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# Sexually Transmitted Diseases (STDs)

Reagents for Assay Development

ISO Certified 13485:2016

**meridian** BIOSCIENCE®  
LIFE DISCOVERED. LIFE DIAGNOSED.

[www.meridianbioscience.com/lifescience](http://www.meridianbioscience.com/lifescience)



# Company Overview



## Extensive Capabilities & Services

### Molecular Reagents

qPCR | RT-qPCR | LAMP

#### ENZYMES

- Hot-Start Taq technologies- chemical, antibody, aptamer
- Lyo & Air-Dryable enzymes (glycerol free) Taq, Bst, RTase
- Thermostable MMLV RT

#### MASTER MIXES

- Lyo & Air-Dryable formats
- Inhibitor-tolerant mixes for stool, sputum, saliva, blood, plant, water.
- For multiplexing, GC-rich templates, and assay formats requiring high concentrations

#### NUCLEOTIDES

- dNTPs, Na or Li salts
- Ultra high purity, >99%

### Immuno Reagents

Antigens | Antibodies | Blockers

#### VIRUS MANUFACTURING

- Live or inactivated
- Proprietary Ag purification

#### RECOMBINANT PROTEINS

- *E. coli*, *P. pastoris*, *S. cerevisiae*, Sf9, Drosophila, Mammalian (CHO, HEK293)
- 10- 2000L bioreactors

#### ANTIBODIES - MAbs/PABs

- Hundreds of antibodies made in multi-gram scale
- Multi-Kilograms of MIgG / year
- Hundreds of liters of GxhIgG
- Ascites production (100K+ Mice)





## Commercial scale manufacturing of immuno raw material. Trusted by largest Diagnostic manufacturers in the world.

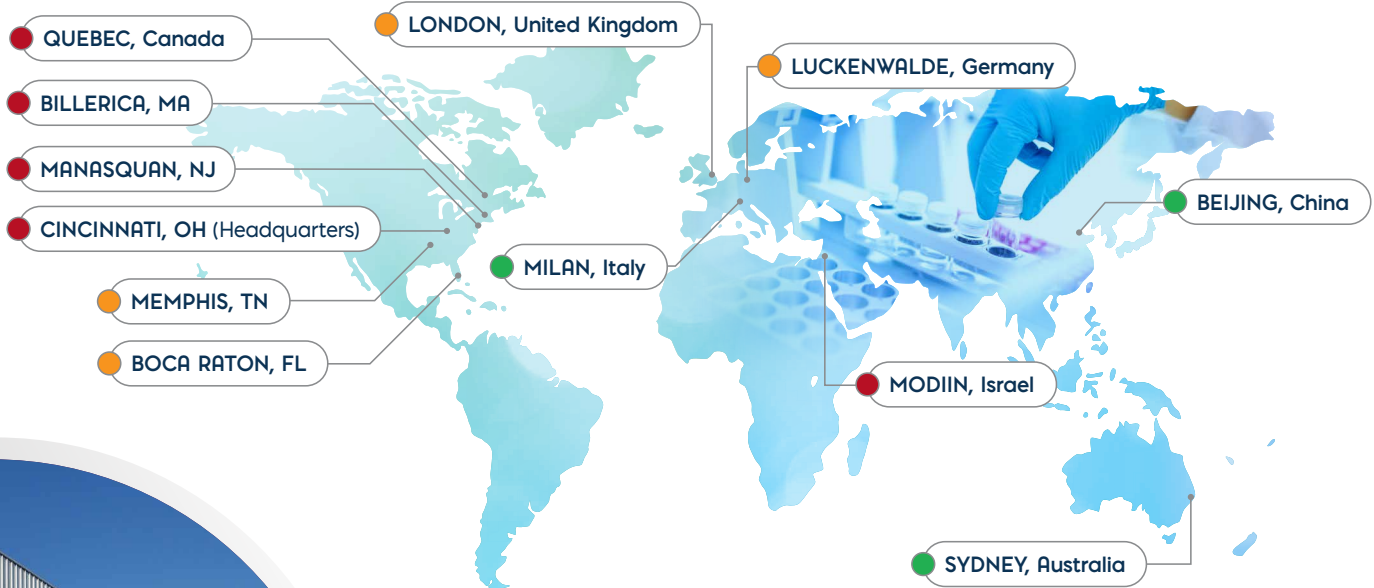
Meridian has been providing innovative life science solutions and building trusted partnerships for over 45 years. Meridian's focus is to offer complete solutions for the development of molecular and immunological assays.

- Full line of immunoassay reagents, including antigens, antibodies and blockers
- Large scale production of antigens, antibodies, blockers, enzymes, nucleotides and master mixes
- Technical support with assay development experience
- Dedicated R&D and manufacturing teams
- Robust and mature Quality System



ISO Certified 13485:2016

## Global presence



● Diagnostic Manufacturing | ● Life Science Manufacturing | ● Sales & Warehouse

### MERIDIAN BIOSCIENCE, INC.

Founded in 1977 | 800+ Employees

Headquartered in Cincinnati, OH | Presence in 70+ Countries.





# Company Overview

## Antigens & Antibodies

### INFECTIOUS DISEASE EXPERTISE



#### Tropical

- Zika
- Dengue 1, 2, 3, 4
- Chikungunya
- Malaria
- Chagas
- Leishmaniasis
- Leptospirosis
- Newcastle Disease
- Yellow Fever
- Nipah Virus
- JEV
- Monkeypox
- Lassa
- *Tsutsugamushi*
- Lyme



#### ToRCH & Childhood

- Toxo
- Rubella
- CMV
- HSV-1,2
- Rubeola
- EBV
- Mumps
- Coxsackie
- Rotavirus
- RSV
- Parvo B19
- VZV



#### Viral Hepatitis

- HAV
- HBV
- HCV
- HDV
- HEV



#### STD

- HSV-1, 2
- HIV-1, 2
- HPV
- Syphilis
- Chlamydia
- Neisseria



#### Gastro

- *H. Pylori*
- *C. Difficile*
- Norovirus
- Adenovirus
- Rotavirus
- Cryptosporidium
- Campylobacter
- *E. Coli*
- Salmonella
- *G. Lambia*
- Astrovirus



#### Respiratory

- SARS-CoV-2
- *M. Pneumoniae*
- *C. Pneumoniae*
- Influenza A, B
- Parainfluenza
- *L. Pneumophila*
- RSV
- *M. Tuberculosis*
- Streptococcus
- Staphylococcus
- Adenovirus





## Cardiac

- Troponin I, T
- Myoglobin
- BNP
- NT-proBNP
- CRP
- PCT
- CK-MB
- D-Dimer
- Cystatin-C
- Galectin-3
- Vitamin D
- Apo A, B, E
- NSE
- FABP
- SAH
- MPO
- Fibrinogen
- EGF
- Lp-PLA2
- PAPP-A



## Hormones

- LH, FSH, hCG,
- hGH, AMH
- Cortisol
- Estradiol
- Insulin, C-peptide
- Prolactin
- Progesterone
- PTH
- PAPP-A
- TSH, T3, T4, ACTH
- Thyroglobulin



## Allergens

- Cat & Dog Allergen
- Horse Allergen
- Dust Mite
- *Alternaria alternate*
- Timothy Grass
- *Platanus acerifolia*
- Mugwort



## Cancer

- CA125
- CA15-3
- CA19-9
- CA72-4
- CA50
- CA242
- Cyfra 21-1
- CEA
- Thyroglobulin
- erbB-2/HER2
- AFP
- EGFR
- HE4
- NSE
- PMA
- PAP
- PSA
- PSMA
- S-100
- PIVKA II
- B2M



## Autoimmune

- Jo-1
- PCNA
- pANCA
- cANCA
- Sm Ag
- dsDNA
- La(SSA)
- Ro(SSA)
- Histone
- GMB
- C1q
- Scl-70
- SS-A
- BS-Gly-1
- Cathepsin G
- Calprotectin



## Veterinary

- ASFV
- Avian Influenza
- Borrelia
- *Brucella abortus*
- Canine Distemper
- Feline Immunodeficiency
- Feline Leukemia
- Foot-and-Mouth
- Canine Heartworm
- Infectious Bursal Disease
- Marek Disease
- Newcastle Disease
- Canine Parvovirus
- Rabies Virus
- Serum Amyloid A (SAA)
- *Trichomonas foetus*
- Nipah
- Transmissible Gastroenteritis



## Microbial Detection

- Legionella
- Salmonella
- Cryptosporidium
- *G. Lambia*
- *C. Jejuni*
- *E. Coli*
- *B. Anthracis*
- Clostridium
- Listeria
- Streptococcus
- Staphylococcus



## Drug of Abuse

- Amphetamine
- Barbitol
- Benzodiazepine
- Buprenorphine
- Cocaine
- Cotinine
- EDDP
- Fentanyl
- Ketamine
- K2
- MDMA (Ecstasy)
- Methadone
- Methamphetamine
- Morphine
- Norketamine
- Opium
- Oxycodone
- PCP
- Phenobarbital
- Propoxyphene
- THC



## Immunoglobulins/Blockers

- Animal-free Blockers
- TRU Block™ & IgM Diluent
- Animal IgGs – Bovine, Chicken, Goat, Mouse, Rabbit, Sheep
- Human IgA, IgG, IgM, IgE
- Kappa Light chain
- Lambda Light chain
- Goat Anti-Human IgG, IgM, IgA
- Goat Anti-Mouse IgG

# STD Diagnostic Testing Overview

Sexually transmitted diseases (STDs) are a major global cause of acute illness, infertility, long-term disability and death, with serious medical and psychological consequences to millions of men, women and infants. Today, over 30 bacterial, viral and parasitic pathogens have been identified that can be transmitted sexually.

STDs are generally acquired by sexual contact specifically through blood, semen, or vaginal and other bodily fluids. Many STDs (chlamydia, gonorrhea, hepatitis, HIV, papillomavirus, herpes and syphilis) can also be transmitted non-sexually such as from mother to infant during pregnancy or childbirth, or through blood transfusions, or shared needles. Many STDs cause no symptoms, therefore an infection may go unnoticed until complications occur. Worldwide, more than 1 million people acquire a STD every day which has a profound impact on sexual and reproductive health globally. STDs rank among the top five disease categories for which adults seek health care.

There are more than 30 known pathogens that cause STDs which include bacteria (gonorrhea, syphilis, chlamydia), parasites (trichomoniasis), and viruses (HPV, herpes, HIV). Each year, an estimated 500 million people become infected with one of the four “classic” STDs (chlamydia, gonorrhea, syphilis and trichomoniasis). In addition, more than 530 million people are infected with genital herpes (HSV-2) and more than 290 million women have a human papillomavirus (HPV) infection.

One of the major concerns regarding the control of STDs is that the majority of infections remain asymptomatic and infected individuals can unknowingly pass on the infection for several years. In addition, without proper diagnosis and treatment, STDs can have serious consequences beyond the immediate impact of the infection itself, such as:

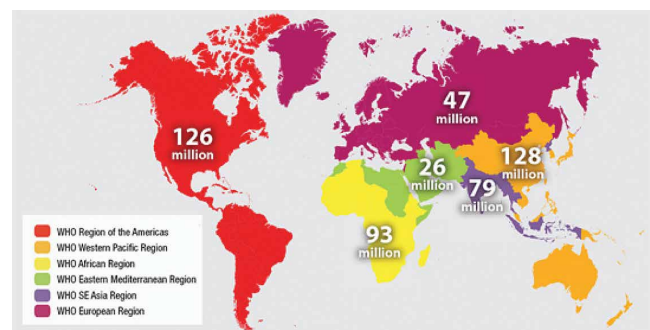
- An increased risk (more than 3x) of acquiring HIV
- Stillbirth, neonatal death, low-birth-weight and prematurity, sepsis, pneumonia, neonatal conjunctivitis, and congenital deformities in infected pregnant woman
- Cervical cancer in women
- Infertility

## Sexually Transmitted Disease (STD) Diagnostic Assays

Early and rapid diagnosis of STDs increases the chance to limit effects of the disease. Since many people infected by an STD have little or no symptoms of their infection, they put others (including unborn children for pregnant mothers) at risk.

There are five main methods for the diagnosis of STDs which include (1) culture (2) microscopy (3) detection of antigens or enzymes (4) detection of nucleic acid sequences (NAAT) and (5) detection of antibodies. Of the five approaches, the assays that provide the most rapid diagnosis have gained the most acceptance. As a result, this has largely limited the traditional use of culture and increased development efforts on rapid tests using microscopy, detection of antibodies by rapid serologic methods, and specific detection of cellular components, including antigens, enzymes, or nucleic acid sequences (especially with amplification).

ESTIMATED NEW CASES OF CURABLE SEXUALLY TRANSMITTED INFECTIONS (GONORRHEA, CHLAMYDIA, SYPHILIS AND TRICHOMONIASIS) BY WHO REGION, 2008





# Catalog Guide

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# HIV-1 & HIV-2

## Antigen & Antibody Detection Assays

Human immunodeficiency virus (HIV) is a lentivirus that causes acquired immunodeficiency syndrome (AIDS), a condition that leads to progressive failure of the immune system. HIV is a well-documented progressive disease and if left untreated, it is almost always fatal.

There are two major types of HIV, type 1 (HIV-1) and type 2 (HIV-2). HIV-1 viruses are further divided into groups M, N, O, P. Group M viruses are the most common group and are predominately responsible for the AIDS pandemic. Group M is further subdivided into clades based on their genetic sequences, which tend to concentrate within specific geographic regions. The clade that an individual becomes infected with can be a major factor in the rate of progression to AIDS; specifically clades C, D and G are 8 times more likely to develop AIDS.

HIV-2 has been found to be less pathogenic than HIV-1 and it is not widely seen outside of West Africa. This strain is also divided into groups A to H. Groups A and B are epidemic. HIV-2 is less easily transmitted than HIV-1 and the time between infection and symptoms tends to be longer. Despite its relative geographic confinement, HIV-2 should be considered in all patients exhibiting symptoms of HIV.

HIV is divided into three main stages:

**Acute Retroviral Syndrome:** Early symptoms of HIV are defined as acute retroviral syndrome and they appear 3-6 weeks after infection and can easily be confused with the symptoms of the flu or other milder diseases. As a result, most infections remain undiagnosed until they progress to more advanced stages.

**Clinical Latency (inactivity or dormancy):** This period is sometimes called asymptomatic HIV infection or chronic HIV infection. During this phase HIV is active but reproduces at very low levels. People who are on antiretroviral therapy may live with clinical latency for several decades. Toward the middle and end of this period, the viral load begins to rise and the CD4+ cell count begins to drop. The World Health Organization (WHO) sub-classifies this period into three stages based on the CD4+ cell count of the individual:

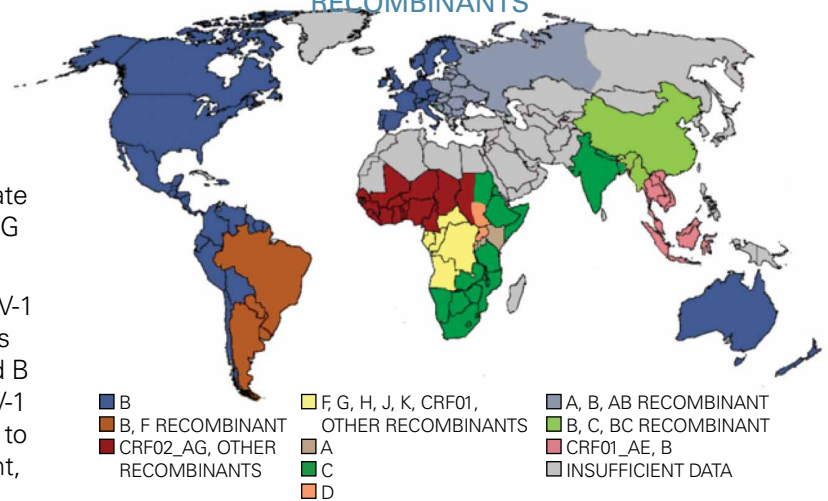
**STAGE 1:** the CD4+ cell count is at least 500 cells per microliter

**STAGE 2:** the CD4+ cell count is 350 to 499

**STAGE 3 (advanced HIV disease, or AHD):** The CD4+ cell count is 200 to 349

**AIDS (Acquired Immunodeficiency Syndrome):** This is the stage of infection that occurs when the immune system is badly damaged and an infected individual become vulnerable to opportunistic illnesses. The CD4+ cell count is less than 200 or the percent of CD4+ cells is less than 15% of all lymphocytes. Without treatment, people who are diagnosed with AIDS typically survive about 3 years. Once a dangerous opportunistic illness is acquired, life expectancy without treatment falls to about 1 year.

## GLOBAL DISTRIBUTION AND GENETIC DIVERSITY OF THE NINE MAJOR HIV-1 CLADES AND RECOMBINANTS



Source: pbs.org





## Diagnosis

Laboratory diagnosis is the only way to confirm an HIV infection and there are specific serologic markers that can be detected in the early course of an infection.

**HIV RNA:** detectable by current molecular methods at about 11 days from the time of HIV infection

**HIV P24 ANTIGEN:** detectable 16 days from the time of infection

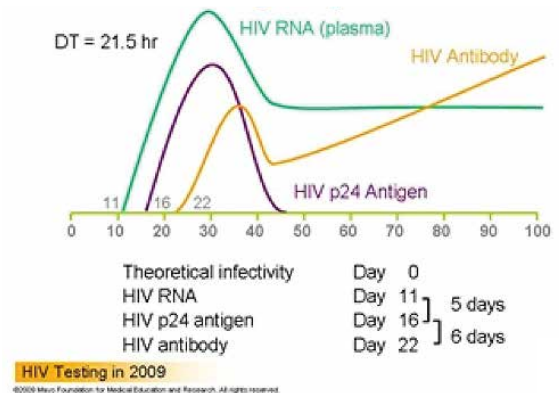
**HIV ANTIBODIES:** detectable 22 days from the time of infection

During the early infection stage (acute retroviral syndrome) the flu-like symptoms are accompanied by a burst of viral replication that can be detected in the blood. The detection of p24 antigen (viral capsid protein) is directly correlated to the amount of virus (viral load) circulating in the infected individual. Antibodies against specific HIV proteins and glycoproteins (e.g. p24, gp41, gp120) are produced between 2-8 weeks after infection and remain detectable in the blood thereafter.

The screening test most widely used to detect exposure to HIV is the "HIV Antibody Test". The first test was approved in 1985 by the FDA and it still remains one of the WHO recommended HIV diagnostics. Advances in technologies and critical reagents have enabled the development of new generation HIV Antibody Tests, which are able to detect an infected individual earlier and with greater accuracy. The 4th generation HIV Antibody Test is capable of diagnosing an HIV infection 3-4 weeks after transmission by simultaneously detecting both HIV antibody and p24 antigen. In addition, many of these tests can also distinguish between acute and established HIV infections, as well as detect antibodies to HIV groups M and O, and HIV-2.

The commercial HIV diagnostic testing market has expanded to include several testing formats such as Western blot, immunofluorescence (IFA), and lateral flow as well as various sample types such as saliva, urine, and nucleic acids. Regardless of the type of screening test used, a positive result requires follow up with a second test to confirm a diagnosis of HIV.

### HIV MARKERS DURING EARLY INFECTION



Source: [mayomedicallaboratories.com](http://mayomedicallaboratories.com)

## Reagents for serology testing

### HIV-1 p24 Antibodies

An early marker of infectivity. The detection of p24 antigen directly correlates to the amount of virus in an infected individual.

|      |                |                                                                                        |                                                                                |
|------|----------------|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|
| PAIR | <b>C01653M</b> | <b>MAB to HIV-1 p24</b><br>• Capture or Detection antibody                             | Paired MAbs for Sandwich ELISA, Lateral Flow and CLIA Antigen Detection Assays |
|      | <b>C65690M</b> | <b>MAB to HIV-1 p24</b><br>• Capture or Detection antibody                             |                                                                                |
| PAIR | <b>C01653M</b> | <b>MAB to HIV-1 p24</b><br>• Isotype: IgG1<br>• Capture antibody or Detection Antibody | Paired MAbs for Sandwich ELISA and Lateral Flow Antigen Detection Assays       |
|      | <b>C01655M</b> | <b>MAB to HIV-1 p24</b><br>• Isotype: IgG1<br>• Capture antibody or Detection Antibody |                                                                                |

# HIV-1 & HIV-2 | Continued

|                |                                                                                                           |                                                                                                     |                                                                          |
|----------------|-----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|
| PAIR           | <b>MAB to HIV-1 p24</b>                                                                                   |                                                                                                     | Paired MABs for Sandwich ELISA and Lateral Flow Antigen Detection Assays |
|                | <b>BN1045</b>                                                                                             | <ul style="list-style-type: none"> <li>• Isotype IgG1, kappa</li> <li>• Capture antibody</li> </ul> |                                                                          |
| <b>BN1046</b>  | <ul style="list-style-type: none"> <li>• Isotype IgG1, kappa</li> <li>• Detection antibody</li> </ul>     |                                                                                                     |                                                                          |
| PAIR           | <b>MAB to HIV-1 p24</b>                                                                                   |                                                                                                     |                                                                          |
|                | <b>C01653M</b>                                                                                            | <ul style="list-style-type: none"> <li>• Isotype: IgG1</li> <li>• Capture antibody</li> </ul>       |                                                                          |
| <b>C01655M</b> | <ul style="list-style-type: none"> <li>• Detection antibody</li> </ul>                                    |                                                                                                     |                                                                          |
| PAIR           | <b>MAB to HIV-1 p24</b>                                                                                   |                                                                                                     |                                                                          |
|                | <b>C01655M</b>                                                                                            | <ul style="list-style-type: none"> <li>• Capture or Detection antibody</li> </ul>                   |                                                                          |
| <b>C01656M</b> | <ul style="list-style-type: none"> <li>• Isotype IgG1</li> <li>• Capture or Detection antibody</li> </ul> |                                                                                                     |                                                                          |
| PAIR           | <b>MAB to HIV-1 p24</b>                                                                                   |                                                                                                     |                                                                          |
|                | <b>C01656M</b>                                                                                            | <ul style="list-style-type: none"> <li>• Capture or Detection antibody</li> </ul>                   |                                                                          |
| <b>C65690M</b> | <ul style="list-style-type: none"> <li>• Capture or Detection antibody</li> </ul>                         |                                                                                                     |                                                                          |
| PAIR           | <b>MAB to HIV-1 p24</b>                                                                                   |                                                                                                     |                                                                          |
|                | <b>C01657M</b>                                                                                            | <ul style="list-style-type: none"> <li>• Capture or Detection antibody</li> </ul>                   |                                                                          |
| <b>C65690M</b> | <ul style="list-style-type: none"> <li>• Capture or Detection antibody</li> </ul>                         |                                                                                                     |                                                                          |

## HIV Recombinant Antigens

HIV p24, gp41, and gp36 are markers of an HIV infection. They are produced 2-8 weeks after initial exposure and remain detectable in the blood thereafter.

|               |                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                    |                                                             |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|
| PAIR          | <b>HIV-1 p24 Recombinant Antigen</b>                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                    | Suitable for ELISA & Lateral Flow Antibody Detection Assays |
|               | <b>BN1018</b>                                                                                                                                                                                                                                                                                 | <ul style="list-style-type: none"> <li>• Represents the entire protein of 231 a.a., strain Group M, Subtype B (JRCSF)</li> <li>• Produced in <i>E. coli</i></li> <li>• Molecular weight of 22.9 kDa</li> <li>• Buffer: 50 mM Carbonate Buffered, pH 9.6</li> </ul> |                                                             |
| PAIR          | <b>HIV-1 p24 Recombinant Antigen</b>                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                    | Suitable for ELISA Antibody Detection Assays                |
|               | <b>VTI340</b>                                                                                                                                                                                                                                                                                 | <ul style="list-style-type: none"> <li>• Represents the entire protein of 231 a.a. (Strain HxB2)</li> <li>• Produced in <i>Pichia pastoris</i></li> <li>• Buffer: 0.2 M Sodium Phosphate, pH 7.0 ± 0.2</li> </ul>                                                  |                                                             |
| <b>R65908</b> | <ul style="list-style-type: none"> <li>• Represents HIV-1 gp41 protein</li> <li>• Produced in <i>E. coli</i>, contains a β-gal fusion partner</li> <li>• Molecular weight of 146 kDa</li> <li>• Buffer: 10 mM Na<sub>2</sub>CO<sub>3</sub>, 10 mM EDTA, 14 mM β-ME, 0.05% Tween 20</li> </ul> |                                                                                                                                                                                                                                                                    |                                                             |

|                                                 |                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                         |
|-------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>HIV-1 Recombinant Antigen</b>                |                                                                                                                                                                                                                                                                                                                          | Suitable for ELISA Antibody Detection Assays                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                         |
| <b>R18550</b>                                   | <ul style="list-style-type: none"> <li>• Represents the C-terminus of gp120 and most of gp41</li> <li>• Produced in <i>E. coli</i>, no fusion partner</li> <li>• Molecular weight of 27.3 kDa</li> <li>• Buffer: 50 mM Tris, pH 8.0, containing 0.1% SDS, 5 mM DTT, 2.5 mM EDTA</li> </ul>                               |                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                         |
| <b>HIV-1 gp41 Recombinant Antigen, Type "O"</b> |                                                                                                                                                                                                                                                                                                                          | Suitable for ELISA and Lateral Flow Antibody Detection Assays                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                         |
| <b>R01454</b>                                   | <ul style="list-style-type: none"> <li>• Represents HIV-1 gp41, Type "O" protein</li> <li>• Produced in <i>E. coli</i>, contains a <math>\beta</math>-gal fusion partner</li> <li>• Reacts with human HIV type O positive serum</li> <li>• Buffer: 1.5 M Urea, 25 mM Tris-HCl, pH 8.0 containing 50% glycerol</li> </ul> |                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                         |
| <b>PAIR</b>                                     | <b>HIV-1 gp41 Recombinant Antigen, Type "O"</b>                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                         |
|                                                 | <b>BN1019</b>                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                       | <ul style="list-style-type: none"> <li>• Represents HIV-1 gp41, Type "O" protein (Cameroon)</li> <li>• Produced in <i>E. coli</i></li> <li>• Molecular weight of 30.0 kDa</li> <li>• Buffer: 50 mM Carbonate Buffered, pH 9.6</li> <li>• Capture antigen</li> <li>• Antibody also self-pairs</li> </ul> |
|                                                 | <b>BN1023</b>                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                       | <ul style="list-style-type: none"> <li>• Represents HIV-1 gp41, Type "O" protein (Cameroon)</li> <li>• Produced in <i>E. coli</i></li> <li>• Molecular weight of 32.9 kDa</li> <li>• Buffer: v Carbonate Buffered, pH 9.6</li> <li>• Detection antibody</li> </ul>                                      |
| <b>PAIR</b>                                     | <b>HIV-1 gp41 Recombinant Antigen, Type "M"</b>                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                         |
|                                                 | <b>BN1020</b>                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                       | <ul style="list-style-type: none"> <li>• Represents HIV-1 gp41, Type "M" protein, Subtype B (BH10)</li> <li>• Produced in <i>E. coli</i></li> <li>• Molecular weight of 29.3 kDa</li> <li>• Buffer: 50 mM Carbonate Buffered, pH 9.6</li> <li>• Capture antigen</li> </ul>                              |
|                                                 | <b>BN1022</b>                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                       | <ul style="list-style-type: none"> <li>• Represents HIV-1 gp41, Type "M" protein, Subtype C, N-term His-Tag</li> <li>• Produced in <i>E. coli</i></li> <li>• Molecular weight of 27.4 kDa</li> <li>• Buffer: 50 mM Carbonate Buffered, pH 9.6</li> <li>• Detection antigen</li> </ul>                   |
| <b>PAIR</b>                                     | <b>HIV-1 gp41 Recombinant Antigen, Type "M"</b>                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                         |
|                                                 | <b>BN1024</b>                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                       | <ul style="list-style-type: none"> <li>• Represents HIV-1 gp41, Type "M" protein, Subtype B (JRCSF)</li> <li>• Produced in <i>E. coli</i></li> <li>• Molecular weight of 30.2 kDa</li> <li>• Buffer: 50 mM Carbonate Buffered, pH 9.6</li> <li>• Capture antigen</li> </ul>                             |
|                                                 | <b>BN1022</b>                                                                                                                                                                                                                                                                                                            | <ul style="list-style-type: none"> <li>• Represents HIV-1 gp41, Type "M" protein, Subtype C, N-term His-Tag</li> <li>• Produced in <i>E. coli</i></li> <li>• Molecular weight of 27.4 kDa</li> <li>• Buffer: 50 mM Carbonate Buffered, pH 9.6</li> <li>• Detection antigen</li> </ul> |                                                                                                                                                                                                                                                                                                         |



# HIV-1 & HIV-2 | Continued

|      |                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                               |
|------|--------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|
| PAIR | <b>HIV-1 gp41 Recombinant Antigen, Type "M"</b>        |                                                                                                                                                                                                                                                                                                                                                                                                                            | Suitable for ELISA and Lateral Flow Antibody Detection Assays |
|      | <b>BN1030</b>                                          | <ul style="list-style-type: none"> <li>• Represents HIV-1 gp41, Type "M" protein, Subtype B (JRCSF), N-term His-Tag</li> <li>• Produced in <i>E. coli</i></li> <li>• Molecular weight of 31.3 kDa</li> <li>• Buffer: 50 mM Carbonate Buffered, pH 9.6</li> <li>• Capture antigen</li> </ul>                                                                                                                                |                                                               |
|      | <b>BN1022</b>                                          | <ul style="list-style-type: none"> <li>• Represents HIV-1 gp41, Type "M" protein, Subtype C, N-term His-Tag</li> <li>• Produced in <i>E. coli</i></li> <li>• Molecular weight of 27.4 kDa</li> <li>• Buffer: 50 mM Carbonate Buffered, pH 9.6</li> <li>• Detection antigen</li> </ul>                                                                                                                                      |                                                               |
| PAIR | <b>HIV gp120 and gp41 Recombinant Chimeric Antigen</b> |                                                                                                                                                                                                                                                                                                                                                                                                                            | Suitable for Lateral Flow and ELISA Antibody Detection Assays |
|      | <b>R01625</b>                                          | <ul style="list-style-type: none"> <li>• Represents a.a. 480-620</li> <li>• Produced in <i>E. coli</i></li> <li>• Buffer 20 mM Phosphate Buffer, 0.1% Sodium Dodecyl Sulfate, pH 7.4</li> <li>• Capture antigen</li> </ul>                                                                                                                                                                                                 |                                                               |
|      | <b>R01626</b>                                          | <ul style="list-style-type: none"> <li>• Represents a.a. 485-631</li> <li>• Produced in <i>E. coli</i></li> <li>• Buffer 20 mM Phosphate Buffer, 0.1% Sodium Dodecyl Sulfate, pH 7.4</li> <li>• Detection antigen</li> </ul>                                                                                                                                                                                               |                                                               |
| PAIR | <b>HIV gp120 and gp41 Recombinant Chimeric Antigen</b> |                                                                                                                                                                                                                                                                                                                                                                                                                            | Suitable for Lateral Flow and ELISA Antibody Detection Assays |
|      | <b>R01631</b>                                          | <ul style="list-style-type: none"> <li>• Represents a.a. 480-620</li> <li>• Produced in <i>E. coli</i></li> <li>• Buffer Tris-HCl Buffer, pH 8.5, Ethylenediaminetetraacetic (EDTA)</li> <li>• Capture antigen</li> </ul>                                                                                                                                                                                                  |                                                               |
|      | <b>R01626</b>                                          | <ul style="list-style-type: none"> <li>• Detection antigen</li> </ul>                                                                                                                                                                                                                                                                                                                                                      |                                                               |
| PAIR | <b>HIV-2 gp36 Recombinant Antigen</b>                  |                                                                                                                                                                                                                                                                                                                                                                                                                            | Suitable for ELISA Antibody Detection Assays                  |
|      | <b>VT1360</b>                                          | <ul style="list-style-type: none"> <li>• Represents the ecto-domain of gp36</li> <li>• Produced in <i>Pichia pastoris</i>, contains a 6-His tag</li> <li>• Buffer: 6 M Urea, 0.02 M Tris-HCl, 0.5 M NaCl, pH 7.0 to 8.0 at room temperature</li> </ul>                                                                                                                                                                     |                                                               |
|      | <b>R65911</b>                                          | <ul style="list-style-type: none"> <li>• Represents the HIV-2 gp36 protein</li> <li>• Produced in <i>E. coli</i>, contains a <math>\beta</math>-gal fusion partner</li> <li>• Molecular weight of 148 kDa</li> <li>• Buffer: 10 mM Na<sub>2</sub>CO<sub>3</sub>, 10 mM EDTA, 14 mM <math>\beta</math>-ME, 0.05% Tween 20</li> </ul>                                                                                        |                                                               |
|      | <b>R8A114</b>                                          | <ul style="list-style-type: none"> <li>• Represents HIV-2 gp36 protein, a.a. 390-702</li> <li>• Produced in <i>E. coli</i>, contains a <math>\beta</math>-gal fusion partner at the N-terminus</li> <li>• Molecular weight of 34 kDa with a 114 kDa <math>\beta</math>-gal tag</li> <li>• Buffer: 0.01 M Na<sub>2</sub>CO<sub>3</sub>; 0.01 M Na<sub>3</sub>EDTA, 0.014 M <math>\beta</math>-ME, 0.05% Tween 20</li> </ul> |                                                               |

PAIR

**HIV-2 gp36 Recombinant Antigen**

- BN1021**
- Represents HIV-2 gp36, Subtype A (ST)
  - Produced in *E. coli*
  - Molecular weight of 29.3 kDa
  - Buffer: 50 mM Carbonate Buffered, pH 9.6
  - Capture antigen
- BN1025**
- Represents HIV-2 gp36, Subtype A (ST)
  - Produced in *E. coli*
  - Molecular weight of 30.5 kDa
  - Buffer: 50 mM Carbonate Buffered, pH 9.6
  - Detection antigen

PAIR

**HIV-2 gp36 Recombinant Antigen**

- BN1021**
- Represents HIV-2 gp36, Subtype A (ST)
  - Produced in *E. coli*
  - Molecular weight of 29.3 kDa
  - Buffer: 50 mM Carbonate Buffered, pH 9.6
  - Capture antigen
- BN1027**
- Represents HIV-2 gp36, Subtype A (ROD), N-term His-Tag
  - Produced in *E. coli*
  - Molecular weight of 31.3 kDa
  - Buffer: 50 mM Carbonate Buffered, pH 9.6
  - Detection antigen

PAIR

**HIV-2 gp36 Recombinant Antigen**

- BN1021**
- Represents HIV-2 gp36, Subtype A (ST)
  - Produced in *E. coli*
  - Molecular weight of 29.3 kDa
  - Buffer: 50 mM Carbonate Buffered, pH 9.6
  - Capture antigen
- BN1026**
- Represents HIV-2 gp36, Subtype A (ST)
  - Produced in *E. coli*
  - Molecular weight of 31.3 kDa
  - Buffer: 50 mM Carbonate Buffered, pH 9.6
  - Detection antigen

PAIR

**HIV-2 gp36 Recombinant Antigen**

- BN1026**
- Represents HIV-2 gp36, Subtype A (ST)
  - Produced in *E. coli*
  - Molecular weight of 31.3 kDa
  - Buffer: 50 mM Carbonate Buffered, pH 9.6
  - Capture or detection antigen (pair is reversible)
- BN1025**
- Represents HIV-2 gp36, Subtype A (ST)
  - Produced in *E. coli*
  - Molecular weight of 30.5 kDa
  - Buffer: 50 mM Carbonate Buffered, pH 9.6
  - Capture or detection antigen (pair is reversible)

Suitable for ELISA  
and Lateral Flow  
Antibody Detection  
Assays

|      |                                       |                                                                                                                                                                                                                                                                         |
|------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PAIR | <b>HIV-2 gp36 Recombinant Antigen</b> |                                                                                                                                                                                                                                                                         |
|      | <b>BN1028</b>                         | <ul style="list-style-type: none"> <li>• Represents HIV-2 gp36, Subtype A (BEN), N-term His-Tag</li> <li>• Produced in <i>E. coli</i></li> <li>• Molecular weight of 28.1 kDa</li> <li>• Buffer: 50 mM Carbonate Buffered, pH 9.6</li> <li>• Capture antigen</li> </ul> |
|      | <b>BN1025</b>                         | <ul style="list-style-type: none"> <li>• Represents HIV-2 gp36, Subtype A (ST)</li> <li>• Produced in <i>E. coli</i></li> <li>• Molecular weight of 30.5 kDa</li> <li>• Buffer: 50 mM Carbonate Buffered, pH 9.6</li> <li>• Detection antigen</li> </ul>                |

|      |                                       |                                                                                                                                                                                                                                                          |
|------|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PAIR | <b>HIV-2 gp36 Recombinant Antigen</b> |                                                                                                                                                                                                                                                          |
|      | <b>BN1029</b>                         | <ul style="list-style-type: none"> <li>• Represents HIV-2 gp36, Subtype A (BEN)</li> <li>• Produced in <i>E. coli</i></li> <li>• Molecular weight of 31.3 kDa</li> <li>• Buffer: 50 mM Carbonate Buffered, pH 9.6</li> <li>• Capture antigen</li> </ul>  |
|      | <b>BN1025</b>                         | <ul style="list-style-type: none"> <li>• Represents HIV-2 gp36, Subtype A (ST)</li> <li>• Produced in <i>E. coli</i></li> <li>• Molecular weight of 30.5 kDa</li> <li>• Buffer: 50 mM Carbonate Buffered, pH 9.6</li> <li>• Detection antigen</li> </ul> |

|      |                                       |                                                                                                                                                                                                                                                          |
|------|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PAIR | <b>HIV-2 gp36 Recombinant Antigen</b> |                                                                                                                                                                                                                                                          |
|      | <b>BN1029</b>                         | <ul style="list-style-type: none"> <li>• Represents HIV-2 gp36, Subtype A (BEN)</li> <li>• Produced in <i>E. coli</i></li> <li>• Molecular weight of 31.3 kDa</li> <li>• Buffer: 50 mM Carbonate Buffered, pH 9.6</li> <li>• Capture antigen</li> </ul>  |
|      | <b>BN1026</b>                         | <ul style="list-style-type: none"> <li>• Represents HIV-2 gp36, Subtype A (ST)</li> <li>• Produced in <i>E. coli</i></li> <li>• Molecular weight of 31.3 kDa</li> <li>• Buffer: 50 mM Carbonate Buffered, pH 9.6</li> <li>• Detection antigen</li> </ul> |

Suitable for ELISA and Lateral Flow Antibody Detection Assays



# HSV-1 & HSV-2

## Antigen & Antibody Detection Assays

Herpes simplex virus (HSV) types 1 and 2 are common infections worldwide. However, the majority of infected individuals remain undiagnosed because they are asymptomatic.

HSV-1 is usually transmitted during childhood through contact with oral secretions (cold sores). Seroprevalence studies indicate about 60% of adults in the United States are infected with this virus. HSV-2 is usually spread by sexual contact (genital herpes). Consequently this infection usually occurs later in life and the seroprevalence rates vary dramatically by geographic region.

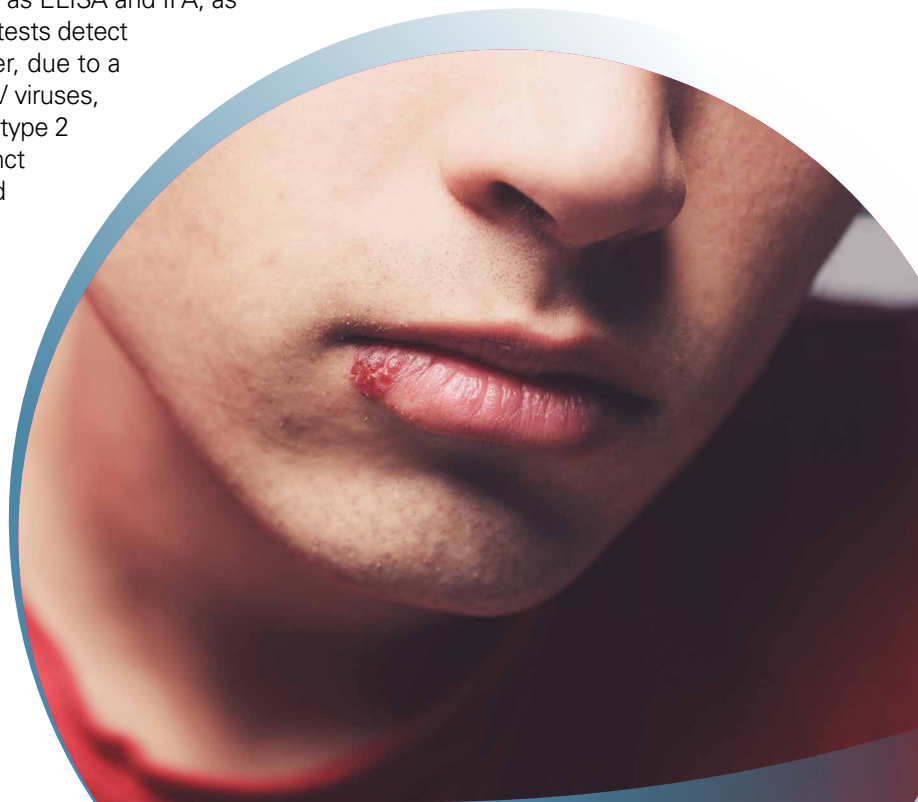
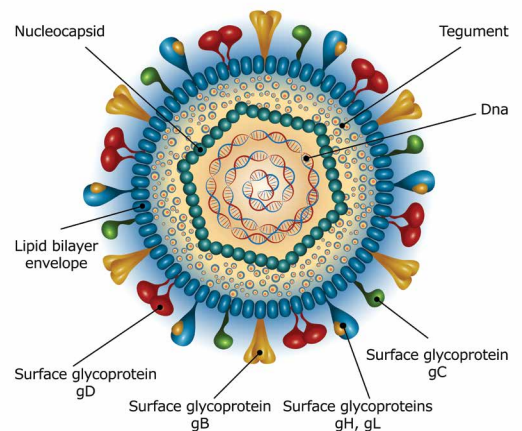
Both HSV-1 and HSV-2 establish a lifelong, latent infection in the nervous system and there is no cure. Antiviral medications can reduce the frequency, duration and severity of outbreaks and over a period of several years, many infected individuals experience less severe symptoms and fewer outbreaks, although they are still contagious to others.

The greatest risk of an HSV infection is in neonates and infants, when an infected mother passes it to her fetus in utero or during delivery. A neonatal HSV infection can be devastating to an infant and 70- 85% of these infections are caused by HSV-2. Many infants infected with HSV are born prematurely and approximately 4% can develop congenital HSV which has serious consequences including death.

## Diagnosis

Diagnostic methods include serological tests such as ELISA and IFA, as well as PCR blood tests and cell culture. Generally tests detect antibodies (IgG or IgM) to HSV-1 or HSV-2, however, due to a high degree of genetic similarity between the HSV viruses, many tests cannot distinguish between a type 1 or type 2 infection. The recent discovery of serologically distinct HSV viral envelope glycoproteins gG-1 (HSV-1) and gG-2 (HSV-2) have enabled the development of new type-specific assays. These assays generally use both purified recombinant type-specific gG-1 and gG-2 antigens, and native HSV common antigens to both HSV and HSV-2 and can discriminate between HSV-1 or HSV infection.

### HERPES SIMPLEX VIRUS



# HIV-1 & HIV-2 | Continued

Antigen & Antibody Detection Assays

## Reagents for serology testing

|                                                                    |                                                                                                                                                                                                                                                                                                    |                                                  |
|--------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|
| <b>7305</b>   <b>HSV-1 Native Antigen</b>                          |                                                                                                                                                                                                                                                                                                    | IgG Detection for ELISA and CLIA                 |
| <b>7309</b>   <b>HSV-1 Native Antigen (Concentrate)</b>            | <ul style="list-style-type: none"><li>• Strain F produced in Vero cells</li><li>• &gt;10% viral protein</li><li>• Buffer: 0.1M Glycine, pH 9.5 ± 0.2</li></ul>                                                                                                                                     |                                                  |
| <b>7705</b>   <b>HSV-2 Native Antigen</b>                          |                                                                                                                                                                                                                                                                                                    |                                                  |
| <b>7749</b>   <b>HSV-2 Native Antigen (Concentrate)</b>            | <ul style="list-style-type: none"><li>• Strain G produced in Vero cells</li><li>• &gt;10% viral protein</li><li>• Buffer: 0.1M Glycine, pH 9.5 ± 0.2</li></ul>                                                                                                                                     |                                                  |
| <b>VTI520</b>   <b>HSV-1 Recombinant Antigen, Glycoprotein G 1</b> | <ul style="list-style-type: none"><li>• Represents amino terminal Met1-Asp190 and fused with superoxide dismutase 1 (SOD)</li><li>• Produced in <i>Saccharomyces cerevisiae</i></li><li>• Buffer: 0.05M Malonate with 6.0M Urea, pH 5.2 ± 0.2</li></ul>                                            | IgM Detection & Type specific for ELISA and CLIA |
| <b>VTI530</b>   <b>HSV-2 Recombinant Antigen, Glycoprotein G 2</b> | <ul style="list-style-type: none"><li>• Represents unique sequences not present in HSV-1</li><li>• Fused with superoxide dismutase 1 (SOD)</li><li>• Produced in <i>Saccharomyces cerevisiae</i></li><li>• Buffer: 50 mM NaH<sub>2</sub>PO<sub>4</sub>, 160mM KCl, 5mM DTT, pH 7.0 ± 0.1</li></ul> |                                                  |
| <b>C66150M</b>   <b>MAb to HSV-1 Glycoprotein G 1</b>              | <ul style="list-style-type: none"><li>• Reacts with HSV-1 Glycoprotein G 1</li></ul>                                                                                                                                                                                                               | IFA Detection                                    |

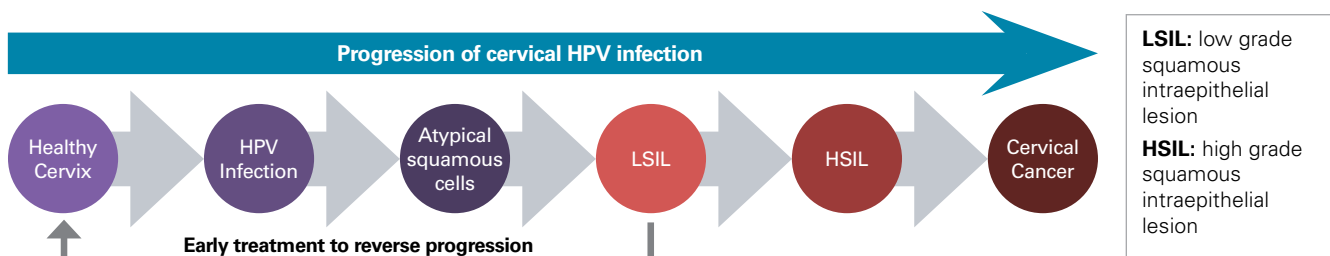


# Human Papilloma Virus (HPV)

## Antigen Detection Assays

Human papilloma virus (HPV) refers to a group of more than 150 related viruses that cause warts (papillomas) on different parts of the body including the hands, feet, genitals, or anus. It is one of the most common STDs and although most HPV infections self-resolve, some types can cause cervical cancer in women and anal cancers in both men and women.

Up to 75% of sexually active males and females will have an HPV infection at some point in their lifetime and symptoms are generally mild or non-existent. Most HPV infections (about 70%) go away without any treatment within 1–2 years. However, there are over 40 types of HPV and becoming immune to one type does not protect an individual from becoming infected with another type. Persistent infection with high-risk HPV types over many years can cause precancerous changes leading to cervical cancer, which is the second most common cancer in women worldwide, second only to breast cancer.



Source: <https://uwaterloo.ca/foldvari-group/research-program/gene-therapy>

HPVs are grouped into types based on their degree of causing cancer. Low-risk HPV types such as HPV-6 and HPV-11, are rarely associated with cancer and are the major cause (99%) of genital warts (World Health Organization). However there are 14 high-risk HPV types that are known to cause cancer, including HPV-16, HPV-18, HPV-31, HPV-33, HPV-35, HPV-39, HPV-45, HPV-51, HPV-52, HPV-56, HPV-58, HPV-59 and HPV-68. The most common high-risk types are HPV-16 and HPV-18 which cause about 70% of cervical cancers. HPV infection with HPV 16 or 18 can also cause anal, vaginal, vulvar, penile and some oral cavity and oropharyngeal cancers. HPV-33 has also been found in cancer of the anus and vulva.





# Human Papilloma Virus (HPV)

| Continued

## Antigen Detection Assays

### Diagnosis

Traditionally, genital HPV infection is detected by a Pap smear and does not distinguish between high- and low-risk types. There are several DNA HPV tests, some of which are approved for marketing by the FDA, that can detect high-risk types of HPV. However in developing countries where more than 85% of cervical cancer deaths occur, the resources, infrastructure, and technological expertise and the need for repeated screening at frequent intervals, have made conventional molecular and cytology-based (Pap smear) screening prohibitively difficult. Ideally, screening tests suitable for low resource settings should be simple, rapid, cost effective and provide information regarding the HPV oncogenic activity.

Research has demonstrated that both HPV E6 and E7 oncoproteins mediate the development of cervical cancer. Their overexpression, which can be measured by mRNA transcripts or detection of the expressed proteins, directly correlates with the severity of cervical histopathology and the risk for precancerous progression. Accordingly, many commercial assays have been developed for the detection of precancerous high-risk HPV 16 and HPV 18 E6 and E7 proteins, in which positive results are suggestive of an increased risk of cervical cancer.

### Reagents for serology testing

|                   |                                                                                                                                                                                                                                    |                                                                   |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| <b>C86718M</b>    | <b>MAB to HPV 18 (E7)</b> <ul style="list-style-type: none"><li>• Reactive with HPV Type 18, E7 protein</li><li>• Does not cross-react with E7 protein of HPV type 16</li><li>• Isotype: IgG1</li><li>• Capture antibody</li></ul> | Paired MAbs for Sandwich ELISA Antigen Detection Assays           |
| <b>MAV56-013</b>  | <b>MAB to HPV 16 (E7)</b> <ul style="list-style-type: none"><li>• Reactive with HPV Type 16, E7 Protein</li><li>• Isotype: IgG2a</li></ul>                                                                                         | Suitable for use in ELISA, RIA and IFA Antigen Detection Assays   |
| <b>MAV56-981</b>  | <b>MAB to HPV 16 (L1)</b> <ul style="list-style-type: none"><li>• Reactive with HPV Type 16, L1 (Major Capsid Protein)</li><li>• Isotype: IgG2a</li></ul>                                                                          | Suitable for use in IHC Antigen Detection Assays                  |
| <b>MAV56-981T</b> | <b>MAB to HPV 16 (L1)</b> <ul style="list-style-type: none"><li>• Reactive to beta galactosidase-L1 protein</li><li>• Isotype: IgG2a</li></ul>                                                                                     |                                                                   |
| <b>MAV56-965</b>  | <b>MAB to HPV 18 (E6)</b> <ul style="list-style-type: none"><li>• Reactive with the E6 of HPV Type 18 and Type 16</li><li>• Isotype: IgG1</li></ul>                                                                                | Suitable for use in IHC and Western Blot Antigen Detection Assays |

# Chlamydia trachomatis

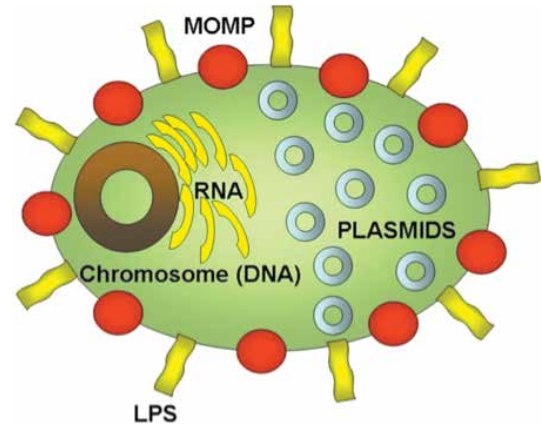
## Antigen and Antibody Detection Assays

Chlamydia is the most common sexually transmitted infection in humans and it is caused by the bacterium *Chlamydia trachomatis*. It affects 5% to 10% of the world's population and it is particularly common in young adults under 25 years. It is a major public health concern due to its prevalence and potential long-term consequences.

An estimated 100 million *Chlamydia trachomatis* infections occur annually among sexually active adolescents and young adults in the world. Its prevalence is due to the majority of cases (75% of women and 50% of men) having minimal to no symptoms, therefore it often goes undiagnosed and can be spread unknowingly. Infection is associated with non-gonococcal urethritis in men and several inflammatory reproductive tract syndromes in women such as inflammation of the uterine cervix and pelvic inflammatory disease (PID). If left untreated in women, 20% will become infertile, 18% will experience debilitating, chronic pelvic pain, and 9% will have a life-threatening tubal pregnancy. Furthermore, *C. trachomatis* infection during pregnancy leads to infant conjunctivitis and pneumonia and maternal postpartum endometriosis.

In most cases, chlamydia can be easily treated with antibiotics with a cure rate of 95%. However, many people don't know they have the disease until it has caused serious complications. Young adults under age 25 and others at high risk (e.g. pregnant women) should be tested for chlamydia once a year even if they are symptom-free.

## CHLAMYDIA TRACHOMATIS MORPHOLOGY



Source: Nature.com

## Diagnosis

Culture testing for *C. trachomatis* has been the reference standard, however antigen detection using ELISA-based assays, direct fluorescent antibody (DFA) tests and nucleic acid hybridization tests have increased in popularity due to their relative ease-of-use. EIA methods initially developed for the detection of *C. trachomatis* measured lipopolysaccharide (LPS) antigen expressed by the chlamydial elementary bodies which is common to all four chlamydia species (*C. trachomatis*, *C. pneumoniae*, *C. psittaci*, and *C. pecorum*). Newer tests for *C. trachomatis* use antibodies against chlamydial heat shock protein 60 (cHSP60) or the major outer membrane protein (MOMP) which do not cross-react with the other chlamydia species or with other organisms that contain LPS.



# Chlamydia trachomatis | Continued

Antigen and Antibody Detection Assays

## Reagents for serology testing

|                  |                                                                                                                                                                                                                                                                                                               |                                                                                                                                               |                                                                  |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|
| PAIR             | <b>C01566M</b>                                                                                                                                                                                                                                                                                                | <b>MAB to <i>Chlamydia trachomatis</i> LPS</b> <ul style="list-style-type: none"> <li>• Isotype: IgG</li> <li>• Capture antibody</li> </ul>   | Paired MAbs for Sandwich Lateral Flow Antigen Detection Assays   |
|                  | <b>C01565M</b>                                                                                                                                                                                                                                                                                                | <b>MAB to <i>Chlamydia trachomatis</i> LPS</b> <ul style="list-style-type: none"> <li>• Isotype: IgG</li> <li>• Detection antibody</li> </ul> |                                                                  |
| <b>MAV07-347</b> | <b>MAB to Chlamydia Species LPS</b> <ul style="list-style-type: none"> <li>• Reactive with serovars: A, B, Ba, C, D, E, F, G, H, I, J, K, L1, L2, L3 and <i>C. psittaci</i></li> <li>• Isotype: IgG2</li> </ul>                                                                                               | <b>MAV06-086</b>                                                                                                                              | Suitable for use in ELISA Antigen Detection Assays               |
|                  | <b>MAB to <i>Chlamydia trachomatis</i> MOMP</b> <ul style="list-style-type: none"> <li>• Reactive with major outer membrane protein (MOMP)</li> <li>• Isotype: IgG2</li> </ul>                                                                                                                                |                                                                                                                                               |                                                                  |
| <b>C66436M</b>   | <b>MAB to <i>Chlamydia trachomatis</i> and <i>Chlamydophila psittaci</i></b> <ul style="list-style-type: none"> <li>• Reacts with a glycolipid antigen on <i>C. trachomatis</i> and <i>C. psittaci</i></li> <li>• Isotype: IgG3</li> </ul>                                                                    | Suitable for use in IFA and IHC Antigen Detection Assays                                                                                      |                                                                  |
| <b>C65168M</b>   | <b>MAB to Chlamydia Species LPS</b> <ul style="list-style-type: none"> <li>• Reactive with elementary bodies from <i>C. trachomatis</i> serovars D, E, F, G, H, I, J, K and L2</li> <li>• Genus specific, cross reactive with <i>C. pneumoniae</i> and <i>C. psittaci</i></li> <li>• Isotype: IgG1</li> </ul> | <b>C65166M</b>                                                                                                                                | Suitable for use in ELISA, IFA, and IHC Antigen Detection Assays |
|                  | <b>MAB to Chlamydia Species MOMP</b> <ul style="list-style-type: none"> <li>• Specific for major outer membrane protein (MOMP)</li> <li>• No reactivity with <i>C. pneumoniae</i></li> <li>• Isotype: IgG2a</li> </ul>                                                                                        |                                                                                                                                               |                                                                  |
| <b>R02121</b>    | <b>Native <i>Chlamydia trachomatis</i> Antigen</b> <ul style="list-style-type: none"> <li>• <i>C. trachomatis</i> LGV Type-2, Elementary Bodies (EB)</li> <li>• Produced in Mouse L Cells infected with <i>C. trachomatis</i> elementary bodies</li> <li>• Buffer: PBS, pH 7.2</li> </ul>                     | IgM & IgG Detection EIA Assays, including Rapid-IgM Capture Formats                                                                           |                                                                  |

# Neisseria gonorrhoeae

## Antigen Detection Assays

*Neisseria gonorrhoeae* is gram-negative bacteria that causes infections in the urethra, cervix, vagina or anus. It is one of the two most common STDs in the United States along with chlamydia. If left untreated, gonorrhea infections can spread in the reproductive tract, causing prostatitis and epididymitis in men, or pelvic inflammatory disease (PID) in women.

The World Health Organization (WHO) estimates that there are 88 million new cases of gonorrhea each year. It is common for infected individuals to not have any symptoms and unknowingly spread the disease. Asymptomatic infections along with the emergence of multidrug-resistant *N. gonorrhoeae*, present a significant challenge in controlling gonorrhea.

If left untreated, gonorrhea may last for weeks or months with a high risks of complications. Significant problems include: infertility in both men and women, infection in the joints and other areas of the body, and an increased risk for HIV/AIDS. Women with gonorrhea infections before or during pregnancy are also at increased risk for pregnancy complications such as stillbirth and premature birth. In addition, babies can become infected with gonorrhea during the birth process, leading to eye and joint infections and possible life-threatening blood infections.

Men who have had a gonorrhea infection have a significantly increased risk of having prostate cancer.

MORPHOLOGY OF *N. GONORRHOEAE*



## Diagnosis

Traditionally, gonorrhea is diagnosed with gram stain and culture as they have 100% specificity; however, newer rapid antigen detection assays are needed as alternatives. Significant disadvantages of culture include variable sensitivity, complex logistics, and slow turnaround times and new tests need to have improved sensitivity, ease of handling, and rapid processing. All gonorrhea tests use a sample of body fluid from the affected area.

## Reagents for serology testing

**C01818M**  
**C01819M**  
**C01820M**

### **MAB to *Neisseria gonorrhoeae***

- Reactive with 9 strains of *N. gonorrhoeae*, *N. lactamica* and *N. Meningitidis*
- Non-reactive with *N. mucosa*, *N. perflava*, *N. sicca*, *G. vaginalis*, group B Streptococcus, *Candida albicans*, Hemophilus influenza type B, *C. trachomatis*, *T. vaginalis*, *M. genitalium*, *U. urealyticum* and HSV-2

Suitable for use in ELISA and IFA Antigen Detection Assays

**B65111R**

### **PAb to *Neisseria gonorrhoeae***

- Produced in rabbits using immunogen of whole *N. gonorrhoeae* (ATCC 31426)
- Specific for all antigens
- Antiserum is not absorbed and may react with related microorganisms
- >95% pure, purified by Protein A chromatography

Suitable for use in ELISA and IFA Antigen Detection Assays

# Syphilis (*Treponema pallidum*)

## Antibody Detection Assays

Syphilis is a sexually transmitted bacterial infection caused by the spirochete bacterium *Treponema pallidum*. It is passed from person to person through direct contact with a syphilis sore and causes a systemic infection with symptoms that vary depending on the stage of the disease.

About 12 million people worldwide are infected with syphilis and > 90% of cases are in developing countries. Syphilis can spread through sexual contact or in pregnancy (mother to fetus), however it can be easily and effectively be treated with antibiotics. Without treatment, an infection can lead to serious consequences including small tumors (called gummas), neurological problems (stroke, meningitis, deafness, demetia), cardiovascular disease and an increased risk of HIV infection (2-5x). An infected baby can also develop serious problems such as cataracts, deafness, seizures, or death. It has been reported that untreated early syphilis in pregnant women results in perinatal death in up to 40% of cases. If acquired during the 4 years before pregnancy, it can lead to infection of the fetus in 80% of cases (CDC, 2013 Sexually Transmitted Diseases Surveillance).

The signs and symptoms of syphilis vary depending on which of the four stages it presents (primary, secondary, latent, and tertiary). During the first (primary) stage of syphilis, a sore appears at the point of contact where syphilis was transmitted. The sore is usually painless, lasts 3-6 weeks, and heals without treatment. Secondary syphilis occurs approximately 4-10 weeks after the primary infection and usually starts with a rash on one or more areas of the body (and these rashes harbor bacteria and are infectious). Other symptoms may include fever, sore throat, malaise, weight loss, hair loss, and headache. The latent stage of syphilis begins when all of the symptoms disappear. An latent infected person can continue to have syphilis for years without any symptoms. Without treatment, a third of infected people develop tertiary syphilis, which usually occurs 3-30 years after the initial infection.

## Diagnosis

Syphilis has several clinical manifestations, making it difficult to diagnose based on clinical symptoms alone. Also, *T. pallidum* cannot be isolated in culture so confirmation must be performed either by ELISA-based serological assays or by direct visual inspection using microscopy. Serological tests are more commonly used, however all syphilis diagnostic assays are unable to distinguish between the stages of the disease.

ESTIMATED NUMBER OF CASES OF SYPHILIS AMONG ADULTS WORLDWIDE



Source: WHO ([http://www.who.int/tdr/dw/syphilis\\_map.htm](http://www.who.int/tdr/dw/syphilis_map.htm))



## Categories of serological testing for syphilis

1. Treponemal tests which are aimed at detecting an antigen or an antibody to *T. pallidum*. Examples include EIA assays that detect IgG and/or IgM and IgA antibodies to *T. pallidum*.
2. Non-treponemal tests which look for indirect indications of the infection such as the presence of cardiolipins (a mitochondrial membrane lipid), which are released when a treponeme bacteria damages cells. Since these tests do not detect the bacteria directly they usually require confirmation testing.

The *T. pallidum* genome is 1.14 Mb and encodes a putative 1,041 proteins (Genome Sequencing Project). Different strains of *T. pallidum* (*Tp*) may express different repertoires of *Tp* proteins as demonstrated by various immunologic studies (Leader, B. et al. (2003) *Infect. Immun.* 71:6054-6057). In the past few years, several highly immunogenic lipoproteins have been identified as diagnostic targets throughout all stages of a syphilis infection, including *Tp*17, *Tp*15, *Tp*44.5 (*TmpA*), *Tp*47, *Tp*41, *Tp*35 (*TmpC*) and *Tp*0453. Specifically, early immune responses have been shown to be against *Tp*47 and some of the flagellar proteins, followed by *Tp*15 and *Tp*17. *Tp*0453 has also been shown to be a promising diagnostic marker with very high sensitivity in early detection. For this reason, several commercial tests have been developed using a combination of these immunogenic antigens and have proven to be highly sensitive and specific for the diagnosis of an active or latent syphilis infection. Also recent developments include rapid formats that can be performed at the point of care, including agglutination tests using latex particles coated with treponemal antigen or lateral flow assays.

| Protein                                              | <i>T. Pallidum</i> Genome                                                     |
|------------------------------------------------------|-------------------------------------------------------------------------------|
| <i>Tp</i> 0453                                       | Outer-membrane protein<br>30 kDa                                              |
| <i>Tp</i> 15<br>( <i>Tp</i> 0171)                    | Membrane-associated<br>15 kDa lipoprotein                                     |
| <i>Tp</i> 17<br>( <i>Tp</i> 0435)                    | Membrane-associated<br>17 kDa lipoprotein                                     |
| <i>Tp</i> 41                                         | 41 kDa homolog of galactose-<br>glucose-binding protein                       |
| <i>Tp</i> 47<br>( <i>Tp</i> 0574)                    | Membrane-associated<br>47 kDa lipoprotein with<br>carboxypeptidase properties |
| <i>TmpA</i> /<br><i>Tp</i> 44.5<br>( <i>Tp</i> 0768) | Membrane lipoprotein<br>42 kDa                                                |

## Reagents for serology testing

### *T. pallidum* p15 Recombinant Antigens

#### R8A101

- Represents the full length p15 protein
- Produced in *E. coli* and fused with a  $\beta$ -gal tag at the N-terminus (>95% pure)
- Molecular weight of 60kDa
- Buffer: 8 M Urea, 20 mM Tris-HCl, pH 8.0 containing 10 mM  $\beta$ -Mercaptoethanol

Suitable for ELISA,  
Lateral Flow and  
Western Blot  
Antibody Detection  
Assays

#### R01531

- Mosaic protein representing immunodominant regions of p15
- Produced in *E. coli* and fused with a 6-His tag
- Molecular weight of 19kDa
- Buffer: 150 mM Imidazole, 25 mM Sodium Phosphate, pH 8.0 containing 150 mM NaCl, 50% Glycerol

Suitable for ELISA  
Antibody Detection  
Assays

### *T. pallidum* p17 Recombinant Antigens

#### R8A201

- Represents the full length p17 protein
- Produced in *E. coli* and fused with a  $\beta$ -gal tag at the N-terminus (>95% pure)
- Molecular weight of 63kDa
- Buffer: 8 M Urea, 20 mM Tris-HCl, pH 8.0 containing 10 mM  $\beta$ -Mercaptoethanol

Suitable for ELISA,  
Lateral Flow and  
Western Blot  
Antibody Detection  
Assays

# Syphilis (*Treponema pallidum*)

| Continued

## Antibody Detection Assays

|      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                             |
|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| PAIR | <p><b><i>T. pallidum</i> p17 Recombinant Antigens</b></p> <p><b>BN1038</b></p> <ul style="list-style-type: none"> <li>• Represents <i>T.pallidum</i> P17, GST Tag</li> <li>• Produced in <i>E. coli</i></li> <li>• Molecular weight of 46.9kDa</li> <li>• Buffer: Phosphate Buffered Saline, pH 7.3</li> <li>• Capture antigen</li> </ul> <p><b>BN1044</b></p> <ul style="list-style-type: none"> <li>• Represents <i>T.pallidum</i> P17, MBP Tag</li> <li>• Produced in <i>E. coli</i></li> <li>• Molecular weight of 86.5kDa</li> <li>• Buffer: Phosphate Buffered Saline, pH 7.3</li> <li>• Detection antigen</li> </ul>                                                                                                                                                          | Suitable for Lateral Flow and ELISA Antibody Detection Assays               |
|      | <p><b><i>T. pallidum</i> p17 Recombinant Antigens - continued</b></p> <p><b>R01528</b></p> <ul style="list-style-type: none"> <li>• Mosaic protein representing immunodominant regions of p17</li> <li>• Produced in <i>E. coli</i></li> <li>• Molecular weight of 46.9 kDa</li> <li>• Buffer: Phosphate Buffered Saline, pH 7.3</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                          | Suitable for Lateral Flow and ELISA Antibody Detection Assays               |
|      | <p><b><i>T. pallidum</i> p41 Recombinant Antigens</b></p> <p><b>R01529</b></p> <ul style="list-style-type: none"> <li>• Represents the full length p41 protein</li> <li>• Produced in <i>E. coli</i> and fused with a <math>\beta</math>-gal tag</li> <li>• Molecular weight of 153kDa</li> <li>• Buffer: 4 M Urea, 5 mM Tris-HCl, pH 8.0 containing 10 mM DTT, 0.5 mM EDTA, 50% glycerol</li> </ul> <p><b>R18830</b></p> <ul style="list-style-type: none"> <li>• Contains the <i>T. pallidum</i> p41 immunodominant region. Contains GST fusion partner</li> <li>• &gt; 90% pure (10% PAGE coomassie staining)</li> <li>• Buffer: 10 mM Tris-HCl, pH 8.0, 1 mM EDTA, 20 mM DTT, 8 M Urea</li> </ul>                                                                                | Suitable for ELISA Antibody Detection Assays                                |
|      | <p><b><i>T. pallidum</i> p45 Recombinant Antigens</b></p> <p><b>R18830</b></p> <ul style="list-style-type: none"> <li>• Represents <i>T.pallidum</i> P45, GST Tag, N-term His-Tag</li> <li>• Produced in <i>E. coli</i></li> <li>• Molecular weight of 53.0kDa</li> <li>• Buffer: Phosphate Buffered Saline, pH 7.3</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                             |
|      | <p><b><i>T. pallidum</i> TmpA (Tp44.5) Recombinant Antigens</b></p> <p><b>R8A404</b></p> <ul style="list-style-type: none"> <li>• Represents the full length protein TmpA</li> <li>• Produced in <i>E. coli</i> and fused with a <math>\beta</math>-gal tag at the N-terminus (&gt;95% pure)</li> <li>• Molecular weight of 42kDa</li> <li>• Buffer: 8 M Urea, 20 mM Tris-HCl, pH 8.0 containing 10 mM <math>\beta</math>-Mercaptoethanol</li> </ul> <p><b>R01530</b></p> <ul style="list-style-type: none"> <li>• Represents TmpA protein, a.a. 23-41 and 288-325</li> <li>• Produced in <i>E. coli</i> and fused with a GST tag</li> <li>• Molecular weight of 32kDa</li> <li>• Buffer: 4 M Urea, 5 mM Tris-HCl, pH 8.0 containing 10 mM DTT, 0.5 mM EDTA, 50% glycerol</li> </ul> | Suitable for ELISA, Lateral Flow and Western Blot Antibody Detection Assays |
|      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Suitable for ELISA Antibody Detection Assays                                |

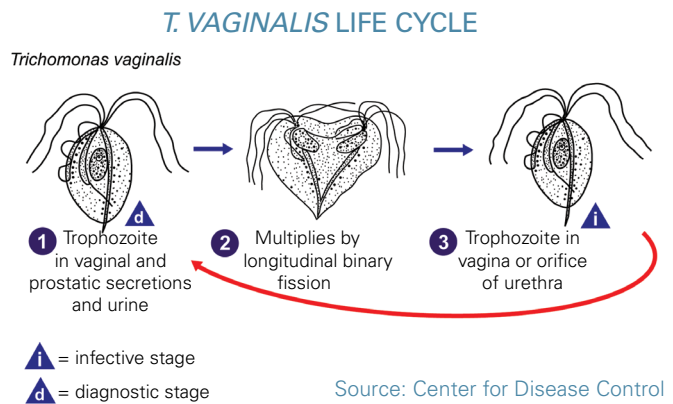
|      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                               |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|
|      | <p><b><i>T. pallidum</i> p17+p45 Chimeric Recombinant Antigen</b></p> <p><b>BN1042</b></p> <ul style="list-style-type: none"> <li>• Represents <i>T.pallidum</i> P17 + P45 Chimeric, MBP Tag</li> <li>• Produced in <i>E. coli</i></li> <li>• Molecular weight of 92.0kDa</li> <li>• Buffer: Phosphate Buffered Saline, pH 7.3</li> </ul>                                                                                                                                                                                                                                                                                                                               |                                                               |
| PAIR | <p><b><i>T. pallidum</i> P17 + P45 Chimeric Recombinant Antigen</b></p> <p><b>BN1039</b></p> <ul style="list-style-type: none"> <li>• Represents <i>T.pallidum</i> P17, MBP Tag</li> <li>• Produced in <i>E. coli</i></li> <li>• Molecular weight of 58.9kDa</li> <li>• Buffer: Phosphate Buffered Saline, pH 7.3</li> <li>• Capture antigen</li> </ul> <p><b>BN1043</b></p> <ul style="list-style-type: none"> <li>• Represents <i>T.pallidum</i> P17 + P45 Chimeric, N-term His-Tag</li> <li>• Produced in <i>E. coli</i></li> <li>• Molecular weight of 65.3kDa</li> <li>• Buffer: Phosphate Buffered Saline, pH 7.3</li> <li>• Detection antigen</li> </ul>         |                                                               |
|      | <p><b><i>T. pallidum</i> P17 and P45 Chimeric Recombinant Antigens</b></p> <p><b>BN1039</b></p> <ul style="list-style-type: none"> <li>• Represents <i>T.pallidum</i> P17, MBP Tag</li> <li>• Produced in <i>E. coli</i></li> <li>• Molecular weight of 58.9kDa</li> <li>• Buffer: Phosphate Buffered Saline, pH 7.3</li> <li>• Capture antigen</li> </ul> <p><b>BN1041</b></p> <ul style="list-style-type: none"> <li>• Represents <i>T.pallidum</i> P45 Chimeric, N-term His-Tag</li> <li>• Produced in <i>E. coli</i></li> <li>• Molecular weight of 53kDa</li> <li>• Buffer: Phosphate Buffered Saline, pH 7.3</li> <li>• Detection antigen</li> </ul>              | Suitable for Lateral Flow and ELISA Antibody Detection Assays |
| PAIR | <p><b><i>T. pallidum</i> P17 and P45 Recombinant Antigens</b></p> <p><b>BN1043</b></p> <ul style="list-style-type: none"> <li>• Represents <i>T.pallidum</i> P17 + P45 Chimeric, N-term His-Tag</li> <li>• Produced in <i>E. coli</i></li> <li>• Molecular weight of 65.3kDa</li> <li>• Buffer: Phosphate Buffered Saline, pH 7.3</li> <li>• Capture antigen</li> </ul> <p><b>BN1041</b></p> <ul style="list-style-type: none"> <li>• Represents <i>T.pallidum</i> P45 Chimeric, N-term His-Tag</li> <li>• Produced in <i>E. coli</i></li> <li>• Molecular weight of 53kDa</li> <li>• Buffer: Phosphate Buffered Saline, pH 7.3</li> <li>• Detection antigen</li> </ul> |                                                               |
| PAIR | <p><b><i>T. pallidum</i> p47 Recombinant Antigens</b></p> <p><b>R8A403</b></p> <ul style="list-style-type: none"> <li>• Represents the full length protein p47</li> <li>• Produced in <i>E. coli</i> and fused with a <math>\beta</math>-gal tag at the N-terminus (<math>\geq 95\%</math> pure)</li> <li>• Molecular weight of 92kDa</li> <li>• Buffer: 8 M Urea, 20 mM Tris-HCl, pH 8.0 containing 10 mM <math>\beta</math>-Mercaptoethanol</li> </ul>                                                                                                                                                                                                                |                                                               |
|      | <p><b><i>T. pallidum</i> p47 Recombinant Antigens</b></p> <p><b>R01568</b></p> <ul style="list-style-type: none"> <li>• Mosaic protein representing immunodominant regions of p47</li> <li>• Produced in <i>E. coli</i> and fused with a 6-His tag</li> <li>• Molecular weight of 45kDa</li> <li>• Buffer: 150 mM Imidazole, pH 8.0, 150 mM NaCl, 25 mM Sodium Phosphate, 50% glycerol</li> </ul>                                                                                                                                                                                                                                                                       | Suitable for ELISA Antibody Detection Assays                  |

# Trichomonas vaginalis

## Antigen Detection Assays

*Trichomonas vaginalis* is an anaerobic, flagellated protozoan parasite and the most common curable STD. The World Health Organization (WHO) estimates that 170-190 million cases of infection are acquired annually worldwide and are increasing each year. As a result, *T. vaginalis* is receiving more attention, prompting an increased demand for both diagnosis of trichomoniasis and screening for asymptomatic infections.

*Trichomonas vaginalis* is a single cell flagellum parasite that lives in the female vagina and the male urethra. Infections are transmitted directly when the organism moves from one host to another, usually during sexual contact. It has long been recognized as a common cause of vaginitis, known as trichomoniasis. Infection of the female genital tract can also result in cervicitis, urethritis, and adverse pregnancy outcomes including premature rupture of membranes and low birth weight babies. Though it was once virtually ignored, *T. vaginalis* infection in men is now recognized as an important cause of nongonococcal urethritis and is associated with prostatitis and male infertility. In addition, trichomoniasis is a risk factor for sexual transmission of HIV. It has been demonstrate to play a critical role in amplifying HIV transmission by lowering the barrier of access to lymphocytes and macrophages.



## Diagnosis

Approximately 70% of women with *T. vaginalis* do not exhibit symptoms and consequently diagnosis based on clinical symptoms alone is unreliable. The most commonly used method of diagnosis is direct microscopic observation (wet mount) of vaginal secretions and although both rapid and inexpensive, the sensitivity of this technique is generally very low (50 to 70%). Newer methods, such as rapid antigen testing and transcription-mediated amplification, have demonstrated greater sensitivity, often detecting 3-5 times more *T. vaginalis* infections than wet-mount microscopy. There is also a move towards self-testing as existing commercial antigen-detection assays are easy to use and provide reliable results in approximately 10 minutes.

Screening of asymptomatic women with HIV infection for *T. vaginalis* is recommended because of the adverse events associated with asymptomatic trichomoniasis and HIV infection. Screening should also be considered for persons receiving care in high-prevalence settings (e.g., STD clinics and correctional facilities) and for asymptomatic persons at high risk for infection.

## Reagents for serology testing

**C65675M** | **MAB to *Trichomonas vaginalis***

- Specific to the p65 adhesive protein of *T. vaginalis*
- p65 is one of 5 adhesion proteins in *T. vaginalis* and is specifically responsible for binding the parasite to the target cell in a ligand-receptor fashion
- Isotype: IgG1

Paired MAbs for Sandwich ELISA Antigen Detection Assays

**C01571M** | **MAB to *Trichomonas vaginalis***

- Targeting *Trichomonas vaginalis*
- Capture antibody

**C01569M** | **MAB to *Trichomonas vaginalis***

- Targeting *Trichomonas vaginalis*
- Detection antibody

Suitable for IFA and ELISA Detection Assays

PAIR





# Product list

## Abbreviations

**6-His** – Polyhisitide-tag

**Ab** – Antibody

**Ag** – Antigen

**β-ME** – Beta Mercaptoethanol

**β-Gal** – Beta Galactosidase

**CLIA** – Chemiluminescence Immunoassay

**CHAPS** – 3-[(3-cholamidopropyl)dimethylammonio]-1-propanesulfonate

**DB** – Dot Blot

**DFA** – Direct Immunofluorescence Assay

**DTT** – Dithiothreitol

**EDTA** – Ethylenediaminetetraacetic acid

**EIA, ELISA** – Enzyme Immunoassay, Enzyme-linked immunosorbent assay

**FCS** – Fetal Calf Serum

**GST** – Glutathione S-transferase

**GSH** – Glutathione

**IgG** – Immunoglobulin G

**IgM** – Immunoglobulin M

**IFA** – Immunofluorescence Assay

**LF** – Lateral Flow

**Lysate** – Cells which have been lysed

**Met** – Methionine

**MAb** – Monoclonal antibody

**NaCl** – Sodium Chloride

**NAAT** – Nucleic acid amplification test

**PAb** – Polyclonal antibody

**OD** – Optical density

**PBS** – Phosphate Buffer Saline

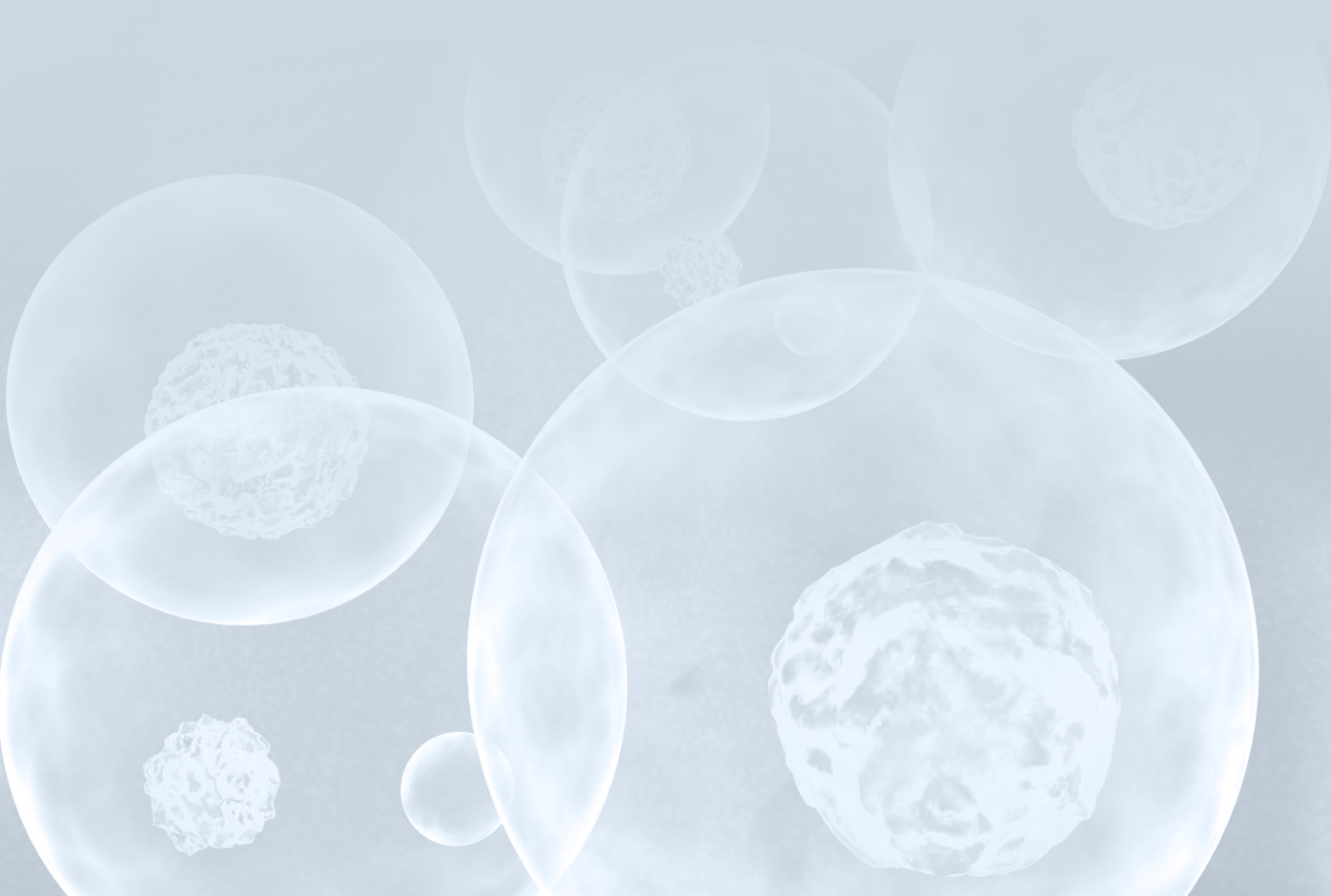
**PCR** – Polymerase Chain Reaction

**Purified** – Refer to the Product Specification Sheet regarding the extent of purification and the purification process used.

**SDS-PAGE** – Sodium dodecyl sulfate polyacrylamide gel electrophoresis

**WB** – Western Blot

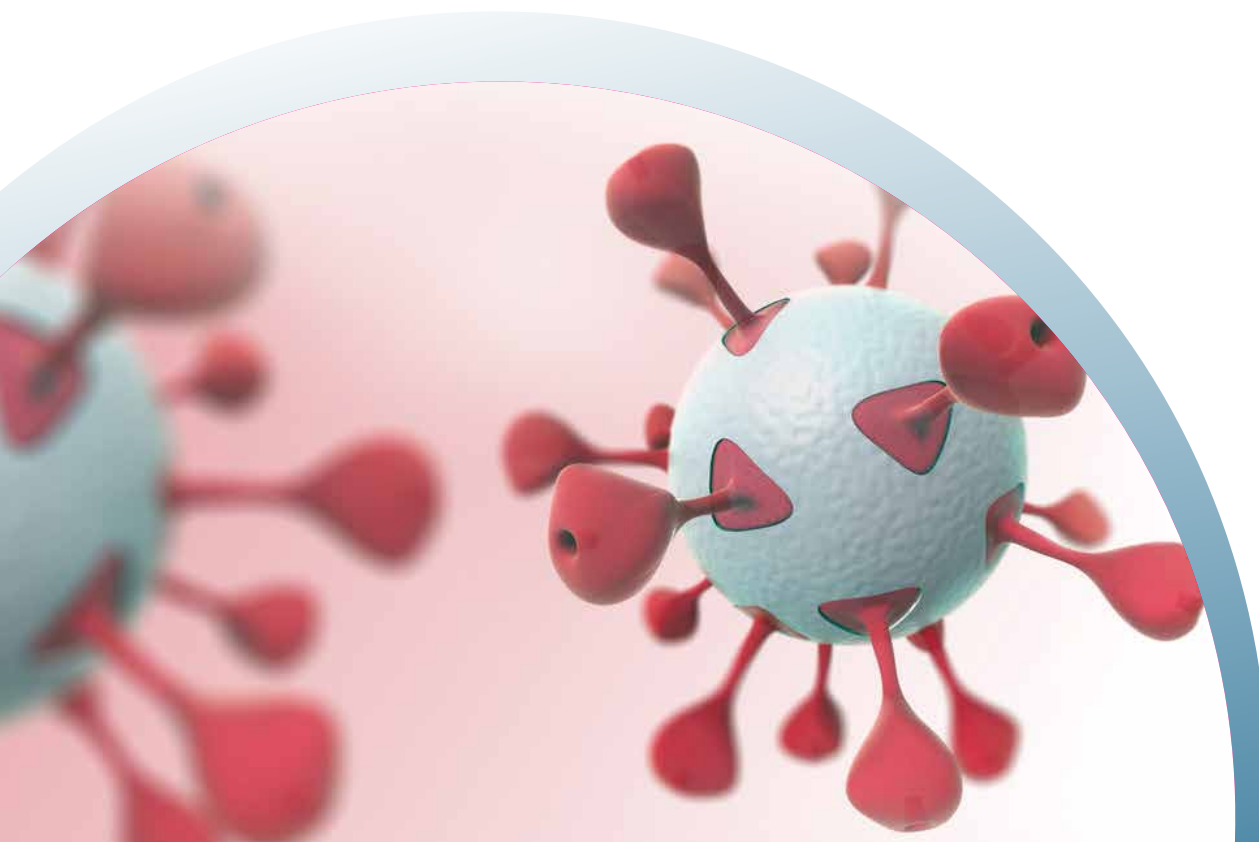
**UV-Vis** – Ultraviolet-visible spectroscopy



## Chlamydia trachomatis

Chlamydia affects 5% to 10% of the world's population and it is particularly common in young adults under 25 years old. It is a major public health concern due to its prevalence and potential severe long-term consequences. Diagnostic tests for Chlamydia include EIA assays that detect specific chlamydial antigens such as the lipopolysaccharide (LPS) antigen expressed by the chlamydial elementary body and which is common to all four chlamydia species (*C. trachomatis*, *C. pneumoniae*, *C. psittaci*, and *C. pecorum*). Newer tests for *C. trachomatis* use antibodies against chlamydial heat shock protein 60 (cHSP60) or the major outer membrane protein (MOMP) which do not cross-react with the other chlamydia species or with other organisms that contain LPS.

| Specificity                                      | Type | Catalog # | Host / Source | Tested Apps      | Format   | Isotype |
|--------------------------------------------------|------|-----------|---------------|------------------|----------|---------|
| Chlamydia trachomatis LGV Type-2 (Strain 434) EB | Ag   | R02121    | Mouse L Cells | EIA              | Purified | N/A     |
| Chlamydia species LPS                            | MAb  | C65168M   | Mouse         | EIA, IFA, IHC(p) | Purified | IgG1    |
| Chlamydia species LPS                            | MAb  | C65815M   | Mouse         | EIA, IFA, IHC(p) | Purified | IgG1    |
| Chlamydia species LPS                            | MAb  | MAV07-347 | Mouse         | N/A              | Purified | IgG2b   |
| Chlamydia trachomatis LPS                        | MAb  | C01565M   | Mouse         | LF, Pr           | Purified | IgG     |
| Chlamydia trachomatis LPS                        | MAb  | C01566M   | Mouse         | LF, Pr           | Purified | IgG     |
| Chlamydia trachomatis (MOMP)                     | MAb  | C65166M   | Mouse         | EIA, IFA, IHC    | Purified | IgG2a   |
| Chlamydia trachomatis (MOMP)                     | MAb  | MAV06-086 | Mouse         | N/A              | Purified | IgG2a   |
| Chlamydia trachomatis                            | MAb  | C66435M   | Mouse         | IFA, IHC(p)      | Purified | IgG3,k  |
| Chlamydia trachomatis and Chlamydia psittaci     | MAb  | C66436M   | Mouse         | IFA, IHC(p)      | Purified | IgG3    |
| Chlamydia trachomatis (EB's all antigens)        | PAb  | B65252G   | Goat          | IFA              | FITC     | N/A     |
| Chlamydia trachomatis (EB's all antigens)        | PAb  | B65252R   | Rabbit        | IFA              | FITC     | N/A     |
| Chlamydia trachomatis (EB's all antigens)        | PAb  | B65256G   | Goat          | EIA, IFA         | Purified | N/A     |
| Chlamydia trachomatis (EB's all antigens)        | PAb  | B65256R   | Rabbit        | EIA, IFA         | Purified | N/A     |
| Chlamydia trachomatis (EB's all antigens)        | PAb  | B65253R   | Rabbit        | EIA, ICC         | HRP      | N/A     |
| Chlamydia trachomatis (MOMP)                     | PAb  | B65261G   | Goat          | IFA              | Biotin   | N/A     |
| Chlamydia trachomatis (MOMP)                     | PAb  | B65266G   | Goat          | IFA              | Purified | N/A     |



# Product list | Continued

## Human Immunodeficiency Virus Type 1 (HIV-1) & 2 (HIV-2)

Human Immunodeficiency Virus Type 1 (HIV-1) & Human Immunodeficiency Virus Type 2 (HIV-2): A lentivirus that causes acquired immunodeficiency syndrome (AIDS), a condition that leads to progressive failure of the immune system. HIV disease has a well-documented progression and if left untreated, it is almost always fatal. To this day, the screening test most widely used to detect the HIV antibodies in the blood is the "HIV Antibody Test" which is based on the detection of antibodies to HIV (e.g. p24, gp41, gp120). The 4th generation HIV Antibody Test is capable of diagnosing an HIV infection 3-4 weeks after transmission by simultaneously detecting both HIV antibody and p24 antigen.

| Specificity                                                        | Type | Catalog # | Host / Source      | Tested Apps              | Format   | Isotype |
|--------------------------------------------------------------------|------|-----------|--------------------|--------------------------|----------|---------|
| <b>HIV-1</b>                                                       |      |           |                    |                          |          |         |
| HIV-1, gp41, Type O, Recombinant ,                                 | Ag   | BN1019    | <i>E. coli</i>     | EIA, LF, Pr              | Purified | N/A     |
| HIV-1, gp41, Type O, Recombinant                                   | Ag   | BN1023    | <i>E. coli</i>     | EIA, LF, Pr              | Purified | N/A     |
| HIV-1, gp41, Type M Subtype B (BH10), Recombinant                  | Ag   | BN1020    | <i>E. coli</i>     | EIA, LF, Pr              | Purified | N/A     |
| HIV-1, gp41, Type M Subtype B (JRCSF), Recombinant                 | Ag   | BN1022    | <i>E. coli</i>     | EIA, LF, Pr              | Purified | N/A     |
| HIV-1, gp41, Type M Subtype C, N-term His-Tag, Recombinant         | Ag   | BN1024    | <i>E. coli</i>     | EIA, LF, Pr              | Purified | N/A     |
| HIV-1, gp41, Type M Subtype B (JRCSF), N-term His-Tag, Recombinant | Ag   | BN1030    | <i>E. coli</i>     | EIA, LF, Pr              | Purified | N/A     |
| HIV-1, p24, Recombinant, Subtype B (JRCSF), N-term. His-Tag        | Ag   | BN1018    | <i>E. coli</i>     | EIA, LF                  | Purified | N/A     |
| HIV-1, p24                                                         | MAB  | BN1045    | Mouse              | EIA, LF, Pr              | Purified | IgG1    |
| HIV-1, p24                                                         | MAB  | BN1046    | Mouse              | EIA, LF, Pr              | Purified | IgG1    |
| HIV-1, p24, Recombinant                                            | Ag   | VT1340    | <i>P. pastoris</i> | EIA, WB                  | Purified | N/A     |
| HIV-1, gag p24 (a.a. 77-436) Strain IIIB, Recombinant              | Ag   | R8A111    | <i>E. coli</i>     | EIA, WB                  | Purified | N/A     |
| HIV-1, gp41 Type O, Recombinant                                    | Ag   | R01454    | <i>E. coli</i>     | EIA, LF, WB              | Purified | N/A     |
| HIV-1, Envelope gp41 (a.a. 466-753) Recombinant                    | Ag   | R8A113    | <i>E. coli</i>     | EIA, WB                  | Purified | N/A     |
| HIV-1, Envelope gp41, Recombinant                                  | Ag   | R65908    | <i>E. coli</i>     | EIA                      | Purified | N/A     |
| HIV-1, nef (a.a. 3-190) Recombinant                                | Ag   | R8A112    | <i>E. coli</i>     | EIA                      | Purified | N/A     |
| HIV-1, Integrase p31 (a.a. 9-289) Recombinant                      | Ag   | R01488    | <i>E. coli</i>     | EIA, LF, WB              | Purified | N/A     |
| HIV-1, C-terminal gp120 + most of gp41, Recombinant                | Ag   | R01593    | <i>E. coli</i>     | EIA, WB                  | Purified | N/A     |
| HIV-1, C-terminal, gp120 + most of gp41, Recombinant               | Ag   | R18550    | <i>E. coli</i>     | EIA, WB                  | Purified | N/A     |
| HIV-1, gp41, Recombinant                                           | Ag   | R01633    | <i>E. coli</i>     | EIA, LF                  | Purified | N/A     |
| HIV-1, gp120 (v3 loop region) Recombinant                          | Ag   | R01276    | <i>E. coli</i>     | EIA                      | Purified | N/A     |
| HIV-1, gp160 (a.a. 283-674) Recombinant                            | Ag   | R01532    | <i>E. coli</i>     | EIA                      | Purified | N/A     |
| HIV, gp120 + gp41 chimeric                                         | Ag   | R01625    | <i>E. coli</i>     | EIA, LF, Pr              | Purified | N/A     |
| HIV, gp120 + gp41 chimeric                                         | Ag   | R01626    | <i>E. coli</i>     | LF, Pr                   | Purified | N/A     |
| HIV, gp120 + gp41 chimeric                                         | Ag   | R01630    | <i>E. coli</i>     | LF, Pr                   | Purified | N/A     |
| HIV, gp120 + gp41 chimeric                                         | Ag   | R01631    | <i>E. coli</i>     | LF, Pr                   | Purified | N/A     |
| HIV-1, gp120                                                       | PAb  | B65961B   | Goat               | EIA, WB                  | Biotin   | N/A     |
| HIV-1, gp120                                                       | PAb  | B65961G   | Goat               | EIA, WB                  | Purified | N/A     |
| HIV-1, gp120                                                       | PAb  | B65961P   | Goat               | EIA, WB                  | HRP      | N/A     |
| HIV-1, p24 Recombinant                                             | Ag   | R01627    | <i>E. coli</i>     | EIA, WB                  | Purified | N/A     |
| HIV-1, p17                                                         | MAB  | C8A014M   | Mouse              | EIA, IHC(f), IP, WB      | Purified | IgG1    |
| HIV-1, p24                                                         | MAB  | C01653M   | Mouse              | EIA, LF, Pr, WB          | Purified | IgG1    |
| HIV-1, p24                                                         | MAB  | C01655M   | Mouse              | EIA, LF, Pr              | Purified | IgG1    |
| HIV-1, p24                                                         | MAB  | C01656M   | Mouse              | EIA, Pr                  | Purified | IgG1    |
| HIV-1, p24                                                         | MAB  | C01657M   | Mouse              | EIA, Pr                  | Purified | IgG1    |
| HIV-1, p24                                                         | MAB  | C11998M   | Mouse              | EIA, Pr                  | Purified | IgG1    |
| HIV-1, p24                                                         | MAB  | C11999M   | Mouse              | EIA, Pr                  | Purified | IgG1    |
| HIV-1, p24                                                         | MAB  | C65489M   | Mouse              | EIA, IFA                 | Purified | IgG1    |
| HIV-1, p24                                                         | MAB  | C65499M   | Mouse              | EIA, Pr                  | Purified | IgG1    |
| HIV-1, p24                                                         | MAB  | C65690M   | Mouse              | EIA, LF, Pr              | Purified | IgG1    |
| HIV-1, p24                                                         | MAB  | C65941F   | Mouse              | EIA, IFA, IHC(f), WB     | FITC     | IgG1    |
| HIV-1, p24                                                         | MAB  | C65941M   | Mouse              | EIA, IFA, IHC(f), Pr, WB | Purified | IgG1    |
| HIV-1, gp41                                                        | MAB  | C18812M   | Mouse              | EIA, LF, Pr              | Purified | IgG1    |
| HIV-1, gp41                                                        | MAB  | C65911M   | Mouse              |                          | Purified | IgG2    |
| HIV-1, gp41                                                        | MAB  | C8A015M   | Mouse              | EIA, WB                  | Purified | IgG1    |
| HIV-1 (purified Virions)                                           | PAb  | B65875G   | Goat               | IFA                      | Purified | N/A     |
| HIV-1 (purified Virions)                                           | PAb  | B65873G   | Goat               | EIA                      | HRP      | N/A     |

## Human Immunodeficiency Virus Type 1 (HIV-1) & 2 (HIV-2) continued

| Specificity                                               | Type | Catalog # | Host / Source      | Tested Apps  | Format   | Isotype |
|-----------------------------------------------------------|------|-----------|--------------------|--------------|----------|---------|
| HIV-1, p24                                                | PAb  | B65951B   | Goat               | EIA, WB      | Biotin   | N/A     |
| HIV-1, p24                                                | PAb  | B65951P   | Goat               | EIA, WB      | HRP      | N/A     |
| HIV-1, p24                                                | PAb  | B65951F   | Goat               | EIA, IFA, WB | FITC     | N/A     |
| HIV-1, p24                                                | PAb  | B65951G   | Goat               | EIA, IFA, WB | Purified | N/A     |
| HIV-1, gp41                                               | PAb  | B65971G   | Goat               | WB           | Purified | N/A     |
| <b>HIV-2</b>                                              |      |           |                    |              |          |         |
| HIV-2, gp36, Subtype A (ST), Recombinant                  | Ag   | BN1021    | <i>E. coli</i>     | EIA, LF, Pr  | Purified | N/A     |
| HIV-2, gp36, Subtype A (ST), Recombinant                  | Ag   | BN1025    | <i>E. coli</i>     | EIA, LF, Pr  | Purified | N/A     |
| HIV-2, gp36, Subtype A (ST), Recombinant                  | Ag   | BN1026    | <i>E. coli</i>     | EIA, LF, Pr  | Purified | N/A     |
| HIV-2, gp36, Subtype A (ROD), N-term His-Tag, Recombinant | Ag   | BN1027    | <i>E. coli</i>     | EIA, LF, Pr  | Purified | N/A     |
| HIV-2, gp36, Subtype A (BEN), N-term His-Tag, Recombinant | Ag   | BN1028    | <i>E. coli</i>     | EIA, LF, Pr  | Purified | N/A     |
| HIV-2, gp36, Subtype A (BEN), Recombinant                 | Ag   | BN1029    | <i>E. coli</i>     | EIA, LF, Pr  | Purified | N/A     |
| HIV-2, gp36, Recombinant                                  | Ag   | VT1360    | <i>P. pastoris</i> | EIA, WB      | Purified | N/A     |
| HIV-2, gp36, Recombinant                                  | Ag   | R01634    | <i>E. coli</i>     | EIA, LF      | Purified | N/A     |
| HIV-2, gp36 seq                                           | Ag   | R18220    | Synthetic          | EIA, WB      | Purified | N/A     |
| HIV-2, Envelope (a.a. 390-702) Recombinant                | Ag   | R8A114    | <i>E. coli</i>     | EIA          | Purified | N/A     |
| HIV-2, Envelope gp36, Recombinant                         | Ag   | R18410    | <i>E. coli</i>     | EIA, WB      | Purified | N/A     |
| HIV-2, Envelope gp36, Recombinant                         | Ag   | R65911    | <i>E. coli</i>     | EIA          | Purified | N/A     |
| HIV-2, gp36                                               | MAB  | C18386M   | Mouse              | EIA          | Purified | IgG1    |
| HIV-2, gp36                                               | MAB  | C8A401H   | Mouse              | EIA, WB      | Purified | IgG2a   |
| <b>HIV-1/2</b>                                            |      |           |                    |              |          |         |
| HIV-1/2, p24                                              | MAB  | C01576M   | Mouse              | EIA, WB      | Purified | IgG1    |
| HIV-1/2, p24                                              | MAB  | C01577M   | Mouse              | EIA, WB      | Purified | IgG1    |
| HIV-1&2 gp41/O group gp41/gp36, Recombinant               | Ag   | R01547    | <i>E. coli</i>     | EIA          | Purified | N/A     |

## Human Papilloma Virus (HPV)

HPV refers to a group of more than 150 related viruses that can cause warts (papillomas) on different parts of the body including the hands, feet, genitals, or anus. It is one of the most common STDs and although most HPV infections self-resolve, some types can cause cervical cancer in women. Research has demonstrated that both HPV E6 and E7 oncoproteins mediate the development of cervical cancer and their overexpression, which can be measured by mRNA transcripts or detection of the expressed proteins, directly correlates with the severity of cervical histopathology and the risk for precancerous progression. Accordingly, many commercial assays have been developed that detect the high-risk HPV 16 and HPV18 E6 and E7 proteins, in which positive results suggest an increased risk of cervical cancer.

| Specificity                                         | Type | Catalog #  | Host / Source               | Tested Apps             | Format   | Isotype |
|-----------------------------------------------------|------|------------|-----------------------------|-------------------------|----------|---------|
| Human Papilloma Virus Type 16 (HPV) L1, Recombinant | Ag   | R01428     | <i>Hansenula polymorpha</i> | WB                      | Purified | N/A     |
| Human Papilloma Virus Type 18 (HPV) L1, Recombinant | Ag   | R01429     | <i>Hansenula polymorpha</i> | WB                      | Purified | N/A     |
| Human Papilloma Virus Type 11 (HPV) E7 Protein      | MAB  | C86166M    | Mouse                       | EIA, Pr, WB             | Purified | IgG1    |
| Human Papilloma Virus Type 16 (HPV) E2 (a.a. 18-41) | MAB  | MAV56-271  | Mouse                       | EIA                     | Purified | IgG1    |
| Human Papilloma Virus Type 16 (HPV) E2 (a.a. 2-17)  | MAB  | MAV56-261  | Mouse                       | EIA, WB                 | Purified | IgG1    |
| Human Papilloma Virus Type 16 (HPV) E7 Protein      | MAB  | C86791M    | Mouse                       | EIA, Pr, WB             | Purified | IgG2a   |
| Human Papilloma Virus Type 16 (HPV) E7 Protein      | MAB  | MAV56-013  | Mouse                       | EIA, FC, IHC(f), IP, WB | Purified | IgG2a   |
| Human Papilloma Virus Type 16 (HPV) L1 Protein      | MAB  | MAV56-981  | Mouse                       | IHC(p), IP, WB          | Purified | IgG2a   |
| Human Papilloma Virus Type 16 (HPV) L1 Protein      | MAB  | MAV56-981T | Mouse                       | IHC(p), IP, WB          | Purified | IgG2a   |
| Human Papilloma Virus Type 18 (HPV) E6 Protein      | MAB  | MAV56-965  | Mouse                       | IHC(p), IP, WB          | Purified | IgG1    |
| Human Papilloma Virus Type 18 (HPV) E6 Protein      | MAB  | MAV56-267  | Mouse                       | EIA, IHC, RIA, WB       | Purified | IgG1    |
| Human Papilloma Virus Type 18 (HPV) E7 Protein      | MAB  | C86718M    | Mouse                       | EIA, Pr, WB             | Purified | IgG1    |
| Human Papilloma Virus Type 18 (HPV) E7 Protein      | MAB  | C86867M    | Mouse                       | EIA, Pr, WB             | Purified | IgG2a   |

# Product list | Continued

## Herpes Simplex Virus Type 1 (HSV-1) & 2 (HSV-2)

HSV infections are common worldwide however, the majority of infected individuals remain undiagnosed. HSV-1 is usually transmitted during childhood through contact with oral secretions (cold sores). HSV-2 is the main cause of neonatal HSV infection (70-85%) which can be devastating to an infant and can develop into congenital HSV which has serious consequences including death. Due to a high degree of genetic similarity between HSV-1 and HSV-2, most viral proteins induce a cross-reactive antibody response that hampers the discrimination between HSV-1 and HSV-2 infections using serological approaches. However, since the discovery of the serologically distinct HSV viral envelope glycoproteins gG-1 (HSV-1) and gG-2 (HSV-2), new type-specific immunoassays have been developed that are capable of discriminating between HSV-1 and HSV-2 infections.

| Specificity                                                                   | Type | Catalog # | Host / Source          | Tested Apps       | Format             | Isotype |
|-------------------------------------------------------------------------------|------|-----------|------------------------|-------------------|--------------------|---------|
| <b>HSV-1</b>                                                                  |      |           |                        |                   |                    |         |
| Herpes Simplex Virus Type 1 (HSV-1) Antigen (Strain F) >10% Viral Protein     | Ag   | 7305      | Vero Cells             | EIA               | Partially Purified | N/A     |
| Herpes Simplex Virus Type 1 (HSV-1) Antigen (Strain F) Concentrate            | Ag   | 7309      | Vero Cells             | EIA               | Partially Purified | N/A     |
| Herpes Simplex Virus Type 1 (HSV-1) Glycoprotein D Glycosylated, Recombinant  | Ag   | VT1510    | <i>Pichia pastoris</i> | CLIA, WB          | Purified           | IgG2b   |
| Herpes Simplex Virus Type 1 (HSV-1) Glycoprotein G, Recombinant               | Ag   | VT1520    | <i>S. cerevisiae</i>   | CLIA, WB          | Purified           | IgG2b   |
| Herpes Simplex Virus Type 1 (HSV-1) Glycoprotein D, Recombinant               | Ag   | R18430    | <i>E. coli</i>         | EIA, WB           | Purified           | IgG2b   |
| Herpes Simplex Virus Type 1 (HSV-1)                                           | MAb  | C01290M   | Mouse                  | EIA               | Purified           | IgG2a   |
| Herpes Simplex Virus Type 1 (HSV-1)                                           | MAb  | C01291M   | Mouse                  | EIA               | Purified           | IgG3    |
| Herpes Simplex Virus Type 1 (HSV-1) Glycoprotein C                            | MAb  | C65141M   | Mouse                  | IFA               | Purified           | IgG1    |
| Herpes Simplex Virus Type 1 (HSV-1) Glycoprotein D                            | MAb  | C8A020M   | Mouse                  | EIA, IP, WB       | Purified           | IgG1    |
| Herpes Simplex Virus Type 1 (HSV-1) Glycoprotein G-1                          | MAb  | C66150M   | Mouse                  | WB                | Purified           | IgG     |
| Herpes Simplex Virus Type 1 (HSV-1) Glycoprotein E                            | MAb  | C65120M   | Mouse                  | EIA, IFA          | Purified           | IgG1    |
| Herpes Simplex Virus Type 1 (HSV-1) Nucleocapsid Protein (155kDa)             | MAb  | C05014MA  | Mouse                  | IFA, IP, WB       | Purified           | IgG1    |
| Herpes Simplex Virus Type 1 (HSV-1)                                           | PAb  | B65131G   | Goat                   | EIA, IFA          | Purified           | N/A     |
| Herpes Simplex Virus Type 1 (HSV-1)                                           | PAb  | B65133G   | Goat                   | EIA, IFA          | FITC               | N/A     |
| Herpes Simplex Virus Type 1 (HSV-1)                                           | PAb  | B65134G   | Goat                   | EIA               | HRP                | N/A     |
| <b>HSV-2</b>                                                                  |      |           |                        |                   |                    |         |
| Herpes Simplex Virus Type 2 (HSV-2) Antigen (Strain G) >10% Viral Protein     | Ag   | 7705      | Vero Cells             | EIA               | Partially Purified | N/A     |
| Herpes Simplex Virus Type 2 (HSV-2) Antigen (Strain G) Concentrate            | Ag   | 7749      | Vero Cells             | EIA               | Partially Purified | N/A     |
| Herpes Simplex Virus Type 2 (HSV-2) Glycoprotein D, Glycosylated, Recombinant | Ag   | VT1540    | <i>P. pastoris</i>     | EIA, WB           | Purified           | IgG2b   |
| Herpes Simplex Virus Type 2 (HSV-2) Glycoprotein D, Recombinant               | Ag   | R18530    | <i>E. coli</i>         | EIA, WB           | Purified           | IgG2b   |
| Herpes Simplex Virus Type 2 (HSV-2) Glycoprotein D (gD)                       | MAb  | C01859M   | Mouse                  | EIA, IFA          | Purified           | IgG1    |
| Herpes Simplex Virus Type 2 (HSV-2) Glycoprotein E                            | MAb  | C65901M   | Mouse                  | EIA               | Purified           | IgG1    |
| Herpes Simplex Virus Type 2 (HSV-2) Glycoprotein G (gG-2) Recombinant         | Ag   | R01673    | <i>E. coli</i>         | EIA, LF, CLIA, WB | Purified           | N/A     |
| Herpes Simplex Virus Type 2 (HSV-2) Glycoprotein G (gG)                       | Ag   | R01594    | Synthetic              | EIA, WB           | Purified           | N/A     |
| Herpes Simplex Virus Type 2 (HSV-2) Glycoprotein G (gG)                       | Ag   | R01591    | Synthetic              | EIA, WB           | Purified           | N/A     |
| Herpes Simplex Virus Type 2 (HSV-2) Glycoprotein G, Recombinant               | Ag   | R18350    | <i>E. coli</i>         | EIA, WB           | Purified           | IgG2b   |
| Herpes Simplex Virus Type 2 (HSV-2) Glycoprotein G, Recombinant               | Ag   | VT1530    | <i>S. cerevisiae</i>   | EIA, WB           | Purified           | IgG2b   |
| Herpes Simplex Virus Type 2 (HSV-2) Glycoprotein G                            | MAb  | C65116M   | Mouse                  | IFA               | Purified           | IgG1    |
| Herpes Simplex Virus Type 2 (HSV-2) Glycoprotein G-2                          | MAb  | C66501M   | Mouse                  | WB                | Ascites            | IgG     |
| Herpes Simplex Virus Type 2 (HSV-2) Glycoprotein G-2                          | MAb  | C66516M   | Mouse                  | WB                | Purified           | IgG     |
| Herpes Simplex Virus Type 2 (HSV-2)                                           | MAb  | C01292M   | Mouse                  | EIA               | Purified           | IgG1    |



## Herpes Simplex Virus Type 1 (HSV-1) & 2 (HSV-2) continued

| Specificity                                               | Type | Catalog # | Host / Source | Tested Apps  | Format   | Isotype |
|-----------------------------------------------------------|------|-----------|---------------|--------------|----------|---------|
| Herpes Simplex Virus Type 2 (HSV-2)                       | PAb  | B65121S   | Sheep         | EIA, IFA, WB | Purified | N/A     |
| Herpes Simplex Virus Type 2 (HSV-2)                       | PAb  | B65123S   | Sheep         | EIA, IFA, WB | FITC     | N/A     |
| Herpes Simplex Virus Type 2 (HSV-2)                       | PAb  | B65124S   | Sheep         | EIA, ICC, WB | HRP      | N/A     |
| <b>HSV-1 &amp; HSV-2</b>                                  |      |           |               |              |          |         |
| Herpes Simplex Virus Types 1 & 2 (HSV-1&2) Glycoprotein D | MAb  | C65912M   | Mouse         | EIA, IFA     | Purified | IgG2    |
| Herpes Simplex Virus Types 1 & 2 (HSV-1&2)                | PAb  | B65107R   | Rabbit        | IFA, WB      | Purified | N/A     |
| Herpes Simplex Virus Types 1 & 2 (HSV-1&2)                | PAb  | B65205R   | Rabbit        | EIA, ICC     | HRP      | N/A     |

## Human T-Cell Lymphotropic Virus Type 1 (HTLV-I)

HTLV-1 belongs to a family of retroviruses that infects T-lymphocytes to cause a range of disorders. Infection is usually asymptomatic in the beginning and typically manifests later in life to cause fatal leukemia, debilitating myelopathy, uveitis, infectious dermatitis, or other inflammatory disorders. HTLV-1 can be transmitted via breast milk, sexual contact, and intravenous drug use. Serological assays such as ELISA and PCR for HTLV are widely used in routine screening of blood donors.

| Specificity                                                                    | Type | Catalog # | Host / Source  | Tested Apps | Format   | Isotype |
|--------------------------------------------------------------------------------|------|-----------|----------------|-------------|----------|---------|
| Human T-Cell Lymphotropic Virus Type 1 Env. C-Terminal of gp46 and most of p21 | Ag   | R18142    | <i>E. coli</i> | EIA, WB     | Purified | N/A     |
| Human T-Cell Lymphotropic Virus Type 1 gp21 (a.a. 351-404)                     | Ag   | R01433    | <i>E. coli</i> | EIA, WB, LF | Purified | N/A     |
| Human T-Cell Lymphotropic Virus Type 1 gp46-gp21 (a.a. 165-440)                | Ag   | R01434    | <i>E. coli</i> | EIA, WB, LF | Purified | N/A     |
| Human T-Cell Lymphotropic Virus Type 1 p24                                     | Ag   | R18152    | <i>E. coli</i> | EIA, WB     | Purified | N/A     |

## Mycoplasma genitalium

*Mycoplasma genitalium* is a common sexually transmitted disease with many of the same symptoms as gonorrhea and chlamydia. It is a bacterium that infects the urethra, cervix and anus and most infections are asymptomatic. In men, it is the second most common cause of nongonococcal urethritis and in women, *M. genitalium* is commonly found in association with bacterial vaginosis, cervicitis and pelvic inflammatory disease. An FDA approved assay for *M. genitalium* is not yet available so diagnosis is usually made in patient with persist symptoms who test negative for chlamydia and gonorrhea.

| Specificity                  | Type | Catalog # | Host / Source | Tested Apps | Format   | Isotype |
|------------------------------|------|-----------|---------------|-------------|----------|---------|
| <i>Mycoplasma genitalium</i> | MAb  | C01665M   | Mouse         | EIA, IFA    | Purified | IgG2b   |
| <i>Mycoplasma genitalium</i> | MAb  | C01666M   | Mouse         | EIA, IFA    | Purified | IgG2b   |
| <i>Mycoplasma genitalium</i> | MAb  | C01667M   | Mouse         | EIA, IFA    | Purified | IgG2b   |
| <i>Mycoplasma genitalium</i> | MAb  | C01668M   | Mouse         | EIA, IFA    | Purified | IgG2b   |

# Product list | Continued

## *Neisseria gonorrhoeae*

*N. gonorrhoeae* is a gram-negative bacteria that causes infections in the urethra, cervix, vagina or anus. It is one of the two most common STDs in the United States along with chlamydia. If left untreated, gonorrhea infections can spread to higher portions of the reproductive tract, causing prostatitis and epididymitis in men, or pelvic inflammatory disease (PID) in women. It can be diagnosed by serologic methods using antigen detection assays, such as direct fluorescent antibody (DFA) testing and enzyme immunoassay (EIA).

| Specificity                                  | Type | Catalog # | Host / Source | Tested Apps | Format   | Isotype |
|----------------------------------------------|------|-----------|---------------|-------------|----------|---------|
| <i>Neisseria gonorrhoeae</i>                 | MAB  | C01818M   | Mouse         | EIA, IFA    | Purified | IgG2b   |
| <i>Neisseria gonorrhoeae</i>                 | MAB  | C01819M   | Mouse         | EIA, IFA    | Purified | IgG2b   |
| <i>Neisseria gonorrhoeae</i>                 | MAB  | C01820M   | Mouse         | EIA, IFA    | Purified | IgG1    |
| <i>Neisseria gonorrhoeae</i> (all antigens)  | PAb  | B65111B   | Rabbit        | IFA         | Biotin   | N/A     |
| <i>Neisseria gonorrhoeae</i> (all antigens)  | PAb  | B65111R   | Rabbit        | IFA         | Purified | N/A     |
| <i>Neisseria gonorrhoeae</i> (all antigens)  | PAb  | B65111P   | Rabbit        | EIA, ICC    | HRP      | N/A     |
| <i>Neisseria meningitidis</i> (all antigens) | PAb  | B65612F   | Rabbit        | IFA         | FITC     | N/A     |
| <i>Neisseria meningitidis</i> (all antigens) | PAb  | B65612R   | Rabbit        | EIA, IFA    | Purified | N/A     |

## *Treponema pallidum* (Syphilis)

*T. pallidum* is a spirochete bacterium that is passed from person to person through direct contact with a syphilis sore. It causes a systemic infection with symptoms that vary depending on the stage of the disease and it can have very serious complications when left untreated. Syphilis has several clinical manifestations, making it difficult to diagnose based on clinical symptoms alone. Also, *T. pallidum* cannot be isolated in culture so confirmation must be performed either via ELISA-based serological assays or by direct visual inspection using microscopy. In the past few years, several highly immunogenic lipoproteins have been identified as diagnostic targets throughout all stages of a syphilis infection, including Tp17, Tp15, Tp44.5 (TmpA), Tp47, Tp41 and Tp35 (TmpC). For this reason, several commercial tests have been developed using a combination of these immunogenic antigens and have proven to be highly sensitive and specific for the diagnosis of an active or latent syphilis infection.

| Specificity                                                                          | Type | Catalog # | Host / Source  | Tested Apps | Format   | Isotype |
|--------------------------------------------------------------------------------------|------|-----------|----------------|-------------|----------|---------|
| <i>Treponema pallidum</i> (Syphilis) p17, GST Tag, Recombinant                       | Ag   | BN1038    | <i>E. coli</i> | EIA, LF, Pr | Purified | N/A     |
| <i>Treponema pallidum</i> (Syphilis) p17, MBP Tag, Recombinant                       | Ag   | BN1039    | <i>E. coli</i> | EIA, LF, Pr | Purified | N/A     |
| <i>Treponema pallidum</i> (Syphilis) p17, MBP Tag, Recombinant                       | Ag   | BN1044    | <i>E. coli</i> | EIA, LF, Pr | Purified | N/A     |
| <i>Treponema pallidum</i> (Syphilis) p45, GST Tag, Recombinant                       | Ag   | BN1040    | <i>E. coli</i> | EIA, LF     | Purified | N/A     |
| <i>Treponema pallidum</i> (Syphilis) p45, N-term His-Tag, Recombinant                | Ag   | BN1041    | <i>E. coli</i> | EIA, LF, Pr | Purified | N/A     |
| <i>Treponema pallidum</i> (Syphilis) P17 + P45 Chimeric, MBP Tag, Recombinant        | Ag   | BN1042    | <i>E. coli</i> | EIA, LF     | Purified | N/A     |
| <i>Treponema pallidum</i> (Syphilis) P17 + P45 Chimeric, N-term His-Tag, Recombinant | Ag   | BN1043    | <i>E. coli</i> | EIA, LF, Pr | Purified | N/A     |
| <i>Treponema pallidum</i> (Syphilis) p15, Recombinant                                | Ag   | R01582    | <i>E. coli</i> | EIA, WB     | Purified | N/A     |
| <i>Treponema pallidum</i> (Syphilis) p15, Recombinant                                | Ag   | R8A101    | <i>E. coli</i> | EIA, WB     | Purified | N/A     |
| <i>Treponema pallidum</i> (Syphilis) p15, Recombinant                                | Ag   | R01531    | <i>E. coli</i> | EIA         | Purified | N/A     |
| <i>Treponema pallidum</i> (Syphilis) p17, Recombinant                                | Ag   | R01583    | <i>E. coli</i> | EIA, WB     | Purified | N/A     |
| <i>Treponema pallidum</i> (Syphilis) p17, Recombinant                                | Ag   | R8A201    | <i>E. coli</i> | EIA, WB     | Purified | N/A     |
| <i>Treponema pallidum</i> (Syphilis) p17, Recombinant                                | Ag   | R01497    | <i>E. coli</i> | EIA         | Purified | N/A     |
| <i>Treponema pallidum</i> (Syphilis) p17, Recombinant                                | Ag   | R01528    | <i>E. coli</i> | EIA         | Purified | N/A     |
| <i>Treponema pallidum</i> (Syphilis) p41, Recombinant                                | Ag   | R18044    | <i>E. coli</i> | EIA, WB     | Purified | N/A     |
| <i>Treponema pallidum</i> (Syphilis) p41, Recombinant                                | Ag   | R18830    | <i>E. coli</i> | EIA, WB     | Purified | N/A     |
| <i>Treponema pallidum</i> (Syphilis) p41, Recombinant                                | Ag   | R01529    | <i>E. coli</i> | EIA         | Purified | N/A     |

## Treponema pallidum (Syphilis) continued

| Specificity                                                                                 | Type | Catalog # | Host / Source  | Tested Apps  | Format   | Isotype |
|---------------------------------------------------------------------------------------------|------|-----------|----------------|--------------|----------|---------|
| Treponema pallidum (Syphilis) p47, mosaic of immunodominant regions, Recombinant            | Ag   | R01568    | <i>E. coli</i> | EIA          | Purified | N/A     |
| Treponema pallidum (Syphilis) p47, Recombinant                                              | Ag   | R8A403    | <i>E. coli</i> | EIA, WB      | Purified | N/A     |
| Treponema pallidum (Syphilis) p47 Recombinant                                               | Ag   | R01606    | <i>E. coli</i> | EIA, LF, WB  | Purified | N/A     |
| Treponema pallidum (Syphilis) Treponemal Membrane Protein A (TmpA) Recombinant              | Ag   | R8A404    | <i>E. coli</i> | EIA, WB      | Purified | N/A     |
| Treponema pallidum (Syphilis) Treponemal Membrane Protein A (TmpA) Recombinant              | Ag   | R01530    | <i>E. coli</i> | EIA          | Purified | N/A     |
| Treponema pallidum (Syphilis) Treponemal Membrane Protein A (TmpA) (Syphilis) Recombinant   | Ag   | R01665    | <i>E. coli</i> | EIA, WB      | Purified | N/A     |
| Treponema pallidum (Syphilis) Treponemal Membrane Protein A (TmpA) Full Length, Recombinant | Ag   | R01632    | <i>E. coli</i> | EIA, LF, WB  | Purified | N/A     |
| Treponema pallidum (Syphilis) p17/p15/p44.5/p47 Recombinant                                 | Ag   | R01705    | <i>E. coli</i> | EIA          | Purified | N/A     |
| Treponema pallidum (Syphilis) p15/p17/p47, Recombinant                                      | Ag   | R01681    | <i>E. coli</i> | LF, Pr       | Purified | N/A     |
| Treponema pallidum (Syphilis) p15/p17/p47, Recombinant                                      | Ag   | R01682    | <i>E. coli</i> | LF, Pr       | Purified | N/A     |
| Treponema pallidum (Syphilis)                                                               | MAB  | C65811M   | Mouse          | EIA, IFA, WB | Purified | IgG2b   |
| Treponema pallidum (Syphilis) p47                                                           | MAB  | C01263M   | Mouse          | EIA, IFA, WB | Purified | IgG2    |
| Treponema pallidum (Syphilis) (all antigens)                                                | PAb  | B65210B   | Rabbit         | IFA, IHC(p)  | Biotin   | N/A     |
| Treponema pallidum (Syphilis) (all antigens)                                                | PAb  | B65210F   | Rabbit         | IFA, IHC(p)  | FITC     | N/A     |
| Treponema pallidum (Syphilis) (all antigens)                                                | PAb  | B65210R   | Rabbit         | IFA, IHC(p)  | Purified | N/A     |
| Treponema pallidum (Syphilis) (all antigens)                                                | PAb  | B65210P   | Rabbit         | IHC(p)       | HRP      | N/A     |

## Trichomonas vaginalis

*T. vaginalis* is an anaerobic, flagellated protozoan parasite and the most common curable STD. Approximately 70% of women and 30% of men with *T. vaginalis* do not exhibit symptoms so diagnosis based on clinical symptoms alone is unreliable. Although traditional methods such as direct microscopic observation (wet mount) of vaginal secretions are still used, newer methods, such as rapid antigen testing and transcription-mediated amplification, have demonstrated much greater sensitivity.

| Specificity                                 | Type | Catalog # | Host / Source  | Tested Apps  | Format   | Isotype |
|---------------------------------------------|------|-----------|----------------|--------------|----------|---------|
| Trichomonas vaginalis                       | MAB  | C01567M   | Mouse /Ascites | IFA          | Purified | IgG1    |
| Trichomonas vaginalis                       | MAB  | C01568M   | Mouse /Ascites | EIA, IFA, Pr | Purified | IgG3    |
| Trichomonas vaginalis                       | MAB  | C01571M   | Mouse /Ascites | EIA, IFA, Pr | Purified | IgG3    |
| Trichomonas vaginalis, p65 adhesive antigen | MAB  | C65675M   | Mouse /Ascites | EIA, IFA     | Purified | IgG1    |



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