynebacterium minutissimum*	●	●
	●	*Corynebacterium mucifaciens*	●	
●		*Corynebacterium mycetoides*	●	●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
●		*Corynebacterium pilosum*	●	●
	●	*Corynebacterium propinquum*	●	●
		Corynebacterium pseudodiphtheriticum	●	●
	●	*Corynebacterium pseudotuberculosis*	●	●
●		*Corynebacterium renale*	●	●
	●	*Corynebacterium riegelii*	●	
●		*Corynebacterium simulans*	●	●
	●	*Corynebacterium* spp	●	●
●		*Corynebacterium stationis*	●	●
	●	*Corynebacterium striatum*	●	●
●		*Corynebacterium sundsvallense*	●	●
●		*Corynebacterium testudinoris*	●	
●		*Corynebacterium timonense*	●	
	●	*Corynebacterium tuberculostearicum*	●	●
		Corynebacterium ulcerans	●	●
		Corynebacterium urealyticum	●	●
●		*Corynebacterium ureicelerivorans*	●	
●		*Corynebacterium variabile*	●	●
	●	*Corynebacterium xerosis*	●	●
		Coxiella burnetii		●
		Cronobacter malonaticus	●	●
		Cronobacter muytjensii	●	●
		Cronobacter sakazakii	●	●
		Cronobacter spp		●
		Cronobacter turicensis	●	●
		Cupriavidus gilardii	●	●
		Cupriavidus necator	●	●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Cupriavidus oxalaticus	●	●
		Cupriavidus pauculus	●	●
		Cupriavidus respiraculi	●	●
		Cutibacterium acnes	●	●
		Cutibacterium avidum	●	
		Cutibacterium granulosum	●	●
		Deinococcus spp	●	
		Delftia acidovorans	●	●
		Delftia spp	●	●
		Dermabacter hominis	●	●
		Dermacoccus nishinomiyaensis	●	●
		Desulfocapsa spp	●	
●		*Dialister micraerophilus*	●	●
●		*Dialister pneumosintes*	●	●
●		*Dietzia cinnamea*	●	●
●		*Dietzia maris*	●	●
●		*Dietzia natronolimnaea*	●	●
		Dysgonomonas gadei	●	
		Edwardsiella hoshinae	●	
		Edwardsiella spp		●
		Edwardsiella tarda	●	
		Eggerthella lenta	●	●
		Eggerthella spp	●	
		Eggerthia catenaformis	●	●
		Eikenella corrodens	●	●
		Eikenella spp	●	
		Elizabethkingia anophelis	●	●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Elizabethkingia endophytica	●	
		Elizabethkingia meningoseptica	●	●
		Elizabethkingia miricola	●	●
		Elizabethkingia spp		●
		Empedobacter brevis	●	●
		Empedobacter falsenii	●	●
		Enterobacter aerogenes (Synonym: *Klebsiella aerogenes*)	●	●
		Enterobacter asburiae	●	●
		Enterobacter cancerogenus	●	●
		Enterobacter cloacae	●	●
		Enterobacter cloacae ssp *dissolvens*	●	
		Enterobacter hormaechei/cloacae	●	
		Enterobacter kobei	●	●
		Enterobacter ludwigii	●	●
		Enterobacter soli	●	
		Enterobacter spp	●	●
		Enterobacteriaceae	●	●
		Enterococcus avium	●	
		Enterococcus avium/raffinosus		●
		Enterococcus casseliflavus	●	●
		Enterococcus casseliflavus/gallinarum	●	
		Enterococcus cecorum	●	●
		Enterococcus columbae	●	●
		Enterococcus durans	●	●
		Enterococcus faecalis	●	●
		Enterococcus faecium	●	●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Enterococcus gallinarum	●	●
		Enterococcus hirae	●	●
		Enterococcus italicus	●	●
		Enterococcus mundtii	●	●
		Enterococcus raffinosus	●	●
		Enterococcus saccharolyticus	●	●
		Enterococcus spp		●
		Erysipelothrix rhusiopathiae	●	●
		Escherichia albertii	●	
		Escherichia coli	●	●
		Escherichia fergusonii	●	
		Escherichia hermannii	●	●
		Escherichia spp	●	●
		Escherichia vulneris (Synonym: *Pseudescherichia vulneris*)	●	●
		Eubacterium callanderi	●	●
		Eubacterium limosum	●	●
		Eubacterium spp		●
		Ewingella americana	●	●
		Exiguobacterium acetylicum	●	
		Exiguobacterium spp	●	
		Facklamia hominis	●	●
		Finegoldia magna	●	●
		Flavobacteriaceae		●
		Flavobacterium spp	●	●
		Flavonifractor plautii	●	●
		Fluoribacter dumoffii	●	●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Fluoribacter gormanii	●	●
		Francisella philomiragia	●	
		Francisella tularensis		●
		Francisella tularensis ssp *holarctica*	●	●
		Franconibacter helveticus	●	●
		Franconibacter pulveris	●	●
		Fusobacterium gonidiaformans	●	●
		Fusobacterium mortiferum	●	●
		Fusobacterium naviforme	●	
		Fusobacterium necrogenes	●	
		Fusobacterium necrophorum	●	●
		Fusobacterium necrophorum ssp *necrophorum*	●	
		Fusobacterium nucleatum	●	●
		Fusobacterium nucleatum ssp *nucleatum*	●	
		Fusobacterium periodonticum	●	●
		Fusobacterium russii	●	●
		Fusobacterium spp		●
		Fusobacterium varium	●	●
		Gallibacterium anatis	●	●
		Gardnerella vaginalis	●	●
		Gemella bergeri	●	●
		Gemella haemolysans	●	
		Gemella morbillorum	●	
		Gemella sanguinis	●	
		Gemella spp		●
		Geobacillus caldoxylosilyticus	●	●
		Geobacillus stearothermophilus	●	●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Geobacillus thermodenitrificans	●	●
		Geobacillus thermoglucosidasius	●	●
		Globicatella sanguinis	●	
		Globicatella spp		●
		Globicatella sulfidifaciens	●	
		Glutamicibacter ardleyensis	●	
		Glutamicibacter arilaitensis	●	
		Glutamicibacter bergerei	●	
		Glutamicibacter creatinolyticus	●	
		Glutamicibacter mysorens	●	
		Glutamicibacter nicotianae	●	
		Glutamicibacter protophormiae	●	
		Glutamicibacter uratoxydans	●	
		Gordonia alkanivorans	●	●
		Gordonia amarae	●	●
		Gordonia bronchialis	●	●
		Gordonia namibiensis	●	●
		Gordonia polyisoprenivorans	●	
		Gordonia rubripertincta	●	●
		Gordonia sputi	●	●
		Gordonia terrae	●	●
		Granulicatella adiacens	●	●
		Granulicatella elegans	●	●
		Granulicatella spp		●
		Grimontia hollisae	●	●
		Haematobacter massiliensis	●	
		Haemophilus ducreyi	●	

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Haemophilus haemoglobinophilus	●	●
		Haemophilus haemolyticus	●	
		Haemophilus influenzae	●	●
		Haemophilus parahaemolyticus	●	●
		Haemophilus parainfluenzae	●	●
		Haemophilus parasuis	●	●
		Haemophilus spp	●	●
		Hafnia alvei	●	●
		Hathewaya histolytica	●	●
		Hathewaya limosa	●	●
		Helcococcus kunzii	●	●
		Helcococcus ovis	●	●
●		*Helicobacter cinaedi*	●	●
●		*Helicobacter fennelliae*	●	●
●		*Helicobacter pullorum*	●	●
	●	*Helicobacter pylori*	●	●
		Herbaspirillum huttiense	●	●
		Histophilus somni	●	●
		Hydrogenophaga spp		●
		Ideonella spp	●	
		Inquilinus limosus	●	●
		Janthinobacterium agaricidamnosum	●	
		Janthinobacterium lividum	●	
		Kineosporia aurantiaca	●	
		Kingella denitrificans	●	●
		Kingella kingae	●	●
		Klebsiella oxytoca	●	●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Klebsiella pneumoniae	●	●
		Klebsiella pneumoniae ssp *ozaenae*	●	
		Klebsiella pneumoniae ssp *pneumoniae*	●	
		Klebsiella pneumoniae ssp *rhinoscleromatis*	●	
		Klebsiella spp	●	●
		Kluyvera ascorbata	●	●
		Kluyvera cryocrescens	●	●
		Kluyvera intermedia	●	●
		Kluyvera spp	●	●
		Kocuria carniphila	●	●
		Kocuria kristinae	●	●
		Kocuria palustris	●	●
		Kocuria rhizophila	●	●
		Kocuria rosea	●	●
		Kocuria spp	●	●
		Kocuria varians	●	●
		Kosakonia cowanii	●	●
		Kutzneria spp	●	
		Kytococcus sedentarius	●	●
		Lactobacillus acidophilus	●	
		Lactobacillus acidophilus/gasseri		●
		Lactobacillus alimentarius	●	●
		Lactobacillus animalis	●	
		Lactobacillus backii	●	
		Lactobacillus brevis	●	●
		Lactobacillus buchneri	●	●
		Lactobacillus casei	●	

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Lactobacillus collinoides	●	●
		Lactobacillus coryniformis	●	●
		Lactobacillus crispatus	●	●
		Lactobacillus curvatus	●	●
		Lactobacillus delbrueckii		●
		Lactobacillus delbrueckii ssp *bulgaricus*	●	
		Lactobacillus delbrueckii ssp *delbrueckii*	●	
		Lactobacillus delbrueckii ssp *lactis*	●	
		Lactobacillus fermentum	●	●
		Lactobacillus fructivorans	●	●
		Lactobacillus fuchuensis	●	●
		Lactobacillus gasseri	●	
		Lactobacillus helveticus	●	●
		Lactobacillus hilgardii	●	●
		Lactobacillus iners	●	●
		Lactobacillus ingluviei	●	●
		Lactobacillus intestinalis	●	
		Lactobacillus jensenii	●	●
		Lactobacillus johnsonii	●	●
		Lactobacillus kefiri	●	●
		Lactobacillus lindneri	●	●
		Lactobacillus mali	●	●
		Lactobacillus otakiensis	●	
		Lactobacillus parabuchneri	●	●
		Lactobacillus paracasei	●	●
		Lactobacillus paracasei ssp *paracasei*	●	
		Lactobacillus paracasei ssp *tolerans*	●	●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Lactobacillus paracollinoides	●	●
		Lactobacillus parakefiri	●	
		Lactobacillus paraplantarum	●	●
		Lactobacillus pentosus	●	●
		Lactobacillus pentosus/plantarum		●
		Lactobacillus perolens	●	●
		Lactobacillus plantarum	●	
		Lactobacillus reuteri	●	●
		Lactobacillus rhamnosus	●	●
		Lactobacillus rossiae	●	
		Lactobacillus sakei	●	●
		Lactobacillus salivarius	●	
		Lactobacillus spp	●	●
		Lactobacillus vaginalis	●	
		Lactococcus garvieae	●	●
		Lactococcus lactis		●
		Lactococcus lactis ssp *cremoris*	●	
		Lactococcus lactis ssp *hordniae*	●	
		Lactococcus lactis ssp *lactis*	●	
		Lactococcus plantarum	●	
		Lactococcus raffinolactis	●	●
		Lamprocystis purpurea	●	●
		Lamprocystis spp		●
		Leclercia adecarboxylata	●	●
		Leclercia spp	●	
		Legionella anisa	●	●
		Legionella birminghamensis	●	●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Legionella bozemanae	●	●
		Legionella cherrii	●	●
		Legionella cincinnatiensis	●	●
		Legionella drancourtii		●
		Legionella erythra	●	●
		Legionella feeleii	●	●
		Legionella hackeliae	●	●
		Legionella israelensis	●	●
		Legionella jamestowniensis	●	●
		Legionella jordanis	●	●
		Legionella lansingensis	●	●
		Legionella londiniensis	●	●
		Legionella longbeachae	●	●
		Legionella oakridgensis	●	●
		Legionella parisiensis	●	●
		Legionella pneumophila	●	●
		Legionella pneumophila ssp *fraseri*	●	
		Legionella pneumophila ssp *pascullei*	●	
		Legionella pneumophila ssp *pneumophila*	●	
		Legionella rubrilucens	●	●
		Legionella sainthelensi	●	●
		Legionella spp		●
		Legionella steigerwaltii	●	●
		Legionella taurinensis	●	●
		Legionella wadsworthii	●	●
		Leifsonia aquatica	●	●
		Leifsonia xyli	●	

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Lelliottia amnigena	●	
		Leptospira spp		●
		Leptothrix mobilis	●	
		Leptotrichia buccalis	●	●
		Leuconostoc carnosum	●	●
		Leuconostoc citreum	●	●
		Leuconostoc fallax	●	●
		Leuconostoc lactis		●
		Leuconostoc mesenteroides	●	●
		Leuconostoc mesenteroides ssp *cremoris*	●	●
		Leuconostoc mesenteroides ssp *dextranicum*	●	
		Leuconostoc mesenteroides ssp *mesenteroides*	●	
		Leuconostoc pseudomesenteroides	●	●
		Leuconostoc spp	●	●
●		*Listeria aquatica*	●	●
●		*Listeria booriae*	●	
●		*Listeria cornellensis*	●	
●		*Listeria fleischmannii*	●	●
●		*Listeria floridensis*	●	●
●		*Listeria grandensis*	●	
		Listeria grayi	●	●
	●	*Listeria innocua*	●	●
		Listeria ivanovii	●	●
		Listeria ivanovii ssp *ivanovii*	●	
		Listeria ivanovii ssp *londoniensis*	●	
●		*Listeria marthii*	●	●
	●	*Listeria monocytogenes*	●	●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
●		*Listeria newyorkensis*	●	
●		*Listeria riparia*	●	
●		*Listeria rocourtiae*	●	●
	●	*Listeria seeligeri*	●	●
	●	*Listeria* spp	●	●
●		*Listeria weihenstephanensis*	●	●
	●	*Listeria welshimeri*	●	●
		Lysinibacillus fusiformis	●	
		Lysinibacillus fusiformis/sphaericus		●
		Lysinibacillus sphaericus	●	
		Mannheimia granulomatis		●
		Mannheimia haemolytica	●	●
		Megasphaera cerevisiae	●	●
		Megasphaera sueciencis	●	
		Methylobacterium extorquens (Synonym: *Methylobacterium chloromethanicum*)	●	
		Methylobacterium fujisawaense	●	
		Methylobacterium mesophilicum	●	
		Methylobacterium radiotolerans	●	●
		Methylobacterium spp	●	●
		Microbacterium aerolatum	●	
		Microbacterium arborescens	●	
		Microbacterium aurum	●	
		Microbacterium dextranolyticum	●	
		Microbacterium flavescens	●	
		Microbacterium hydrocarbonoxydans	●	
		Microbacterium keratanolyticum	●	

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Microbacterium ketosireducens	●	
		Microbacterium koreense	●	
		Microbacterium laevaniformans	●	
		Microbacterium luteolum	●	
		Microbacterium natoriense	●	
		Microbacterium oleivorans	●	
		Microbacterium paraoxydans	●	
		Microbacterium phyllosphaerae	●	
		Microbacterium schleiferi	●	
		Microbacterium spp	●	●
		Microbacterium testaceum	●	
		Microbacterium thalassium	●	
		Micrococcaceae	●	
		Micrococcus luteus	●	●
		Micrococcus spp	●	●
		Mitsuaria chitosanitabida	●	
		Mobiluncus curtisii	●	●
		Mobiluncus mulieris	●	●
		Moellerella wisconsensis	●	●
		Moraxella atlantae	●	●
	●	*Moraxella bovis*	●	●
●		*Moraxella canis*	●	
		Moraxella catarrhalis	●	●
		Moraxella caviae	●	●
●		*Moraxella cuniculi*	●	●
	●	*Moraxella lacunata*	●	●
		Moraxella nonliquefaciens	●	●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
	●	*Moraxella osloensis*	●	●
●		*Moraxella ovis* (Synonym: *Neisseria ovis*)	●	●
		Moraxella spp	●	●
		Morganella morganii	●	●
		Morganella morganii ssp *morganii*	●	
		Morganella morganii ssp *sibonii*	●	
		Mycobacterium abscessus	●	●
		Mycobacterium africanum	●	
		Mycobacterium agri	●	●
		Mycobacterium arupense	●	
		Mycobacterium arupense/nonchromogenicum		●
		Mycobacterium asiaticum	●	●
		Mycobacterium aurum	●	●
		Mycobacterium avium	●	●
		Mycobacterium bovis	●	
		Mycobacterium brisbanense	●	
		Mycobacterium celatum	●	●
		Mycobacterium chelonae	●	●
●		*Mycobacterium chimaera*	●	●
		Mycobacterium cosmeticum	●	●
		Mycobacterium diernhoferi	●	
		Mycobacterium duvalii	●	
		Mycobacterium farcinogenes	●	
		Mycobacterium flavescens	●	●
		Mycobacterium fortuitum	●	

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Mycobacterium fortuitum-Complex (Included: *M. farcinogenes, M. fortuitum, M. porcinum, M. senegalense*)		●
		Mycobacterium gastri	●	●
		Mycobacterium genavense	●	
		Mycobacterium gilvum	●	●
		Mycobacterium goodii	●	●
		Mycobacterium gordonae	●	●
		Mycobacterium haemophilum	●	●
		Mycobacterium heckeshornense	●	●
		Mycobacterium immunogenum	●	●
	●	*Mycobacterium intracellulare*	●	●
		Mycobacterium kansasii	●	●
		Mycobacterium kubicae	●	●
		Mycobacterium kumamotonense	●	
		Mycobacterium lentiflavum	●	●
		Mycobacterium mageritense	●	●
		Mycobacterium malmoense	●	●
		Mycobacterium marinum	●	●
●		*Mycobacterium microti*	●	
		Mycobacterium moriokaense	●	●
		Mycobacterium mucogenicum	●	●
		Mycobacterium nebraskense	●	●
		Mycobacterium neoaurum	●	●
		Mycobacterium nonchromogenicum	●	
		Mycobacterium obuense	●	●
		Mycobacterium paraffinicum	●	●
		Mycobacterium peregrinum	●	●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Mycobacterium phlei	●	●
		Mycobacterium porcinum	●	
		Mycobacterium rhodesiae	●	
		Mycobacterium scrofulaceum	●	●
		Mycobacterium senegalense	●	
		Mycobacterium senuense	●	
		Mycobacterium sherrisii	●	
		Mycobacterium shimoidei	●	●
		Mycobacterium simiae	●	●
		Mycobacterium smegmatis	●	●
		Mycobacterium spp	●	●
		Mycobacterium szulgai	●	●
		Mycobacterium terrae	●	
		Mycobacterium thermoresistibile	●	●
		Mycobacterium triplex	●	●
		Mycobacterium triviale	●	
		Mycobacterium tuberculosis	●	
		Mycobacterium tuberculosis-Complex (Included: *M. africanum, M. bovis, M. microti, M. tuberculosis*)		●
		Mycobacterium vaccae	●	●
		Mycobacterium xenopi	●	●
		Mycoplasma alkalescens	●	●
		Mycoplasma alvi	●	●
		Mycoplasma arginini	●	●
		Mycoplasma bovigenitalium	●	●
		Mycoplasma bovoculi	●	●
		Mycoplasma californicum	●	●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Mycoplasma canadense	●	●
		Mycoplasma conjunctivae	●	●
		Mycoplasma fermentans	●	●
		Mycoplasma gallisepticum	●	●
		Mycoplasma genitalium	●	●
		Mycoplasma hominis	●	●
		Mycoplasma hyopneumoniae	●	●
		Mycoplasma hyorhinis	●	●
		Mycoplasma hyosynoviae	●	
		Mycoplasma iowae	●	
		Mycoplasma meleagridis	●	
		Mycoplasma orale	●	●
		Mycoplasma ovipneumoniae	●	
		Mycoplasma penetrans	●	
		Mycoplasma pirum	●	●
		Mycoplasma pneumoniae	●	●
		Mycoplasma putrefaciens	●	
		Mycoplasma salivarium	●	●
		Mycoplasma spp	●	●
		Mycoplasma synoviae	●	
		Mycoplasma verecundum	●	
		Myroides odoratimimus	●	●
		Myroides odoratus	●	
		Myroides spp	●	●
		Neisseria animaloris	●	●
		Neisseria canis	●	●
		Neisseria cinerea	●	●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Neisseria elongata	●	
		Neisseria flava	●	●
		Neisseria flavescens	●	
		Neisseria gonorrhoeae	●	●
		Neisseria lactamica	●	●
		Neisseria meningitidis	●	●
		Neisseria mucosa	●	
		Neisseria perflava	●	
		Neisseria polysaccharea	●	●
		Neisseria sicca	●	
		Neisseria spp	●	●
		Neisseria subflava	●	●
		Neisseria wadsworthii	●	●
		Neisseria weaveri	●	●
		Neisseria zoodegmatis	●	●
		Nocardia abscessus	●	●
		Nocardia abscessus/asiatica		●
		Nocardia abscessus/asteroides/farcinica		●
		Nocardia africana	●	
		Nocardia africana/nova		●
●		*Nocardia anaemiae*	●	●
●		*Nocardia araoensis*	●	●
●		*Nocardia arthritidis*	●	
		Nocardia asiatica	●	●
		Nocardia asteroides	●	●
		Nocardia beijingensis	●	●
		Nocardia brasiliensis	●	●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Nocardia brevicatena	●	
		Nocardia carnea	●	●
		Nocardia cyriacigeorgica	●	●
●		*Nocardia exalbida*	●	●
		Nocardia farcinica	●	●
		Nocardia ignorata	●	
		Nocardia neocaledoniensis	●	●
		Nocardia nova	●	
		Nocardia otitidiscaviarum	●	●
		Nocardia paucivorans	●	●
	●	*Nocardia pneumoniae*	●	●
		Nocardia pseudobrasiliensis	●	●
		Nocardia spp	●	●
		Nocardia transvalensis	●	●
		Nocardia veterana	●	●
		Nocardia wallacei	●	●
		Novosphingobium aromaticivorans	●	●
		Oceanobacillus caeni	●	●
		Ochrobactrum anthropi	●	●
		Ochrobactrum ciceri	●	
		Ochrobactrum ciceri/intermedium		●
		Ochrobactrum cytisi	●	
		Ochrobactrum gallinifaecis	●	
		Ochrobactrum grignonense	●	
		Ochrobactrum haematophilum	●	
		Ochrobactrum intermedium	●	
		Ochrobactrum lupini	●	

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Ochrobactrum oryzae	●	
		Ochrobactrum pseudintermedium	●	
		Ochrobactrum pseudogrignonense	●	●
		Ochrobactrum rhizosphaerae	●	
		Ochrobactrum spp	●	●
		Ochrobactrum thiophenivorans	●	
		Ochrobactrum tritici	●	
		Odoribacter splanchnicus	●	●
		Oerskovia turbata	●	●
		Oligella spp		●
		Oligella ureolytica	●	●
		Oligella urethralis	●	●
		Ornithobacterium rhinotracheale	●	●
		Paenarthrobacter aurescens	●	
		Paenarthrobacter histidinolovorans	●	
		Paenarthrobacter ilicis	●	
		Paenarthrobacter nicotinovorans	●	
		Paenarthrobacter ureafaciens	●	
		Paenibacillus agarexedens	●	●
		Paenibacillus alvei	●	●
		Paenibacillus amylolyticus	●	●
		Paenibacillus apiarius	●	●
		Paenibacillus barcinonensis	●	
		Paenibacillus barengoltzii	●	
		Paenibacillus durus	●	●
		Paenibacillus glucanolyticus	●	●
		Paenibacillus jamilae	●	●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Paenibacillus lactis	●	●
		Paenibacillus larvae	●	●
		Paenibacillus lautus	●	●
		Paenibacillus macerans	●	●
		Paenibacillus naphthalenovorans	●	●
		Paenibacillus pabuli	●	
		Paenibacillus pasadenensis	●	
		Paenibacillus peoriae	●	●
		Paenibacillus polymyxa	●	●
		Paenibacillus provencensis	●	●
		Paenibacillus pueri	●	●
		Paenibacillus spp	●	●
		Paenibacillus thiaminolyticus	●	
		Paenibacillus turicensis	●	
		Paenibacillus validus	●	●
		Paeniclostridium sordellii	●	
		Paeniglutamicibacter gangotriensis	●	
		Paeniglutamicibacter kerguelensis	●	
		Paeniglutamicibacter psychrophenolicus	●	
		Paeniglutamicibacter sulfureus	●	
		Pandoraea apista	●	●
		Pandoraea norimbergensis	●	●
		Pandoraea pnomenusa	●	●
		Pandoraea pulmonicola	●	●
		Pandoraea spp		●
		Pandoraea sputorum	●	●
		Pantoea agglomerans	●	●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Pantoea dispersa	●	●
		Pantoea spp	●	
		Parabacteroides distasonis	●	●
		Parabacteroides goldsteinii	●	
		Parabacteroides johnsonii	●	
		Parabacteroides merdae	●	●
		Parabacteroides spp		●
		Paraburkholderia fungorum	●	●
		Paraclostridium bifermentans	●	
		Paracoccus denitrificans	●	●
		Paracoccus spp	●	●
		Paracoccus versutus	●	●
		Paracoccus yeei	●	●
		Paraeggerthella hongkongensis	●	
		Parvimonas micra	●	●
		Pasteurella aerogenes	●	●
		Pasteurella caballi		●
		Pasteurella canis	●	●
		Pasteurella mairii		●
		Pasteurella multocida	●	●
		Pasteurella pneumotropica (Synonym: *Rodentibacter pneumotropicus*)	●	●
		Pasteurella spp		●
		Pasteurella testudinis		●
		Pasteurellaceae		●
		Pectobacterium carotovorum ssp *carotovorum*	●	●
		Pediococcus acidilactici	●	●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Pediococcus claussenii	●	
		Pediococcus damnosus	●	●
		Pediococcus inopinatus	●	●
		Pediococcus parvulus	●	●
		Pediococcus pentosaceus	●	●
		Pediococcus spp		●
		Pedobacter spp	●	●
		Pedomicrobium australicum	●	
		Pelistega europaea	●	●
		Peptococcus niger	●	●
		Peptoniphilus asaccharolyticus	●	●
		Peptoniphilus gorbachii	●	●
		Peptoniphilus harei	●	●
		Peptoniphilus indolicus	●	●
		Peptoniphilus ivorii	●	●
		Peptoniphilus lacrimalis	●	●
		Peptoniphilus olsenii	●	●
		Peptoniphilus spp	●	●
		Peptostreptococcus anaerobius	●	●
		Peptostreptococcus spp	●	
		Phenylobacterium spp		●
		Photobacterium damselae	●	●
●		*Photorhabdus luminescens*		●
●		*Photorhabdus luminescens* ssp *laumondii*	●	
		Plesiomonas shigelloides	●	●
		Pluralibacter gergoviae	●	●
		Porphyromonas asaccharolytica	●	●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Porphyromonas gingivalis	●	●
		Porphyromonas somerae		●
		Porphyromonas spp	●	●
		Porphyromonas uenonis	●	●
		Pragia fontium	●	
		Prevotella baroniae	●	●
		Prevotella bergensis	●	●
		Prevotella bivia	●	●
		Prevotella buccae	●	●
		Prevotella buccalis	●	●
		Prevotella denticola	●	●
		Prevotella disiens	●	●
		Prevotella intermedia	●	●
		Prevotella loescheii	●	●
		Prevotella melaninogenica	●	●
		Prevotella melaninogenica/bivia		●
		Prevotella multiformis	●	●
		Prevotella nanceiensis	●	●
		Prevotella nigrescens	●	●
		Prevotella oralis	●	●
		Prevotella oris	●	●
		Prevotella ruminicola	●	
		Prevotella salivae	●	●
		Prevotella spp	●	●
		Prevotella timonensis	●	●
		Prevotella veroralis	●	●
		Propionibacterium freudenreichii	●	●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Propionibacterium freudenreichii ssp *shermanii*	●	
		Propionibacterium spp	●	
		Proteus mirabilis	●	●
		Proteus penneri	●	
		Proteus spp		●
		Proteus vulgaris	●	●
		Proteus vulgaris/penneri	●	●
		Providencia alcalifaciens	●	●
		Providencia rettgeri	●	●
		Providencia rustigianii	●	●
		Providencia spp	●	●
		Providencia stuartii	●	●
		Pseudarthrobacter chlorophenolicus	●	
		Pseudarthrobacter oxydans	●	●
		Pseudarthrobacter polychromogenes	●	
		Pseudarthrobacter scleromae	●	
		Pseudarthrobacter sulfonivorans	●	
		Pseudochrobactrum asaccharolyticum	●	
		Pseudochrobactrum kiredjianiae	●	
		Pseudochrobactrum lubricantis	●	
		Pseudochrobactrum lubricantis/saccharolyticum		●
		Pseudochrobactrum saccharolyticum	●	
		Pseudochrobactrum spp		●
		Pseudoflavonifractor capillosus	●	●
		Pseudoglutamicibacter albus	●	
		Pseudoglutamicibacter cumminsii	●	●
		Pseudomonas aeruginosa	●	●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Pseudomonas alcaligenes	●	
		Pseudomonas anguilliseptica	●	●
		Pseudomonas brassicacearum	●	
		Pseudomonas caeni	●	
		Pseudomonas chlororaphis	●	●
		Pseudomonas chlororaphis ssp *aureofaciens*	●	
		Pseudomonas chlororaphis ssp *chlororaphis*	●	
		Pseudomonas citronellolis	●	
		Pseudomonas citronellolis/delhiensis		●
		Pseudomonas cuatrocienegasensis	●	●
		Pseudomonas delhiensis	●	
		Pseudomonas extremorientalis	●	●
		Pseudomonas fluorescens	●	●
		Pseudomonas fragi	●	●
		Pseudomonas fulva	●	
		Pseudomonas graminis	●	●
		Pseudomonas grimontii	●	
		Pseudomonas knackmussii	●	
		Pseudomonas lini	●	
		Pseudomonas lutea	●	
		Pseudomonas luteola	●	●
		Pseudomonas mendocina	●	
		Pseudomonas migulae	●	●
		Pseudomonas monteilii	●	
		Pseudomonas mosselii	●	
		Pseudomonas mucidolens	●	●
		Pseudomonas nitroreducens	●	●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Pseudomonas oleovorans	●	●
		Pseudomonas oryzihabitans	●	●
		Pseudomonas peli	●	●
		Pseudomonas pictorum	●	
		Pseudomonas protegens	●	
		Pseudomonas putida	●	●
		Pseudomonas rhizosphaerae	●	●
		Pseudomonas rhodesiae	●	●
		Pseudomonas salomonii	●	
		Pseudomonas spp	●	●
		Pseudomonas straminea	●	●
		Pseudomonas stutzeri	●	●
		Pseudomonas synxantha	●	●
		Pseudomonas syringae	●	●
		Pseudomonas syringae ssp *delphinii*	●	●
		Pseudomonas thermotolerans	●	●
		Pseudomonas thivervalensis	●	
		Pseudomonas tolaasii	●	
		Pseudomonas umsongensis	●	
		Pseudomonas veronii	●	●
		Pseudomonas viridiflava	●	●
		Pseudopropionibacterium propionicum	●	●
		Pseudoxanthomonas broegbernensis	●	
		Pseudoxanthomonas daejeonensis	●	
		Pseudoxanthomonas dokdonensis	●	
		Pseudoxanthomonas japonensis	●	
		Pseudoxanthomonas japonensis/mexicana		●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Pseudoxanthomonas kalamensis	●	
		Pseudoxanthomonas kaohsiungensis	●	
		Pseudoxanthomonas koreensis	●	
		Pseudoxanthomonas mexicana	●	
		Pseudoxanthomonas spadix	●	
		Pseudoxanthomonas spp		●
		Pseudoxanthomonas taiwanensis	●	
		Psychrobacter phenylpyruvicus	●	●
		Psychrobacter spp	●	●
		Rahnella aquatilis	●	●
		Rahnella spp		●
		Ralstonia insidiosa	●	●
		Ralstonia mannitolilytica	●	●
		Ralstonia pickettii	●	●
		Ralstonia spp	●	●
		Raoultella ornithinolytica	●	●
		Raoultella planticola	●	
		Raoultella spp	●	●
		Raoultella terrigena	●	
		Rheinheimera texasensis		●
		Rhizobiaceae		●
		Rhizobium radiobacter	●	●
		Rhizobium spp	●	
		Rhizorhapis suberifaciens	●	●
		Rhodobacter sphaeroides	●	
●		*Rhodococcus baikonurensis*	●	
●		*Rhodococcus coprophilus*	●	●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
	●	*Rhodococcus erythropolis*	●	●
●		*Rhodococcus fascians*	●	●
●		*Rhodococcus globerulus*	●	●
	●	*Rhodococcus hoagii*	●	●
●		*Rhodococcus opacus*	●	●
●		*Rhodococcus rhodnii*	●	●
●		*Rhodococcus rhodochrous*	●	●
●		*Rhodococcus ruber*	●	●
		Rhodospirillum rubrum	●	
		Riemerella anatipestifer	●	●
		Riemerella columbina	●	
		Riemerella spp		●
		Robinsoniella peoriensis	●	●
●		*Roseomonas cervicalis*	●	
●		*Roseomonas mucosa*	●	●
		Rothia aeria	●	●
		Rothia amarae	●	●
		Rothia dentocariosa	●	●
		Rothia mucilaginosa	●	●
		Rothia nasimurium	●	
		Rothia spp	●	
		Rothia terrae	●	
		Ruminococcus gnavus	●	●
		Salmonella bongori	●	
		Salmonella enterica ssp *arizonae*	●	●
		Salmonella enterica ssp *diarizonae*	●	
		Salmonella enterica ssp *enterica*	●	●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Salmonella enterica ssp *houtenae*	●	●
		Salmonella enterica ssp *indica*	●	
		Salmonella enterica ssp *salamae*	●	
		Salmonella spp	●	●
		Serratia ficaria	●	●
		Serratia fonticola	●	●
		Serratia grimesii	●	
		Serratia liquefaciens	●	●
		Serratia marcescens	●	●
		Serratia odorifera	●	
		Serratia plymuthica	●	●
		Serratia proteamaculans	●	●
		Serratia rubidaea	●	●
		Serratia spp		●
		Shewanella algae		●
		Shewanella putrefaciens	●	●
		Shigella boydii	●	●
		Shigella dysenteriae	●	●
		Shigella flexneri	●	●
		Shigella sonnei	●	●
		Shigella spp	●	●
		Shimwellia blattae	●	●
		Siccibacter turicensis	●	●
		Sinomonas atrocyanea	●	
		Skermanella spp	●	
		Solibacillus silvestris	●	●
		Sphaerotilus spp	●	

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Sphingobacterium daejeonense	●	●
		Sphingobacterium mizutaii	●	
		Sphingobacterium multivorum	●	●
		Sphingobacterium spiritivorum	●	●
		Sphingobacterium thalpophilum	●	●
		Sphingobium chlorophenolicum	●	●
		Sphingobium xenophagum	●	●
		Sphingobium yanoikuyae	●	●
		Sphingomonas adhaesiva	●	●
		Sphingomonas echinoides	●	●
		Sphingomonas koreensis		●
		Sphingomonas leidyi	●	●
		Sphingomonas melonis	●	●
		Sphingomonas parapaucimobilis	●	●
		Sphingomonas paucimobilis	●	●
		Sphingomonas spp	●	●
		Sphingomonas trueperi	●	●
		Sphingopyxis terrae	●	
	●	*Staphylococcus arlettae*	●	●
		Staphylococcus aureus	●	●
		Staphylococcus aureus ssp *aureus*	●	
		Staphylococcus auricularis	●	●
		Staphylococcus capitis	●	●
		Staphylococcus capitis ssp *capitis*	●	
		Staphylococcus capitis ssp *ureolyticus*	●	
		Staphylococcus caprae	●	●
		Staphylococcus caprae/capitis		●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Staphylococcus carnosus		●
		Staphylococcus carnosus ssp *carnosus*	●	
		Staphylococcus carnosus ssp *utilis*	●	
		Staphylococcus chromogenes	●	●
	●	*Staphylococcus cohnii*		●
		Staphylococcus cohnii ssp *cohnii*	●	
	●	*Staphylococcus cohnii* ssp *urealyticus*	●	
	●	*Staphylococcus delphini*	●	●
		Staphylococcus delphini/intermedius/pseudintermedius		●
	●	*Staphylococcus epidermidis*	●	●
		Staphylococcus equorum	●	●
		Staphylococcus equorum ssp *equorum*	●	
		Staphylococcus equorum ssp *linens*	●	
●		*Staphylococcus felis*	●	●
		Staphylococcus gallinarum	●	●
	●	*Staphylococcus haemolyticus*	●	●
	●	*Staphylococcus hominis*	●	●
	●	*Staphylococcus hominis* ssp *hominis*	●	
●		*Staphylococcus hominis* ssp *novobiosepticus*	●	
		Staphylococcus hyicus	●	●
	●	*Staphylococcus intermedius*	●	●
	●	*Staphylococcus kloosii*	●	●
		Staphylococcus lentus	●	●
		Staphylococcus lugdunensis	●	●
		Staphylococcus lutrae	●	
●		*Staphylococcus muscae*	●	●
●		*Staphylococcus pasteuri*	●	●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
●		*Staphylococcus pettenkoferi*	●	●
●		*Staphylococcus piscifermentans*	●	●
	●	*Staphylococcus pseudintermedius*	●	●
		Staphylococcus saccharolyticus	●	●
		Staphylococcus saprophyticus	●	●
		Staphylococcus saprophyticus ssp *saprophyticus*	●	
		Staphylococcus schleiferi	●	●
		Staphylococcus schleiferi ssp *coagulans*	●	
		Staphylococcus schleiferi ssp. *schleiferi*	●	
		Staphylococcus sciuri	●	●
		Staphylococcus sciuri ssp *carhaticus*	●	
		Staphylococcus sciuri ssp *rodentium*	●	
		Staphylococcus sciuri ssp *sciuri*	●	
	●	*Staphylococcus simulans*	●	●
		Staphylococcus spp		●
●		*Staphylococcus succinus*	●	●
●		*Staphylococcus succinus* ssp *casei*	●	
●		*Staphylococcus succinus* ssp *succinus*	●	
		Staphylococcus vitulinus	●	●
	●	*Staphylococcus warneri*	●	●
		Staphylococcus warneri/pasteuri		●
		Staphylococcus xylosus	●	●
		Stenotrophomonas acidaminiphila	●	●
		Stenotrophomonas chelatiphaga	●	
		Stenotrophomonas humi	●	
		Stenotrophomonas koreensis	●	
		Stenotrophomonas maltophilia	●	●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Stenotrophomonas nitritireducens	●	
		Stenotrophomonas rhizophila	●	●
		Stenotrophomonas spp	●	●
		Stenotrophomonas terrae	●	
●		*Streptococcus acidominimus*	●	●
	●	*Streptococcus agalactiae*	●	●
		Streptococcus alactolyticus	●	●
		Streptococcus anginosus	●	●
		Streptococcus anginosus/constellatus	●	●
		Streptococcus anginosus/constellatus/gordonii		●
		Streptococcus australis	●	●
		Streptococcus australis/parasanguinis		●
	●	*Streptococcus canis*	●	●
		Streptococcus canis/equi		●
		Streptococcus constellatus	●	●
	●	*Streptococcus constellatus* ssp *constellatus*	●	
		Streptococcus constellatus ssp *pharyngis*	●	
		Streptococcus constellatus/intermedius		●
		Streptococcus cristatus	●	●
●		*Streptococcus devriesei*	●	●
		Streptococcus didelphis	●	
	●	*Streptococcus downei*	●	●
		Streptococcus dysgalactiae	●	●
	●	*Streptococcus dysgalactiae* ssp *dysgalactiae*	●	●
	●	*Streptococcus dysgalactiae* ssp *equisimilis*	●	●
		Streptococcus dysgalactiae/pyogenes		●
		Streptococcus entericus	●	

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
	●	*Streptococcus equi*		●
	●	*Streptococcus equi* ssp *equi*	●	●
	●	*Streptococcus equi* ssp *ruminatorum*	●	
	●	*Streptococcus equi* ssp *zooepidemicus*	●	●
		Streptococcus equinus	●	●
		Streptococcus gallinaceus	●	
		Streptococcus gallolyticus	●	●
		Streptococcus gallolyticus ssp *gallolyticus*	●	●
		Streptococcus gallolyticus ssp *macedonicus*	●	●
	●	*Streptococcus gallolyticus* ssp *pasteurianus*	●	●
	●	*Streptococcus gordonii*	●	●
		Streptococcus hyointestinalis	●	●
		Streptococcus hyovaginalis	●	●
		Streptococcus infantarius		●
		Streptococcus infantarius ssp *coli*	●	
		Streptococcus infantarius ssp *infantarius*	●	●
	●	*Streptococcus infantis*	●	●
●		*Streptococcus iniae*	●	●
		Streptococcus intermedius	●	●
		Streptococcus intermedius/constellatus		●
		Streptococcus lutetiensis	●	
		Streptococcus marimammalium	●	
		Streptococcus massiliensis	●	
	●	*Streptococcus mitis*	●	●
		Streptococcus mitis/oligofermentans/oralis		●
		Streptococcus mitis/oralis/pneumoniae		●
		Streptococcus mitis/oralis/pseudopneumoniae		●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Streptococcus mutans	●	●
		Streptococcus oligofermentans	●	●
		Streptococcus oligofermentans/oralis		●
	●	*Streptococcus oralis*	●	●
		Streptococcus orisratti	●	
		Streptococcus ovis	●	●
		Streptococcus parasanguinis	●	●
		Streptococcus parauberis	●	●
		Streptococcus peroris	●	●
		Streptococcus phocae	●	
		Streptococcus pluranimalium	●	●
		Streptococcus pneumoniae	●	●
		Streptococcus pneumoniae/mitis		●
	●	*Streptococcus porcinus*	●	●
		Streptococcus pseudopneumoniae	●	
●		*Streptococcus pseudoporcinus*	●	●
		Streptococcus pyogenes	●	●
		Streptococcus salivarius	●	●
●		*Streptococcus salivarius* ssp *salivarius*	●	
	●	*Streptococcus salivarius* ssp *thermophilus*	●	●
		Streptococcus salivarius/vestibularis		●
		Streptococcus sanguinis	●	●
	●	*Streptococcus sinensis*	●	●
		Streptococcus sobrinus	●	●
	●	*Streptococcus* spp	●	●
		Streptococcus suis	●	●
		Streptococcus thoraltensis	●	●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Streptococcus uberis	●	●
		Streptococcus vestibularis	●	
		Streptomyces albofaciens	●	●
		Streptomyces fradiae	●	●
		Streptomyces griseus	●	●
		Streptomyces griseus ssp *griseus*	●	●
		Streptomyces spp	●	
●		*Sutterella wadsworthensis*	●	●
		Suttonella indologenes	●	●
		Tatlockia maceachernii	●	
		Tatlockia micdadei	●	●
		Tatlockia spp		●
		Tatumella ptyseos	●	●
		Taylorella asinigenitalis	●	●
		Taylorella equigenitalis	●	●
		Terrabacter spp	●	
		Terrisporobacter glycolicum	●	
		Tetragenococcus halophilus	●	●
		Thiocystis spp	●	
		Trueperella bernardiae	●	●
		Trueperella bialowiezense	●	
		Trueperella bonasi	●	
		Trueperella pyogenes	●	●
		Tsukamurella paurometabola	●	●
		Tsukamurella pulmonis	●	
		Tsukamurella spp	●	
		Tsukamurella tyrosinosolvens	●	

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
	●	*Turicella otitidis*	●	●
		Vagococcus fluvialis	●	●
		Variovorax paradoxus	●	●
		Veillonella atypica	●	●
		Veillonella dispar	●	●
		Veillonella parvula	●	
		Veillonella spp	●	●
		Vibrio alginolyticus	●	●
		Vibrio anguillarum	●	
		Vibrio campbellii	●	
		Vibrio cholerae	●	●
		Vibrio cholerae/mimicus		●
		Vibrio cincinnatiensis	●	
		Vibrio fluvialis	●	
		Vibrio furnissii	●	●
		Vibrio harveyi	●	●
		Vibrio metschnikovii	●	
		Vibrio mimicus	●	●
		Vibrio natriegens	●	
		Vibrio navarrensis	●	
		Vibrio orientalis	●	
		Vibrio parahaemolyticus	●	●
		Vibrio proteolyticus	●	
		Vibrio spp	●	●
		Vibrio vulnificus	●	●
		Virgibacillus pantothenticus	●	●
		Virgibacillus proomii	●	●

New in V4.16	Amended in V4.16	Taxon	Reference Spectra	Super Spectra
		Weeksella virosa	●	●
		Weissella confusa	●	●
		Weissella viridescens	●	●
		Xenorhabdus nematophila	●	
		Xenorhabdus spp	●	●
		Yersinia aldovae	●	●
		Yersinia enterocolitica	●	●
		Yersinia frederiksenii	●	●
		Yersinia intermedia	●	●
		Yersinia kristensenii	●	●
		Yersinia mollaretii	●	●
		Yersinia pestis	●	●
		Yersinia pseudotuberculosis	●	●
		Yersinia ruckeri	●	●
		Yersinia spp	●	●
		Yokenella regensburgei	●	●

A Appendix - Protocol to Use and Store *E. coli* ATCC® 8739™ for Calibration

IMPORTANT: Follow the instructions provided by the commercial supplier of E. coli ATCC® 8739™ concerning the number of passages that can be made from the stock strain.

Depending on the number of passages from the *E. coli* ATCC® 8739™ stock strain, perform subculture(s) to have your daily, fresh calibration plate.

The *E. coli* ATCC® 8739™ strain for the calibration should be incubated for 18 to 24 hours at 35°C ± 2°C on blood agar under aerobic atmosphere.

Media to be used:

- Columbia agar + 5% sheep blood.
- Trypticase soy agar + 5% sheep blood.

Revision History

This section contains a summary of changes made to each released revision of this document starting with part number 161150-1225 - A.

Change type categories:

N/A	Not applicable (First publication)
Correction	Correction of documentation anomalies
Technical change	Addition, revision and/or removal of information related to the product
Administrative	Implementation of non-technical changes noticeable to the user

Note:
- *Minor typographical, grammar, and formatting changes are not included in the revision history.*
- *Not all versions may be available in all languages.*

Release Date	Part Number	Change Type	Change Summary
2019-03	161150-1225 - A	N/A	First publication

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