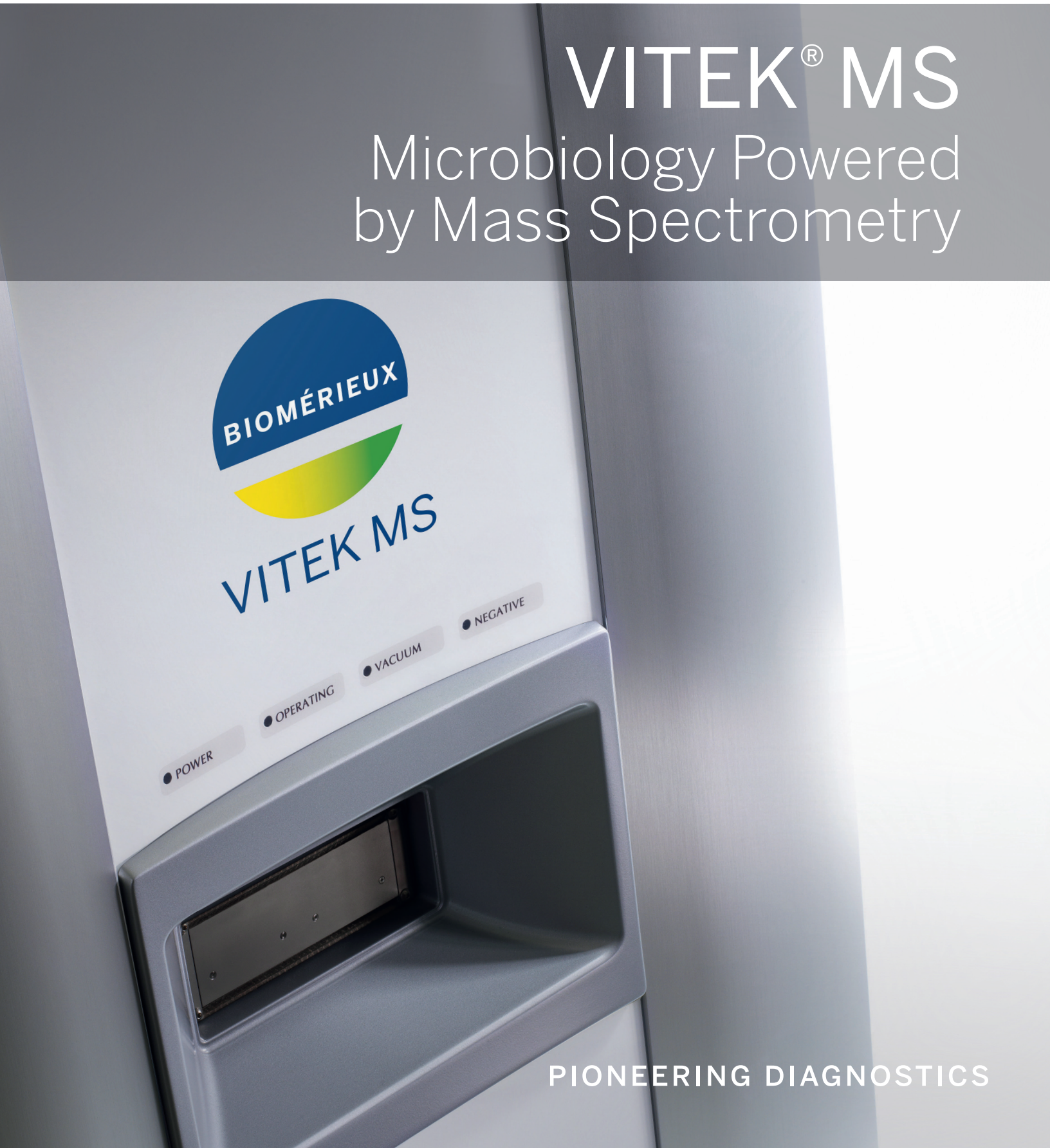
BIOMÉRIEUX

VITEK® MS

Microbiology Powered by Mass Spectrometry



PIONEERING DIAGNOSTICS

DELIVER ACTIONABLE RESULTS TO CLINICIANS TO SUPPORT INFORMED TREATMENT DECISIONS.

Fast and actionable organism identification provides clinicians with **valuable diagnostic information** that helps them tailor antimicrobial therapy. Incorporating fast identification and AST* with stewardship interventions has been shown to **reduce time to appropriate therapy** and to **reduce hospital length of stay**.[1]

- **Safe and effective** inactivation and extraction protocols offer excellent performance for identification of pathogenic microorganisms
- **Easy workflow** with convenient, prepackaged reagent kits
- In-lab solution to **save time and costs** compared to sending out tests or using other methods

*Antimicrobial Susceptibility Testing

TRULY INTEGRATED ID & AST SETUP

Simple, step-by-step guided slide preparation for ID and connection with AST using the on-screen VITEK MS Prep Station.

SIMPLE SPOTTING

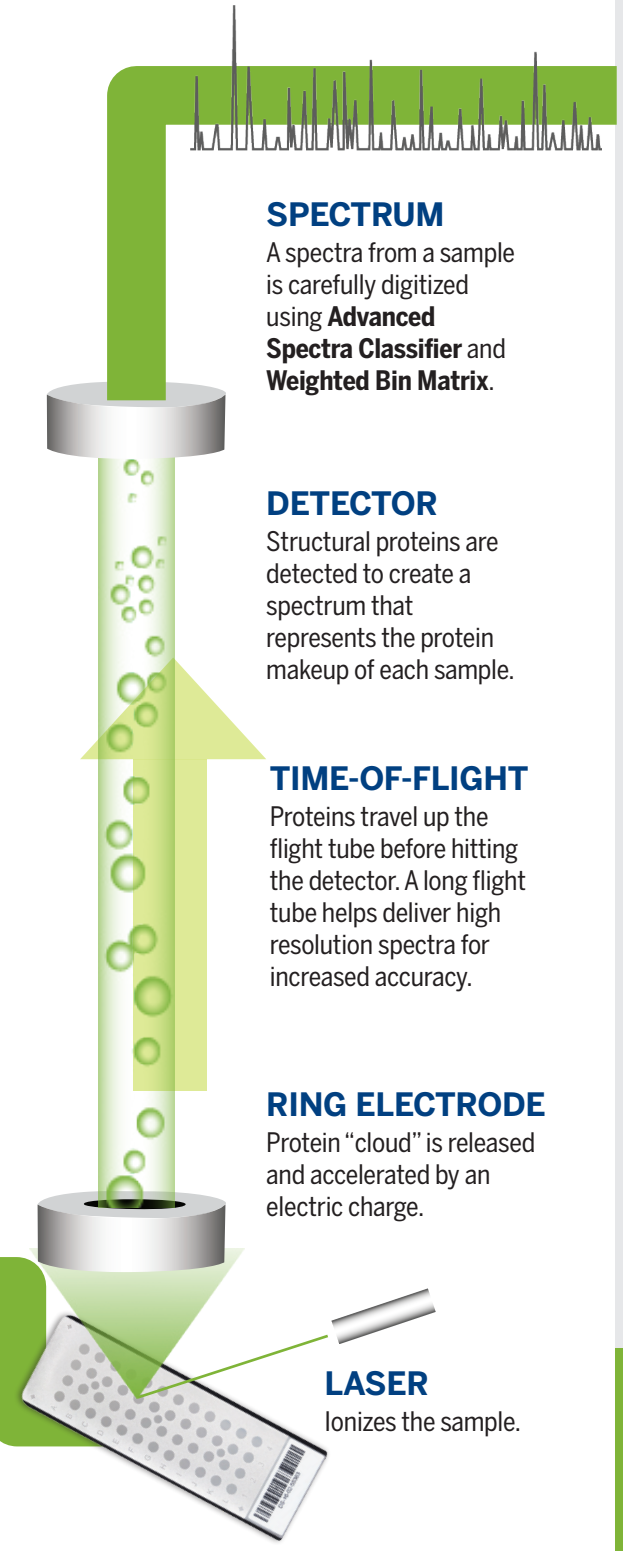
Easy sample preparation step of spotting organism onto slide and applying sample matrix for bacteria or matrix plus formic acid for yeasts.

FLEXIBLE SAMPLE LOADING

VITEK MS carrier can be loaded with up to four prepared slides and introduced into the instrument. With 48 sample spots per target slide, 192 isolates can be tested per run.

References

1. Cavalieri SJ, Kwon S, Vivekanandan R, et al. **Effect of antimicrobial stewardship with rapid MALDI-TOF identification and VITEK 2 antimicrobial susceptibility testing on hospitalization outcome.** *Diagn Microbiol Infec Dis.* 2019. http://doi.org/10.1016/j.diagmicrobio.2019.05.020. Available online June 6, 2019.
2. Dunne Jr. WM, Doing K, Miller E, et al. **Rapid Inactivation of Mycobacterium and Nocardia Species before Identification Using Matrix-Assisted Laser Desorption Ionization–Time of Flight Mass Spectrometry.** *J Clin Microbiol.* 2014;52 (10) 3654-3659.
3. Totty H, Miller E, Moreno E, Dunne WM, Deol P. **Comparison of Mechanical Disruption Techniques for Rapid Inactivation of Mycobacterium and Nocardia Species before Identification Using Matrix-Assisted Laser Desorption Ionization–Time of Flight (MALDI-TOF) Mass Spectrometry.** *J Clin Microbiol.* 2016;54 (10) 2626-2627.
4. Dunne WMJ, Doing K, Miller E, et al. **Rapid Inactivation of Mycobacterium and Nocardia species before identification using Matrix-Assisted Laser Desorption Ionization-Time of Flight mass spectrometry.** *J Clin Microbiol.* 2014;52:3654-3659.
5. U.S. Food & Drug Administration. 510(k) substantial equivalence determination decision summary. https://www.accessdata.fda.gov/cdrh_docs/reviews/K181412.pdf. Accessed March 20, 2019.



SPECTRUM
A spectra from a sample is carefully digitized using **Advanced Spectra Classifier** and **Weighted Bin Matrix**.

DETECTOR
Structural proteins are detected to create a spectrum that represents the protein makeup of each sample.

TIME-OF-FLIGHT
Proteins travel up the flight tube before hitting the detector. A long flight tube helps deliver high resolution spectra for increased accuracy.

RING ELECTRODE
Protein "cloud" is released and accelerated by an electric charge.

LASER
Ionizes the sample.

ROBUST DATABASE

With more than 15,000 strains and an average of 12 strains per species, the VITEK MS provides highly accurate results.

FDA 510(k) cleared for 401 organisms — 1,316 total organisms in database
The first FDA cleared database for Mycobacteria, *Nocardia* and molds

Mycobacteria | *Nocardia* | Molds | Bacteria | Yeast

Now including *Brucella* species, *Candida auris*, and *Elizabethkingia anophelis*!

- 39 Mycobacteria
- 16 *Nocardia* species
- 207 Molds & Yeast
- 19 *Legionella* species
- 43 *Streptococcus* species
- 36 *Staphylococcus* species
- 17 *Burkholderia* species
- 12 *Yersinia* species

Refer to the VITEK MS V3.2 Knowledge Base for the full list of claimed and unclaimed organisms.

SAFE EXTRACTION PROCEDURE

- No extractions required for routine bacteria and yeast identifications
- Simple and reliable inactivation for Mycobacteria, *Nocardia* and molds[2,3]
- Studies show no viable organisms after performing inactivation steps[4]
- Post-inactivation processing steps may be performed in BSL2 lab

HIGH PERFORMANCE

- 95.4% Total Combined Correct Identification Results
- **Mycobacteria –** 96.5% correct single choice IDs from patient cultures
- **Molds –** 92.7% accurate single choice IDs with challenge strains[5]

VITEK MS provides identifications in minutes using an innovative mass spectrometry technology — Matrix Assisted Laser Desorption Ionization Time-of-Flight, or MALDI-TOF.

VITEK® MS Organism List

ANAEROBES

- *Acidipropionibacterium (Propionibacterium) acidipropionici* *
- *Actinomyces bovis* *
- *Actinomyces israelii* *
- *Actinomyces meyeri*
- *Actinomyces naeslundii* *
- *Actinomyces neuii*
- *Actinomyces odontolyticus*
- *Actinotignum schaalii* *
- *Bacteroides caccae*
- *Bacteroides eggerthii* *
- *Bacteroides fragilis*
- *Bacteroides ovatus / xylanisolvens*
- *Bacteroides pyogenes* *
- *Bacteroides stercoris* *
- *Bacteroides thetaiotaomicron*
- *Bacteroides uniformis*
- *Bacteroides vulgatus*
- *Bifidobacterium spp* *
- *Bilophila wadsworthia* *
- *Clostridium baratii* *
- *Clostridium beijerinckii* *
- *Clostridium butyricum* *
- *Clostridium cadaveris* *
- *Clostridium clostridioforme*
- *Clostridioides (Clostridium) difficile*
- *Clostridium innocuum* *
- *Clostridium novyi* *
- *Clostridium perfringens*
- *Clostridium ramosum*
- *Clostridium septicum* *
- *Clostridium sporogenes* *
- *Clostridium tertium* *
- *Clostridium tetani* *
- *Cutibacterium acnes*
- *Cutibacterium (Propionibacterium) avidum* *
- *Cutibacterium (Propionibacterium) granulosum* *
- *Finegoldia magna*
- *Fusobacterium mortiferum* *
- *Fusobacterium necrophorum*
- *Fusobacterium nucleatum*
- *Fusobacterium periodonticum* *
- *Hathewaya histolytica* *
- *Mobiluncus curtisii*
- *Paeniclostridium sordellii* *
- *Paraclostridium bifermentans* *
- *Parvimonas micra*
- *Peptoniphilus asaccharolyticus*
- *Peptostreptococcus anaerobius*
- *Porphyromonas asaccharolytica / uenonis* *
- *Porphyromonas gingivalis* *
- *Prevotella bivia*
- *Prevotella buccae*
- *Prevotella denticola*
- *Prevotella intermedia*
- *Prevotella loescheii* *
- *Prevotella melaninogenica*
- *Prevotella oralis* *
- *Prevotella oris* *
- *Propionibacterium acnes*
- *Pseudopropionibacterium (Propionibacterium) propionicum* *
- *Tannerella forsythia* *
- *Veillonella dispar* *

GRAM-NEGATIVE ENTEROBACTERIACEAE

- *Cedecea davisae* *
- *Cedecea lapagei* *
- *Cedecea neteri* *
- *Citrobacter amalonaticus*
- *Citrobacter braakii*
- *Citrobacter farmeri* *
- *Citrobacter freundii*
- *Citrobacter koseri*
- *Citrobacter youngae*
- *Cronobacter muytjensii* *
- *Cronobacter sakazakii*
- *Cronobacter turicensis* *
- *Edwardsiella hoshinae*
- *Edwardsiella tarda*
- *Enterobacter aerogenes*
- *Enterobacter asburiae*
- *Enterobacter cancerogenus*
- *Enterobacter cloacae*
- *Enterobacter hormaechei* *
- *Enterobacter kobei* *
- *Enterobacter ludwigii* *
- *Escherichia coli*
- *Escherichia fergusonii*
- *Escherichia hermannii*
- *Ewingella americana*
- *Hafnia alvei*
- *Klebsiella oxytoca*
- *Klebsiella pneumoniae*
- *Klebsiella variicola* *
- *Kluyvera ascorbata* *
- *Kluyvera cryocrescens* *
- *Kluyvera intermedia* *
- *Leclercia adecarboxylata*
- *Lelliottia amnigena* *
- *Morganella morganii*
- *Pantoea agglomerans*
- *Pantoea dispersa* *
- *Plesiomonas shigelloides* *
- *Pluralibacter gergoviae*
- *Proteus mirabilis*
- *Proteus penneri*
- *Proteus vulgaris*
- *Providencia alcalifaciens* *
- *Providencia rettgeri*
- *Providencia rustigianii* *
- *Providencia stuartii*
- *Pseudescherichia (Escherichia) vulneris* *
- *Raoultella ornithinolytica*
- *Raoultella planticola*
- *Raoultella terrigena* *
- *Salmonella enterica ssp enterica*
- *Serratia ficaria* *
- *Serratia fonticola*
- *Serratia grimesii* *
- *Serratia liquefaciens*
- *Serratia marcescens*
- *Serratia odorifera*
- *Serratia plymuthica* *
- *Serratia proteamaculans* *
- *Serratia quinivorans* *
- *Serratia rubidaea* *
- *Yersinia aldovae* *
- *Yersinia enterocolitica*
- *Yersinia frederiksenii*
- *Yersinia intermedia*
- *Yersinia kristensenii*
- *Yersinia pseudotuberculosis*
- *Yersinia ruckeri* *

GRAM-NEGATIVE FASTIDIOUS

- *Aggregatibacter actinomycetemcomitans*
- *Aggregatibacter aphrophilus*
- *Aggregatibacter segnis*
- *Brucella spp* *
- *Campylobacter coli*
- *Campylobacter jejuni*
- *Campylobacter rectus* *
- *Eikenella corrodens*
- *Haemophilus influenzae*
- *Haemophilus parahaemolyticus*
- *Haemophilus parainfluenzae*
- *Kingella denitrificans*
- *Kingella kingae*
- *Legionella pneumophila*
- *Moraxella catarrhalis*
- *Moraxella lacunata* *
- *Moraxella nonliquefaciens* *
- *Moraxella osloensis* *
- *Neisseria cinerea*
- *Neisseria gonorrhoeae*
- *Neisseria meningitidis*
- *Neisseria mucosa / sicca*
- *Oligella ureolytica*
- *Oligella urethralis*

GRAM-NEGATIVE NON-ENTEROBACTERIACEAE

- *Achromobacter denitrificans*
- *Achromobacter xylosoxidans*
- *Acinetobacter baumannii* *
- *Acinetobacter calcoaceticus* *
- *Acinetobacter haemolyticus*
- *Acinetobacter johnsonii* *
- *Acinetobacter junii*
- *Acinetobacter lwoffii*
- *Acinetobacter nosocomialis* *
- *Acinetobacter pittii* *
- *Aeromonas hydrophila*
- *Aeromonas jandaei* *
- *Aeromonas punctata (caviae)*
- *Aeromonas sobria*
- *Alcaligenes faecalis ssp faecalis*
- *Bordetella avium* *
- *Bordetella bronchiseptica* *
- *Bordetella parapertussis*
- *Bordetella pertussis*
- *Brevundimonas diminuta*
- *Brevundimonas vesicularis* *
- *Burkholderia cenocepacia* *
- *Burkholderia cepacia* *
- *Burkholderia contaminans* *
- *Burkholderia gladioli* *
- *Burkholderia multivorans*
- *Burkholderia vietnamiensis* *
- *Chryseobacterium gleum* *
- *Chryseobacterium indologenes*
- *Comamonas testosteroni* *
- *Delftia acidovorans* *
- *Elizabethkingia anophelis* *
- *Elizabethkingia meningoseptica*
- *Elizabethkingia miricola* *
- *Mannheimia haemolytica* *
- *Myroides spp* *
- *Ochrobactrum anthropi*
- *Pasteurella aerogenes* *
- *Pasteurella multocida*
- *Pseudomonas aeruginosa*
- *Pseudomonas alcaligenes* *
- *Pseudomonas fluorescens*
- *Pseudomonas luteola* *
- *Pseudomonas mendocina* *
- *Pseudomonas oryzihabitans* *
- *Pseudomonas putida*
- *Pseudomonas stutzeri*
- *Ralstonia pickettii*

- *Rhizobium radiobacter*
- *Shewanella putrefaciens* *
- *Sphingobacterium multivorum*
- *Sphingobacterium spiritivorum*
- *Sphingomonas paucimobilis*
- *Stenotrophomonas maltophilia*
- *Vibrio alginolyticus* *
- *Vibrio cholerae*
- *Vibrio fluvialis* *
- *Vibrio metschnikovii* *
- *Vibrio mimicus* *
- *Vibrio parahaemolyticus*
- *Vibrio vulnificus*

GRAM-POSITIVE

- *Abiotrophia defectiva*
- *Aerococcus viridans*
- *Corynebacterium jeikeium*
- *Curtobacterium flaccumfaciens* *
- *Enterococcus avium*
- *Enterococcus casseliflavus*
- *Enterococcus durans*
- *Enterococcus faecalis*
- *Enterococcus faecium*
- *Enterococcus gallinarum*
- *Enterococcus hirae* *
- *Gardnerella vaginalis*
- *Gemella haemolysans*
- *Gemella morbillorum*
- *Granulicatella adiacens*
- *Kocuria rhizophila* *
- *Lactococcus garvieae*
- *Lactococcus lactis*
- *Leuconostoc mesenteroides*
- *Leuconostoc pseudomesenteroides*
- *Listeria monocytogenes*
- *Micrococcus luteus*
- *Pediococcus acidilactici*
- *Rothia mucilaginosa*
- *Staphylococcus aureus*
- *Staphylococcus auricularis* *
- *Staphylococcus capitis*
- *Staphylococcus chromogenes* *
- *Staphylococcus cohnii ssp cohnii*
- *Staphylococcus cohnii ssp urealyticus*
- *Staphylococcus epidermidis*
- *Staphylococcus haemolyticus*
- *Staphylococcus hominis*
- *Staphylococcus hyicus* *
- *Staphylococcus intermedius* *
- *Staphylococcus kloosii* *
- *Staphylococcus lentus* *
- *Staphylococcus lugdunensis*
- *Staphylococcus pseudintermedius* *
- *Staphylococcus saprophyticus*
- *Staphylococcus schleiferi*
- *Staphylococcus sciuri*
- *Staphylococcus simulans*
- *Staphylococcus warneri*
- *Staphylococcus xylosus* *
- *Streptococcus agalactiae*
- *Streptococcus alactolyticus* *
- *Streptococcus anginosus*
- *Streptococcus canis* *
- *Streptococcus constellatus*
- *Streptococcus cristatus* *
- *Streptococcus dysgalactiae ssp dysgalactiae*
- *Streptococcus dysgalactiae ssp equisimilis*
- *Streptococcus equi ssp equi* *
- *Streptococcus equi ssp zooepidemicus* *
- *Streptococcus equinus* *
- *Streptococcus gallolyticus ssp gallolyticus*
- *Streptococcus gallolyticus ssp pasteurianus* *
- *Streptococcus gordonii* *
- *Streptococcus infantarius ssp coli (Str.lutetiensis)*
- *Streptococcus infantarius ssp infantarius*
- *Streptococcus intermedius*
- *Streptococcus mitis / Streptococcus oralis*
- *Streptococcus mutans*
- *Streptococcus parasanguinis* *
- *Streptococcus pneumoniae*
- *Streptococcus pseudoporcinus* *
- *Streptococcus pyogenes*
- *Streptococcus salivarius ssp salivarius*
- *Streptococcus sanguinis*
- *Streptococcus sobrinus* *
- *Streptococcus suis* *
- *Streptococcus uberis* *
- *Streptococcus vestibularis* *

MOLDS

- *Acremonium sclerotigenum*
- *Alternaria alternata*
- *Aspergillus brasiliensis*
- *Aspergillus calidoustus / ustus*
- *Aspergillus flavus / oryzae*
- *Aspergillus fumigatus*
- *Aspergillus lentulus*
- *Aspergillus nidulans*
- *Aspergillus niger complex*
- *Aspergillus sydowii*
- *Aspergillus terreus complex*
- *Aspergillus versicolor*
- *Blastomyces dermatitidis*
- *Cladophialophora bantiana*
- *Coccidioides immitis / posadasii*
- *Curvularia hawaiiensis*
- *Curvularia spicifera*
- *Epidermophyton floccosum*
- *Exophiala dermatitidis*
- *Exophiala xenobiotica*
- *Exserohilum rostratum*
- *Fusarium oxysporum complex*
- *Fusarium proliferatum*
- *Fusarium solani complex*
- *Histoplasma capsulatum*
- *Lecythophora hoffmannii*
- *Lichtheimia corymbifera*
- *Microsporum audouinii*
- *Microsporum canis*
- *Microsporum gypseum*
- *Mucor racemosus complex*
- *Paecilomyces variotii complex*
- *Penicillium chrysogenum*
- *Pseudallescheria boydii*
- *Purpureocillium lilacinum*
- *Rasamsonia argillacea complex*
- *Rhizopus arrhizus complex*
- *Rhizopus microsporus complex*
- *Sarocladium kiliense*
- *Scedosporium apiospermum*
- *Scedosporium prolificans*
- *Sporothrix schenckii complex*
- *Trichophyton interdigitale*
- *Trichophyton rubrum*
- *Trichophyton tonsurans*
- *Trichophyton verrucosum*
- *Trichophyton violaceum*

MYCOBACTERIUM

- *Mycobacterium abscessus*
- *Mycobacterium avium*
- *Mycobacterium chelonae*
- *Mycobacterium fortuitum group*
- *Mycobacterium gordonae*
- *Mycobacterium haemophilum*
- *Mycobacterium immunogenum*
- *Mycobacterium intracellulare*
- *Mycobacterium kansasii*
- *Mycobacterium lentiflavum*
- *Mycobacterium malmoense*
- *Mycobacterium marinum*
- *Mycobacterium mucogenicum*
- *Mycobacterium scrofulaceum*
- *Mycobacterium simiae*
- *Mycobacterium smegmatis*
- *Mycobacterium szulgai*
- *Mycobacterium tuberculosis complex*
- *Mycobacterium xenopi*

NOCARDIA

- *Nocardia abscessus*
- *Nocardia africana / nova*
- *Nocardia asteroides*
- *Nocardia brasiliensis*
- *Nocardia cyriacigeorgica*
- *Nocardia farcinica*
- *Nocardia otitidiscaviarum*
- *Nocardia paucivorans*
- *Nocardia pseudobrasiliensis*
- *Nocardia transvalensis*
- *Nocardia veterana*
- *Nocardia wallacei*

YEAST

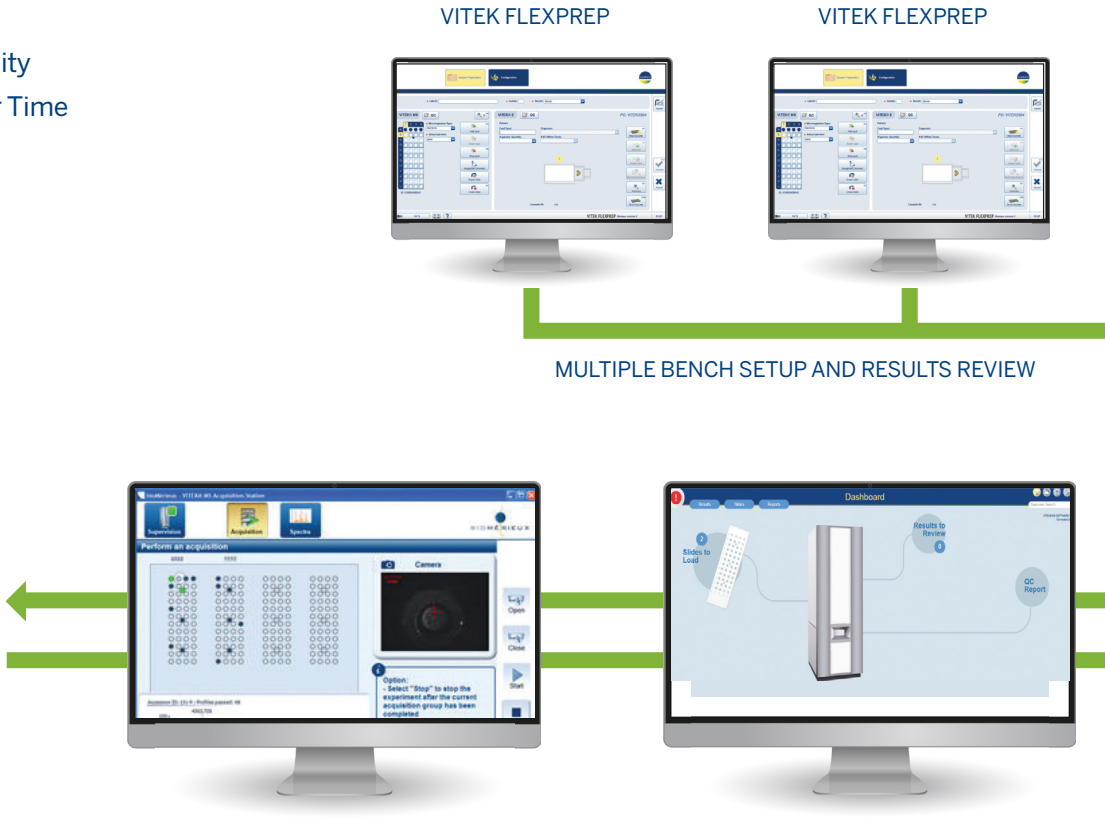
- *Candida albicans*
- *Candida auris* *
- *Candida dubliniensis*
- *Candida duobushaemulonii* *
- *Candida famata*
- *Candida glabrata*
- *Candida guilliermondii*
- *Candida haemulonii*
- *Candida inconspicua*
- *Candida intermedia*
- *Candida kefyr*
- *Candida krusei*
- *Candida lambica*
- *Candida lipolytica*
- *Candida lusitaniae*
- *Candida metapsilosis* *
- *Candida norvegensis*
- *Candida orthopsilosis* *
- *Candida parapsilosis*
- *Candida pelliculosa*
- *Candida rugosa*
- *Candida tropicalis*
- *Candida utilis*
- *Candida zeylanoides*
- *Cryptococcus gattii* *
- *Cryptococcus neoformans*
- *Kodamaea ohmeri*
- *Malassezia furfur*
- *Malassezia pachydermatis*
- *Rhodotorula mucilaginosa*
- *Saccharomyces cerevisiae*
- *Saprochaete capitata*
- *Trichosporon asahii*
- *Trichosporon dermatis / mucoides* *
- *Trichosporon inkin*

**** Added in V3.2 database update***

ENHANCE MICROBIOLOGY WORKFLOW WITH VITEK® MS V3.1 SYSTEM SOFTWARE

The VITEK MS V3.1 System software enhances the microbiology workflow with features focusing on results management and FLEXPREP™ software.

- Increased Setup Efficiency
- Improved Traceability and Quality
- User-Friendly to Maximize Your Time



SHARE & MODIFY SLIDES

- Isolate information now saved by spot instead of acquisition group
- Slides shared within acquisition groups with full traceability
- Ability to have multiple operators per acquisition group

IMPROVED TRACEABILITY, QUALITY & REPORTING

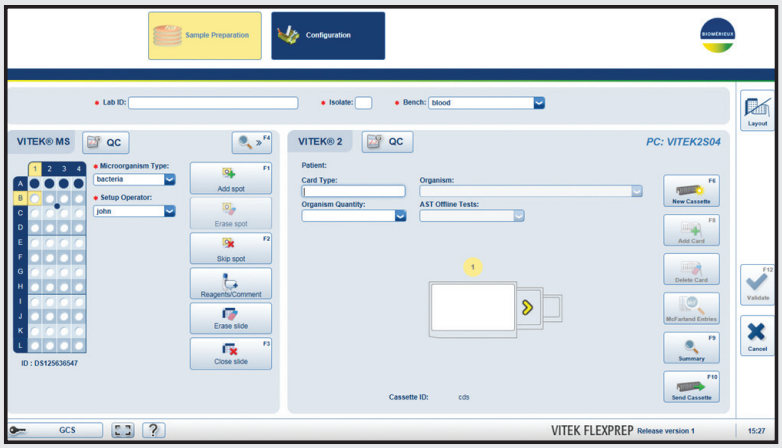
- QC Mapping: Create customized QC lists
- Reagent traceability: ability to track the lot number and expiration date for reagents and kits (customizable)
- Operator traceability: track the technician who sets up each spot and/or slide (customizable)
- New reports including QC, isolate, spot, and usage report

ENHANCED RUO FUNCTIONALITY

- One user-friendly application for IVD and RUO
- VITEK FLEXPREP is now used for RUO target slide preparation
- Automatically send “no ID” results to SARAMIS® for analysis

FLEXPREP: THE NEW WAY TO SET UP TARGET SLIDES AND VITEK 2 CARDS

- Simplified, browser-based setup from any computer connected to the same network as your VITEK Solution
- Easily switch between setup layouts (ID/AST) for optimal workflow
- Reminder to add formic acid for yeast identifications
- Ability to add a comment by spot



RESULTS MANAGEMENT

- Auto release high confidence green results to the LIS (customizable for *E. coli*)
- Review results by selection, batch, specimen, slide, or acquisition group
- Sort and filter results with customizable fields such as operator, confidence level, bench name, accession number, or setup technician/operator
- Display of new icons provides additional information during result review, including a duplicate isolate alert

MYLA® CONNECTED MICROBIOLOGY FOR BLOOD CULTURE & ID/AST

MYLA is the foundation of your VITEK Solution, providing important connectivity and reporting functions.

MYLA software offers you a real-time, control-tower overview of your bioMérieux instruments with flexible and easy-to-generate-reports.

Put MYLA at the heart of your lab operations to transform results into smart data insights.

BIOMÉRIEUX

VITEK® MS

Microbiology Powered by Mass Spectrometry

WE ARE FOR LEVERAGING LAB EXPERTISE

Innovation in microbiology must never stop — because your **laboratory challenges never stop**. For more than 50 years, bioMérieux has shared your commitment to continually strengthen laboratory impact on patient therapy.

For all your testing needs — from the **most routine to the truly challenging** — our integrated identification and susceptibility testing (ID/AST) solution lets you leverage your expertise to ensure test results that impact timely, appropriate therapy.

ID/AST SOLUTIONS

VITEK MS is part of bioMérieux's **comprehensive and complementary** range of ID/AST solutions for infectious disease diagnostics. Together, VITEK MS, VITEK 2 and ETEST® provide **seamless integration** and the **flexibility** needed to **optimize laboratory workflow** and to support selection of **appropriate antimicrobial treatment**. Turn data into **actionable insights** using MYLA®, bioMérieux's easy-to-use middleware and instrument manager, and increase the **value** of every test result.

bioMérieux's ID/AST solutions provide **confidence in reporting** results with **speed and accuracy** — whether you are faced with routine diagnoses, unusual or resistant organisms, or critical clinical situations.

For more information visit
www.biomerieux-usa.com/vitek-ms

Order reagents and track shipments:
www.biomerieuxDIRECT.com

When you invest in bringing our instrumentation into your lab, you'll be supported by a team of more than 300 award winning application, engineering and customer service experts. Our VILINK® solution provides rapid access to remote diagnostic support. 24 hours a day, 365 days a year, we're ready to help you keep your lab running smoothly.

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