

# THE VIKOR DIFFERENCE



VIKORSCIENTIFIC



CLINICAL PROVIDER-LED ORGANIZATION THAT WORK AS YOUR PARTNERS IN PATIENT CARE

DEDICATED TO IMPROVING CLINICAL AND ECONOMIC OUTCOMES IN INFECTIOUS DISEASE

CUSTOM DEVELOPED PANELS THAT ARE UPDATED BASED ON MEDICAL LITERATURE AND WHAT OUR HEALTHCARE PROFESSIONAL CUSTOMERS REQUEST

## VIKOR SCIENTIFIC

## OTHER COMPANIES



Personalized, therapeutic guidance including non-pharmacological and symptomatic management guidance



Dosing guidelines and adjustments for patients with renal and liver dysfunction



Live consultation available with infectious disease specialists



Testing of up to 13 classes of antibiotic resistance genes to improve inappropriate antibiotic prescribing



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Testing of up to 13 classes of antibiotic resistance genes to improve inappropriate antibiotic prescribing



# URINE-ID™

The PCR solution for Urinary Tract Infections

## Urine-ID™ can assist in:

-  One simple swab for collection, ideal for patients who have difficulties producing large amount of urine needed for standard testing methods
-  Test patients with complicated, recurrent, and/or persistent urinary tract infections
-  Use for contact or exposure to a sexually transmitted disease with reflex option to new STI-ID panel, or Urine-Extended for both Urine-ID and STI-ID pathogens
-  History of treatment failure or high-risk for antibiotic resistance

**PCR has shown primary advantages over standard urine culture for accurately diagnosing UTIs including the ability to:**

- ✓ Detect polymicrobial infections (up to 40% of UTIs) and common fastidious UTI pathogens that are unable to grow in a standard agar plate
- ✓ Identify specific fungal species versus a generic "yeast" result on standard urine culture
- ✓ Detect antibiotic resistance genes including patients on recent or current antibiotic therapy

## Standard Culture vs. Vikor Molecular-Based Pathogen Identification

Culture	qPCR
Cumbersome	Simple (one swab collection)
Potential for contamination or "mixed flora." Extended time for incubation of anaerobes and fungi	Detects up to 49 antibiotic resistance genes. Rapid detection of fungi, anaerobes, and other fastidious microorganisms
3-14 days	24-48 hours*
Typically, only primary pathogens detected, sensitivity and specificity may vary	~99% for all pathogens present, including detection of polymicrobial infections
Antibiotics can affect results	Less susceptible to antibiotics

\*from receipt of properly received specimen and completed requisition



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# TEST MENU

## URINE-ID™

URINE SWAB

- ✓ One simple swab for collection, ideal for patients who have difficulties producing large amount of urine needed for standard testing methods
- ✓ Test patients with complicated, recurrent, and/or persistent urinary tract infections
- ✓ Use for contact or exposure to a sexually transmitted disease with reflex option to new STI-ID panel, or Urine-Extended for both Urine-ID and STI-ID pathogens
- ✓ History of treatment failure or high-risk for antibiotic resistance
- ✓ PCR is less susceptible to antibiotic therapy compared to culture
- ✓ Help detect co-infections, which can be present in up to 40% of cases

## RESPIRA-ID™

NASOPHARYNGEAL SWAB • OROPHARYNGEAL SWAB

- ✓ Acute respiratory infection symptoms in patients at risk of progression to morbid sequelae or hospitalization:
  - Cough, fever, pain in throat, wheezing, nasal congestion, shortness of breath, malaise
- ✓ Recurrent or progressing upper or lower respiratory infections
- ✓ Risk of co-infection in the presence of a viral syndrome which can be missed with single pathogen point-of-care testing
- ✓ Avoid delayed diagnosis of immunocompromised patients which can lead to more serious illnesses such as CAP

## SURGICAL-ID™

SWAB • TISSUE

- ✓ Surgical site infections with symptoms of infection in post-operative period (redness, pain, swelling, drainage around incision site, fever)
- ✓ Poor healing or disruption of surgical incision site
- ✓ Infections from medical devices/implants
- ✓ Recent antibiotic therapy (PCR results less susceptible to being affected by antibiotic therapy)

## WOUND-ID™

WOUND SWAB • WOUND TISSUE



- ✓ Non-healing, chronic wounds, cellulitis, abscesses, decubitus ulcers, diabetic foot ulcers, dermatitis
- ✓ Prior negative culture (20-30% of pathogens may not grow in a culture due to biofilm formation. PCR is not limited by the phenotypic change of pathogens in biofilm.)
- ✓ Recurrent wound with history of MRSA or prior infection

## JOINT-ID™

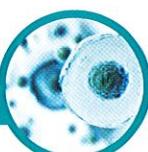
SYNOVIAL FLUID SWAB



- ✓ Suspected joint infections with symptoms of pain, swelling, redness, reduced range of motion of joint
- ✓ History of prosthetic joint, arthroscopy, trauma, intra-articular injections, inflammatory joint disease, gout, diabetes
- ✓ Recent antibiotic therapy (PCR results less susceptible to being affected by antibiotic therapy)

## DERM-ID™

DERM SWAB • DERM TISSUE



- ✓ Skin disorders with atypical presentations
- ✓ Faster, improved diagnosis of fungal infections including dermatophytes and yeast
- ✓ Detect slow-growing bacteria such as anaerobic bacteria and mycobacteria, which are difficult to culture through standard methods

## NAIL-FUNGAL-ID™

SWAB • TISSUE • NAIL



- ✓ Tests for most common bacterial and fungal pathogens associated with webspace dermatitis
- ✓ Suspected fungal infection of integumentary system
- ✓ Need for more accurate diagnosis of infection prior to prescribing anti-fungal medications, which can be toxic with many adverse drug reactions

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The PCR Solution for Skin & Soft Tissue Infections

**Derm-ID™ can assist in:**



Skin disorders with  
**atypical presentations**



**Faster, improved diagnosis**  
of fungal infections including  
dermatophytes and yeast



**Detecting slow-growing bacteria** such as anaerobic  
bacteria and mycobacteria,  
which are difficult to culture  
through standard methods

**Economic Impact of Skin Infections:**

- ✓ Accurately detect common fungal pathogens such as Sporothrix or Trichophyton species where PCR has shown in some studies to **improve sensitivity** and specificity over fungal culture<sup>1</sup>
- ✓ Utilizing PCR to detect MRSA in skin and soft tissue infections can lead to **shorter durations of antibiotic therapy**. As a result, patients experience **less adverse drug reactions** and **drug interactions**<sup>2</sup>

**Standard Culture vs. Vikor Molecular-Based Pathogen Identification**

**Culture**

**qPCR**

Cumbersome

EASE OF COLLECTION

Simple (one swab collection)

Potential for contamination or "mixed flora."  
Extended time for incubation of anaerobes and fungi

DETECTION

Detects up to 49 antibiotic resistance genes. Rapid detection of fungi, anaerobes, and other fastidious microorganisms

3-14 days

TURNAROUND TIME

24-48 hours\*

Typically, only primary pathogens detected, sensitivity and specificity may vary

ACCURACY

-99% for all pathogens present, including detection of polymicrobial infections

Antibiotics can affect results

CURRENT ANTIBIOTIC TREATMENT

Less susceptible to antibiotics

\*from receipt of properly received specimen and completed requisition



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(1) Gustafson E, Bakotic W, Bennett L, Page L, McCarthy L. DNA-based detection for onychomycosis correlates better to histopathology than does fungal culture. *Dermatol Online J.* 2019 Jul 15;25(7):13030/qt5bc2z46g

(2) Bridwell MR, Bajaj S, Gress TW, Hambuchen MD, ClayTB. Impact of MRSA polymerase chain reaction (PCR) wound swabs on antibiotic de-escalation in skin and soft tissue infections. *Diagn Microbiol Infect Dis.* 2022 Jul;103(3):115722. doi: 10.1016/j.diagmicrobio.2022.115722. Epub 2022 May 4. PMID: 35605561.

The PCR Solution for Wound Management

### Wound-ID™ can assist in:



**Non-healing, chronic wounds,**  
cellulitis, abscesses, decubitus  
ulcers, diabetic foot ulcers,  
dermatitis



**Prior negative culture**  
(20-30% of pathogens may not  
grow in a culture due to biofilm  
formation. PCR is not limited  
by the phenotypic change of  
pathogens in biofilm.)



Recurrent wound with history of  
**MRSA** or **prior infection**

### Economic and Clinical Impact of Insufficient Wound Management

- ✓ Biofilms impede healing in up to 60% of chronic wounds and are extremely tolerant to multiple antimicrobials.<sup>1</sup>
- ✓ In nature, biofilms are typically made up of several microbial species. Common wound pathogens typically do not grow in normal culture conditions and culture-based techniques can underreport the diversity of these microorganisms.<sup>1</sup>
- ✓ Utilizing PCR to detect MRSA in skin and soft tissue infections can lead to shorter durations of antibiotic therapy. As a result, patients experience less adverse drug reactions and drug interactions.<sup>2</sup>

### Standard Culture vs. Vikor Molecular-Based Pathogen Identification

#### Culture

Cumbersome

Potential for contamination or "mixed flora."  
Extended time for incubation of anaerobes and fungi

3-14 days

Typically, only primary pathogens detected, sensitivity and specificity may vary

Antibiotics can affect results

#### qPCR

✓ Simple (one swab collection)

✓ Detects up to 49 antibiotic resistance genes. Rapid detection of fungi, anaerobes, and other fastidious microorganisms

✓ 24-48 hours\*

✓ ~99% for all pathogens present, including detection of polymicrobial infections

✓ Less susceptible to antibiotics

\*from receipt of properly received specimen and completed requisition



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[1] S. Darvishi, S. Tavakoli, M. Kharaziha, H. H. Girault, C. F. Kaminski, I. Mela, Angew. Chem. Int. Ed. 2022, 61, e202112218; Angew. Chem. 2022, 134, e202112218.

[2] Bridwell MR, Bajaj S, Gress TW, Hambuchen MD, Clay TB. Impact of MRSA polymerase chain reaction (PCR) wound swabs on antibiotic de-escalation in skin and soft tissue infections. Diagn Microbiol Infect Dis. 2022 Jul;103(3):115722. doi: 10.1016/j.diagmicrobio.2022.115722. Epub 2022 May 4. PMID: 35605561.

# NAIL-FUNGAL-ID™

The PCR Solution for Fungal Infections of the Skin and Nails

## Nail-Fungal-ID™ can assist in:



Testing for most common bacterial and fungal pathogens associated with webspace dermatitis



Suspected fungal infection of integumentary system



Need for more accurate diagnosis of infection prior to prescribing anti-fungal medications, which can be toxic with many adverse drug reactions

**The utilization of advanced molecular PCR technology has proven to be more sensitive and specific than culture results:**

- ✓ Nail-Fungal-ID can detect 29 fungal pathogens and 5 bacterial pathogens that are common on the foot and nail
- ✓ PCR can help rule out the multiple causes of webspace dermatitis which include erythrasma (*Corynebacterium minutissimum*), tinea pedis, candidal intertrigo, and bacterial co-infections
- ✓ Fungal PCR has demonstrated superior sensitivity and specificity to fungal culture with the additional benefit of speciation for prescribing appropriate anti-fungal therapy<sup>1</sup>

## Standard Culture vs. Vikor Molecular-Based Pathogen Identification

### Culture

Cumbersome

Potential for contamination or "mixed flora." Extended time for incubation of anaerobes and fungi

3-14 days

Typically, only primary pathogens detected, sensitivity and specificity may vary

Antibiotics can affect results

### qPCR

Simple (one swab collection)

Detects up to 49 antibiotic resistance genes. Rapid detection of fungi, anaerobes, and other fastidious microorganisms

24-48 hours\*

~99% for all pathogens present, including detection of polymicrobial infections

Less susceptible to antibiotics

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<sup>(1)</sup> Gustafson E, Bakotic W, Bennett L, Page L, McCarthy L. DNA-based detection for onychomycosis correlates better to histopathology than does fungal culture. Dermatol Online J. 2019 Jul 15;25(7):13030/qt5bc2z46g.

## Respira-ID™ can assist in:



**Acute respiratory infection symptoms** in patients at risk of progression to morbid sequelae or hospitalization:

Cough, fever, pain in throat, wheezing, nasal congestion, shortness of breath, malaise



**Recurrent or progressing upper or lower respiratory infections**



**Detecting co-infection** in the presence of a viral syndrome which can be missed with single pathogen point-of-care testing



**Avoiding delayed diagnosis** of immunocompromised patients which can lead to more serious illnesses such as CAP

## Economic Impact of Acute Respiratory Infections (ARIs)

- ✓ Acute respiratory illnesses (ARI) are the most common type of infectious disease and lead to over 25 million primary care visits and 9 million emergency department visits in the United States annually.<sup>1</sup>
- ✓ Influenza pandemics over the last century have shown the leading causes of death were concurrent or secondary bacterial co-infections.<sup>2</sup>
- ✓ Studies show most respiratory tract infections are caused by a combination of bacterial and/or viral pathogens, which can lead to disease severity.<sup>3</sup> Clinical manifestations of bacterial and viral infections are often similar and important to differentiate for the appropriate therapeutic treatment.

Elderly patients are more likely to be prescribed antibiotics when presenting with respiratory symptoms, which can lead to potential adverse drug reactions, drug interactions, and complications of underlying diseases.

## Standard Culture vs. Vikor Molecular-Based Pathogen Identification

### Culture

### qPCR

Cumbersome

EASE OF COLLECTION

Potential for contamination or "mixed flora." Extended time for incubation of anaerobes and fungi



Simple (one swab collection)

DETECTION



Detects up to 49 antibiotic resistance genes. Rapid detection of fungi, anaerobes, and other fastidious microorganisms

3-14 days

TURNAROUND TIME



24-48 hours\*

Typically, only primary pathogens detected, sensitivity and specificity may vary

ACCURACY



~99% for all pathogens present, including detection of polymicrobial infections

Antibiotics can affect results

CURRENT ANTIBIOTIC TREATMENT



Less susceptible to antibiotics

\*from receipt of properly received specimen and completed requisition



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(1) Stockwell MS, Reed C, Vargas CY, Wang L, Alba LR, Jia H, LaRussa P, Larson EL, Saiman L. Five-Year Community Surveillance Study for Acute Respiratory Infections Using Text Messaging: Findings From the MoSAIC Study. Clin Infect Dis. 2022 Sep 29;75(6):987-995. doi: 10.1093/cid/ciac027. PMID: 35037056; PMCID: PMC9383201.

(2) Gupta R.K., George R., Nguyen-Van-Tam J.S. Bacterial pneumonia and pandemic influenza planning. Emerg Infect Dis. 2008;14(8):1187-1192.

(3) Upadhyay P, Reddy J, Proctor T, Sorel O, Veereshlingam H, Gandhi M, Wang X, Singh V. Expanded PCR Panel Testing for Identification of Respiratory Pathogens and Coinfections in Influenza-like Illness. Diagnostics (Basel). 2023 Jun 9;13(12):2014. doi: 10.3390/diagnostics13122014. PMID: 37370910; PMCID: PMC10297358

## Vaginal-ID™ can assist in:

-  Testing for **STIs**, GBS, yeast, and other **gynecological infections**
-  Comprehensive offering of **bacterial vaginosis pathogens**
-  **Vaginitis:** Bacterial Vaginosis, vulvovaginal candidiasis, or Trichomonas vaginalis
  -  **Vaginal itching/discomfort, burning, discharge, odor, swelling, sores, painful urination**
-  **Pelvic inflammatory disease**
  -  **Lower abdominal pain, abnormal vaginal bleeding, urinary frequency, vaginal discharge**
-  **Sexually active women younger than 25 years old**
-  **Women 25 years and older with multiple sex partners**

# VAGINAL-ID™

The PCR Solution for Vaginal Infections

## Significance of Accurately Diagnosing Vaginitis

-  BV is important to accurately diagnose as it increases the risk of post-operative pelvic infections, complications during pregnancy, STI acquisition, and recurrence of BV [\(CDC, 2022\)](#).
-  PCR's ability to differentiate *Candida species* that commonly cause vaginal yeast infections is significant when prescribing the appropriate treatment. Non-albicans yeast, such as *C. glabrata* and *C. krusei*, are known to be less responsive or even resistant to common antifungal agents [\(CDC, 2022\)](#).

## Standard Culture vs. Vikor Molecular-Based Pathogen Identification

Culture	qPCR
 <b>Cumbersome</b>	 <b>Simple (one swab collection)</b>
 <b>Potential for contamination or "mixed flora."</b> <b>Extended time for incubation of anaerobes and fungi</b>	 <b>Detects up to 49 antibiotic resistance genes. Rapid detection of fungi, anaerobes, and other fastidious microorganisms</b>
 <b>3-14 days</b>	 <b>24-48 hours*</b>
 <b>Typically, only primary pathogens detected, sensitivity and specificity may vary</b>	 <b>~99% for all pathogens present, including detection of polymicrobial infections</b>
 <b>Antibiotics can affect results</b>	 <b>Less susceptible to antibiotics</b>

\*from receipt of properly received specimen and completed requisition



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**Joint-ID™ can assist in:**

Suspected **joint infections** with symptoms of pain, swelling, redness, reduced range of motion of joint



History of **prosthetic joint, arthroscopy, trauma, intra-articular injections, inflammatory joint disease, gout, diabetes**



**Recent antibiotic therapy** (PCR results less susceptible to being affected by antibiotic therapy)

**Economic Impact of Joint Infections:**

- ✓ Joint infections are on the rise and associated with **significant morbidity and mortality rates** <sup>1</sup>
- ✓ **Prompt identification of causative pathogens is essential for both native and prosthetic joint infections.** Septic arthritis in native joints can result in rapid destruction of the joint if not treated urgently, and ongoing biofilm formation on prosthetic joints significantly limits antibiotic options; often resulting in removal of the implant <sup>2,3</sup>
- ✓ Joint infections are commonly caused by anaerobic bacteria that can take weeks to grow with standard culture methods. As a result, patients are empirically prescribed antibiotics that may not **appropriately treat the infection** and further contribute to antimicrobial resistance

**Standard Culture vs. Vikor Molecular-Based Pathogen Identification****Culture**

Cumbersome

Potential for contamination or "mixed flora." Extended time for incubation of anaerobes and fungi

3-14 days

Typically, only primary pathogens detected, sensitivity and specificity may vary

Antibiotics can affect results

**EASE OF COLLECTION****DETECTION****TURNAROUND TIME****ACCURACY****CURRENT ANTIBIOTIC TREATMENT****qPCR**

Simple (one swab collection)

Detects up to 49 antibiotic resistance genes. Rapid detection of fungi, anaerobes, and other fastidious microorganisms

24-48 hours\*

~99% for all pathogens present, including detection of polymicrobial infections

Less susceptible to antibiotics

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(1) Tande A and Patel R. Clin Microbiol Rev. 2014 Apr; 27(2): 302-345.

(2) Mathews, C. J., Weston, V. C., Jones, A., Field, M., and Coakley, G.: Bacterial septic arthritis in adults. Lancet. 375, 846-855. [https://doi.org/10.1016/S0140-6736\(09\)61595-6](https://doi.org/10.1016/S0140-6736(09)61595-6), 2010.

(3) Löwik, C. A. M., Parvizi, J., Jutte, P. C., Zijlstra, W. P., Knobben, B. A. S., Xu, C., Goswami, K., Belden, K. A., Souza, R., Carvalho, A., Martínez-Pastor, J. C., Soriano, A., and Wouthuyzen-Bakker, M.: Debridement, Antibiotics, and Implant Retention Is a Viable Treatment Option for Early Periprosthetic Joint Infection Presenting More Than 4 Weeks After Index Arthroplasty. Clin. Infect. Dis., 71, 630-636. <https://doi.org/10.1093/cid/ciz867>, 2020.

# SURGICAL-ID™

The PCR solution for Surgical Site Infections

## Surgical-ID™ may be utilized for:

-  **Surgical site infections with symptoms of infection in the post-operative period** (redness, pain, swelling, drainage around incision site, fever) **or during a procedure if the provider suspects there is an infection**
-  **Poor healing or disruption of surgical incision site**
-  **Infections from medical devices/implants**

## Economic Impact of Surgical Site Infections

- ✓ Although infrequent, the estimated costs of surgical site infections can range from \$10,443 to \$25,546 per infection (Berrios-Torres et al., 2017)
- ✓ Antimicrobial resistance in SSIs can result in increased morbidity, mortality, and costs of care
- ✓ Presence of MRSA in a surgical incision can be associated with a 12-fold increase in 90-day post-operative mortality compared with uninfected patients. The median cost of care for these patients can be up to \$40,000 higher (Cosgrove, 2006)

## Standard Culture vs. Vikor Molecular-Based Pathogen Identification

Culture	qPCR
Cumbersome	Simple (one swab collection)
Potential for contamination or "mixed flora." Extended time for incubation of anaerobes and fungi	Detects up to 49 antibiotic resistance genes. Rapid detection of fungi, anaerobes, and other fastidious microorganisms
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Typically, only primary pathogens detected, sensitivity and specificity may vary	-99% for all pathogens present, including detection of polymicrobial infections
Antibiotics can affect results	Less susceptible to antibiotics

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Cosgrove SE. The relationship between antimicrobial resistance and patient outcomes: mortality, length of hospital stay, and health care costs. Clin Infect Dis. 2006;42 (Suppl 2):S82-89. PUBMED:16355321

Berrios-Torres SI, Umscheid CA, Bratzler DW, et al. Centers for Disease Control and Prevention Guideline for the Prevention of Surgical Site Infection. 2017. JAMA Surg. 2017;152(8):784-791. doi:10.1001/jamasurg.2017.0904

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