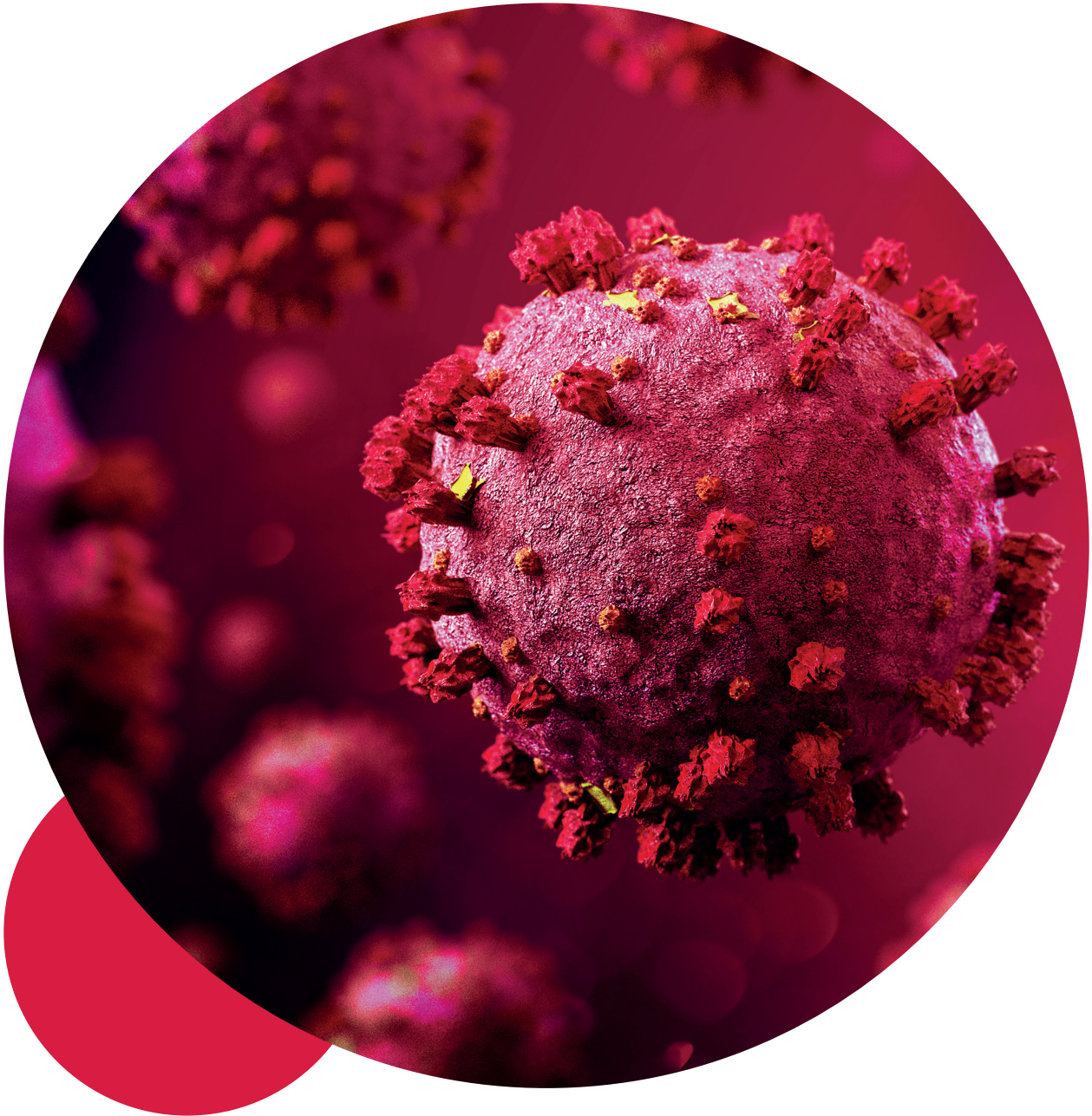


INFECTIOUS DISEASES

Sample preparation



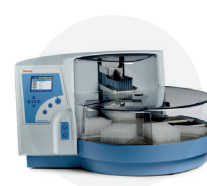
Extract viral DNA/RNA, bacterial DNA,
and parasite DNA for detection of
infectious diseases

Company overview

Invitek Diagnostics produces high quality nucleic acid extraction products for infectious diseases, from research to diagnostics. Our extraction systems enable an excellent performance in downstream applications such as Next Generation Sequencing (NGS) and multiplex PCR detection systems.

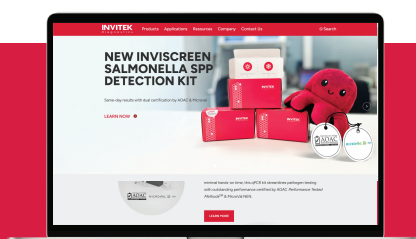
Invitek's product lines Universal and Ready-to-Prep (RTP®) for infectious diseases cover all requirements of daily routine labs.

Kit overview



Kit	Invisorb® Spin Universal Kit (CE-IVD)	RTP® Pathogen Kit (CE-IVD)	InviMag® Universal Kit / KF96 (CE-IVD)
Method	Manual	Manual	Automated
Technology	Spin filter column	Spin filter column	Magnetic bead
Sample capacity	Small to medium throughput	Small to medium throughput	1-96
Processing time	30 min + lysis	20 min + lysis	40-70 min/96 samples

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UNIVERSAL Kit Series:

Broad specimen compatibility for all diagnostic targets

The InviSorb® and InviMag® Universal Kits are versatile options for diagnostic labs, ideal for isolating viral DNA/RNA, bacterial DNA, and DNA of protozoa. They are suitable for in vitro diagnostics, compatible with various starting materials, and can be used manually or with automated procedures. They support high-throughput processing of diverse samples with established protocols for common extraction platforms.



InviSorb®



InviMag®

InviSorb® Spin Universal Kit

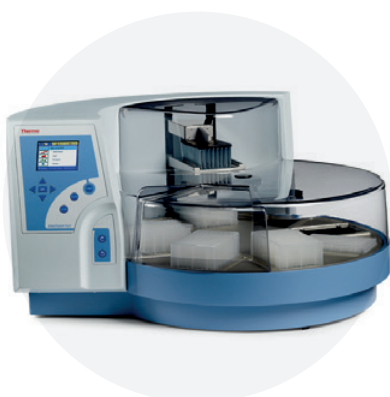
Manual Precision for Confident Diagnostics



- One kit for all diagnostic targets: Isolation of viral DNA/RNA, bacterial DNA & DNA of protozoa
- Flexible use: suitable for most clinically relevant starting materials (e.g. serum, plasma, urine, blood, stool suspension, bacterial enrichment culture)
- CE-IVD certified, recommended for in vitro diagnostic use

InviMag® Universal Kit/ KF96

High-Throughput Purification with Magnetic Precision



- High reliability: automated and standardized sample processing on the KingFisher™ Flex Purification System¹
- High throughput: automated processing of up to 96 samples in one run
- One kit for all diagnostic targets: Isolation of viral DNA/RNA, bacterial DNA & protozoal DNA
- Flexible use: suitable for most clinically relevant starting materials (e.g. serum, plasma, urine, blood, stool suspension, bacterial enrichment culture)
- CE-IVD certified, recommended for in vitro diagnostic use

¹ RUO protocols for additional magnetic bead handling instruments are available on invitek.com

RTP® Pathogen Kit

Maximum reproducibility with lyophilized components

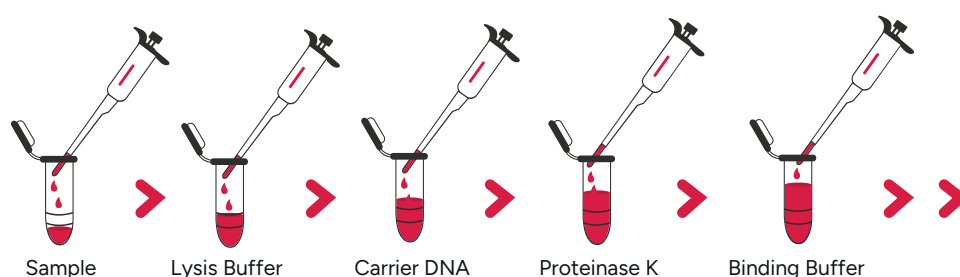
Rapid extraction with Ready-to-Prep (RTP®) Technology: the Extraction Tube is prefilled with lyophilized buffer containing all components needed for extraction (e.g. Carrier RNA, Proteinase K). Simply add your sample and save up to 40% hands-on time compared to traditional manual extraction protocols.



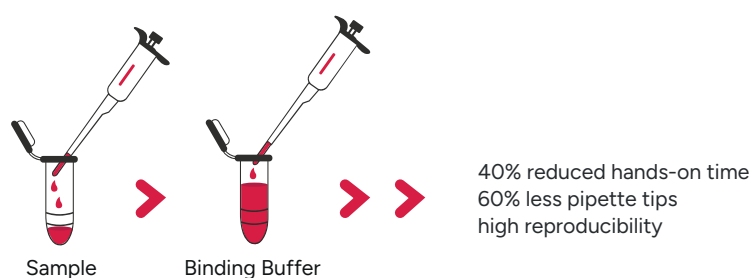
- Pre-filled Extraction Tubes for one-step sample lysis; storage of tubes at room temperature
- Save hands-on time and plastic: less centrifugation and pipetting steps due to one-step lysis
- Multipurpose kit: simultaneous isolation of viral DNA/RNA and protozoal DNA from most clinically relevant starting materials (e.g. serum, plasma, stool suspension, bacterial enrichment culture, tissue)
- CE-IVD certified, recommended for in vitro diagnostic use

Fast and convenient handling

Classical Method



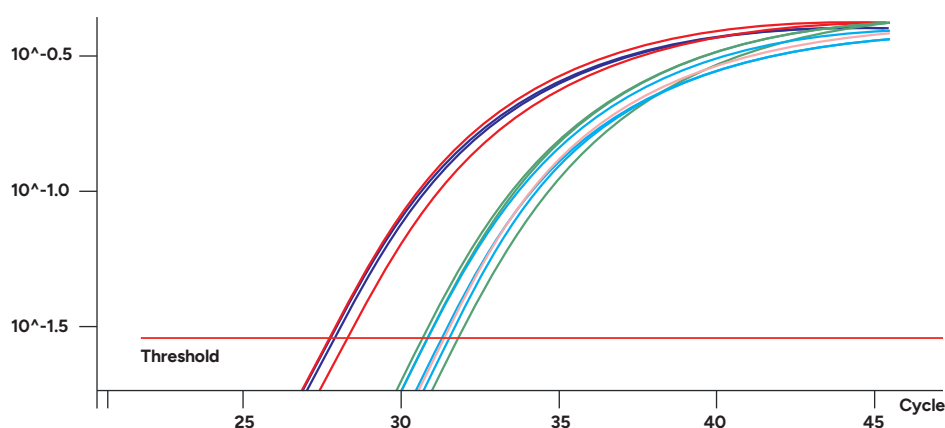
RTP® Technology



Comparison

RTP® Pathogen Kit with Invisorb® Universal Spin Kit

To compare the performance of the RTP® Pathogen Kit and Invisorb® Spin Universal Kit, RNA was prepared from 0.1 µl and 0.01 µl Influenza A virus stock spiked in 200 µl serum. Three replicates each were purified with both extraction kits. PCR was performed with SureFast® Influenza A Virus Kit (Congen, Berlin, Germany) according to the manufacturer's instructions. Results show (see below) equivalent results for both extraction kits.

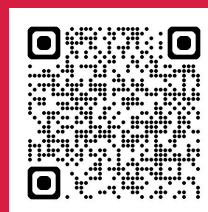
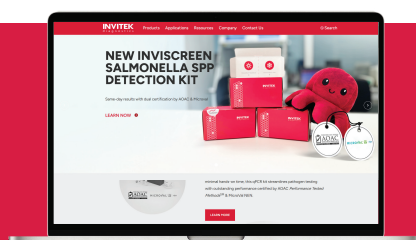


PCR assay SureFast® Influenza A (Congen, Berlin, Germany), FAM Channel. RNA was extracted from Influenza A spiked serum in two dilution levels with RTP® Pathogen and Invisorb® Spin Universal Kit, Blue/light blue: extraction with RTP® Pathogen. Red/light red: extraction with Invisorb® Spin Universal Kit. Green: PTC.

Ct values for samples spiked with Influenza A in two dilutions. RNA was extracted with RTP® Pathogen Kit and Invisorb® Spin Universal Kit.

RTP® Pathogen Kit			Invisorb® Spin Universal Kit		
0.1 µl Influenza A			0.1 µl Influenza A		
Sample	Ct	CV [%]	Sample	Ct	CV [%]
1 	27.31	0.08	1 	27.67	0.27
2 	27.23		2 	27.35	
3 	27.38		3 	27.14	
0.01 µl Influenza A			0.01 µl Influenza A		
Sample	Ct	CV [%]	Sample	Ct	CV [%]
1 	30.96	0.40	1 	31.09	0.40
2 	30.18		2 	30.31	
3 	30.75		3 	30.84	
PTC 	30.08		PTC 	31.22	

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Selection of Infectious Diseases Publications

InviSorb® Spin Universal Kit

Pathogen	Sample Type	Downstream Application	Publication
Bacteria			
Escherichia coli (EAEC, EIEC, EPEC, ETEC), Salmonella spp., Shigella spp., Campylobacter jejuni, Yersinia spp.	Fecal samples	PCR	Chercos et al., 2024 ¹
Neisseria gonorrhoeae, Chlamydia trachomatis, Mycoplasma genitalium, Mycoplasma hominis, Ureaplasma urealyticum, Ureaplasma parvum, and Trichomonas vaginalis	Vaginal swab	PCR	Cortés-Ortiz et al., 2023 ²
Salmonella enterica serovars	Salmonella coultures isolated from poultry and humans	End-point PCR for virulence genes	Lozano-Villegas et al., 2023 ³
Viruses			
Human papillomavirus (HPV)	Cervical epithelial cells	PCR	Fulawka et al., 2025 ⁴
Human papillomavirus (HPV)	Vaginal swab	PCR	Cortés-Ortiz et al., 2023 ²
Hepatitis C virus (HCV)	Plasma	RT-PCR	Molès et al., 2023 ⁵
Hepatitis E virus, Norovirus, Hepatitis A virus	Fecal samples	RT-PCR	Chercos et al., 2024 ¹
Hepatitis C virus (HCV)	Blood	PCR, RT-PCR	Jhelum et al., 2023 ⁶
Protozoa (Parasites)			
Entamoeba histolytica, Giardia duodenalis, Cyclospora spp., Cryptosporidium parvum, Ancylostoma spp., Ascaris lumbricoides, Enterobius vermicularis, Hymenolepis nana, Necator americanus, Schistosoma spp., Strongyloides stercoralis, Taenia saginata, Taenia solium, Trichuris trichiura	Fecal samples	PCR	Chercos et al., 2024 ¹

InviMag® Universal Kit/ KF96

Pathogen	Sample Type	Downstream Application	Publication
Bacteria			
Coxiella burnetii, Chlamydia abortus	Goat milk, vaginal swabs, dust samples, animal tissue	PCR	Trachsel et al., 2023 ⁷
Rickettsia spp.	Ticks	PCR, sequencing	Chitanga et al., 2021 ⁸
Coxiella burnetii	Goat milk, animal tissue	PCR	Bauer et al., 2024 ⁹
Oral microbiota	Dental plaque swabs	16S rRNA Sequencing	van Meijeren-van Lunteren et al., 2023 ¹⁰
Viruses			
SARS-CoV-2	Respiratory swabs	RT-PCR, Whole Genome Sequencing (Nanopore)	Hassan et al., 2024 ¹¹
Various plant viruses	Plant material	Nanopore sequencing	Liefting et al., 2021 ¹²
SARS-CoV-2	Nasopharyngeal swabs	RT-PCR, RT-RPA, RT-RAA	

RTP® Pathogen Kit

Pathogen	Sample Type	Downstream Application	Publication
Bacteria			
Mycoplasma pneumoniae, Haemophilus influenzae (b and non-b type), Chlamydiae	Pharyngeal Swabs	PCR	Krumkamp et al., 2023 ¹⁴
Streptococcus pneumoniae, Staphylococcus aureus, Haemophilus influenzae type b, Chlamydia pneumoniae, and Mycoplasma pneumoniae	Nasopharyngeal Swabs	PCR	Khan et al., 2021 ¹⁵
Aeromonas hydrophila, Enterobacter aerogenes, Enterococcus faecalis, Enterobacter cloacae, Escherichia coli, Klebsiella pneumoniae, Proteus mirabilis, Pantoea agglomerans, Serratia fonticola, Bacteroides distasonis, Bacteroides fragilis, Bacteroides vulgatus, Fusobacterium species	Fecal Samples	Sequencing	Vázquez-López et al., 2021 ¹⁶
Viruses			
Parvovirus B19 (B19V)	Serum	PCR	Herr et al., 2020 ¹⁷
Influenza A/B, RSV, hMPV, human Parainfluenzaviruses 1–4 (hPiV1-4), human Coronaviruses (hCoV)-229E, -OC43, -NL63, -HKU1, Enteroviruses, Rhinoviruses, Adenoviruses	Pharyngeal Swabs	RT-PCR	Krumkamp et al., 2023 ¹⁴
Mesonivirus (MeSV), Negevirus (NeV), Arboviruses	Mosquitos	RT-PCR, Sequencing	Agboli et al., 2023 ¹⁸
SARS-CoV-2	Cornea, nasopharyngeal swabs, conjunctival swabs	RT-PCR	Wille et al., 2022 ¹⁹
Human Adenovirus, Human Bocavirus, Human Coronavirus (NL63, 229E, OC43 and HKU1229), Enterovirus, Influenza A Virus, Influenza A H1N1 Virus, Influenza B Virus, Human Metapneumovirus A/B, Human Parainfluenza Virus 1, 2, 3 and 4, Human Parechovirus, Human Rhinovirus, RSV A/B	Nasopharyngeal Swabs	RT-PCR	Khan et al., 2021 ¹⁵
Protozoa (Parasites)			
Trypanosoma cruzi	Serum	PCR	Kann et al., 2023 ²⁰
Trypanosoma cruzi	Serum	PCR, 18S rRNA Sequencing	Kann et al., 2020 ²¹

¹ Spectrum of respiratory viral infections in liver disease patients with cirrhosis admitted in critical care unit. Bajpai V, Gupta E, Mitra LG, Kumar H, Maiwall R, Soni KD, Gupta A, J Lab Physicians. 2019 Oct-Dec;11(4):356-360

² Respiratory Pathogens in Infants Diagnosed with Acute Lower Respiratory Tract Infection in a Tertiary Care Hospital of Western India Using Multiplex Real Time PCR. Sonawane AA, Shastri J, Bavdekar SB. Indian J Pediatr. 2019 May;86(5):433-438

³ Acute Respiratory Illness in Rural Haiti. Kim YY, Lew JF, Keith B, Telisma T, Nelson EJ, Brantly AC, Chavannes S, Anilis G, Yang Y, Liu M, Alam MT, Rashid MH, Morris JG Jr, Madsen Beau De Rochars VE. Int J Infect Dis. 2019 Apr;81:176-183

⁴ Acute respiratory viral infections in pediatric cancer patients undergoing chemotherapy. Benites EC, Cabrini DP, Silva AC, Silva JC, Catalan DT, Berezin EN, Cardoso MR, Passos SD. J Pediatr (Rio J). 2014 Jul-Aug;90(4):370-6

⁵ Burden of influenza among hospitalized febrile children in Ghana. Hogan et al., Influenza Other Respir Viruses. 2017 Nov;11(6):497-501

⁶ New Safety Aspects in Corneal Donation-Studies on SARS-CoV-2-Positive Corneal Donors. Wille D, Heinzemann J, Kehlen A, Lütgehetmann M, Nörz DS, Siebels U, Mueller A, Karrasch M, Hofmann N, Viestenz A, Börgel M, Kuhn F, Viestenz A. J Clin Med. 2022 Jun 9;11(12):3312.

⁷ SARS-CoV-2 and influenza virus coinfection among patients with severe acute respiratory infection during the first wave of COVID-19 pandemic in Bangladesh: a hospital-based descriptive study. Akhtar Z, Islam MA, Aleem MA, Mah-E-Muneer S, Ahmed MK, Ghosh PK, Rahman M, Rahman MZ, Sumiya MK, Rahman MM, Shirin T, Alamgir ASM, Banu S, Rahman M, Chowdhury F. BMJ Open. 2021 Nov 29;11(11):e053768.

⁸ Evaluation of recombinase-based isothermal amplification assays for point-of-need detection of SARS-CoV-2 in resource limited settings Ghosh P, Chowdhury R, Hossain ME, Hossain F, Miah M, Rashid MU, Baker J, Rahman MZ, Rahman M, Ma X, Duthie MS, Wahed AAE, Mondal D. Int J Infect Dis. 2021 Nov 7;114:105-111.

⁹ Detection of adenovirus and respiratory syncytial virus in patients with chronic obstructive pulmonary disease: Exacerbation versus stable condition. Kokturk N, Bozdayi G, Yilmaz S, Doğan B, Gulbahar O, Rota S, Tatlicioglu T. Mol Med Rep. 2015 Aug;12(2):3039-46

¹⁰ Cytomegalovirus and Langerhans Cell Histiocytosis: Is There a Link? Maliheh Khoddami, Seyed-Alireza Nadj, Paria Dehghanian, Mahsa Vahdatinia and Ahmad-Reza Shamshiri, Iran J Pediatr. 2016 April; 26(2):e673

¹¹ Detection of Epstein-Barr Virus DNA in Langerhans Cell Histiocytosis. Khoddami M, Nadj SA, Dehghanian P, Vahdatinia M, Shamshiri AR Jundishapur J Microbiol. 2015 Dec 26;8(12):e2721

¹² Absence of Human Papillomavirus in Benign and Malignant Breast Tissue. Kazemi Aghdam M, Nadj SA, Alvandimanesh A, Maliheh M, Khademi Y. Iran J Pathol. 2019 Fall;14(4):279-283

¹³ Comparison of different polymerase chain reaction methods for detection of herpes simplex virus types 1 and 2 encephalitis. Altuglu I, Zeytinoglu A, Sirin H, Yuceyar N, Erensoy S. Eur J Clin Microbiol Infect Dis. 2006 Oct;25(10):669-71

¹⁴ A 12-year molecular survey of clinical herpes simplex virus type 2 isolates demonstrates the circulation of clade A and B strains in Germany. Schmidt-Chanasit J, Bialonski A, Heinemann P, Ulrich RG, Günther S, Rabenau HF, Doerr HW. J Clin Virol. 2010 Jul; 48(3):208-11. Epub 2010 May 21

¹⁵ Novel varicella-zoster virus glycoprotein E gene mutations associated with genotypes A and D. Schmidt-Chanasit et al.; J. Clin. Microbiol. , Jan. 2008, 46 (1); 325–327

¹⁶ Molecular analysis of varicella-zoster virus strains circulating in Tanzania demonstrating the presence of genotype M1. Schmidt-Chanasit J, Olschläger S, Günther S, Jaeger G, Bleyemehl K, Schäd SG, Heckel G, Ulrich RG, Doerr HW. J Clin Microbiol.

2008 Oct;46(10):3530-3

¹⁷ Simple technique for in field samples collection in the cases of skin rash illness and subsequent PCR detection of orthopoxviruses and varicella zoster virus. Dumont C, Irengue LM, Magazani EK, Garin D, Muyembe JJ, Bentahir M, Gala JL. PLoS One. 2014 May 19;9(5):e96930

¹⁸ Methicillin-resistant Staphylococcus aureus in cattle food chains - prevalence, diversity, and antimicrobial resistance in Germany. Tenhagen BA, Vossenkuhl B, Käsböhrer A, Alt K, Kraushaar B, Guerra B, Schroeter A, Fetsch A. J Anim Sci. 2014 Jun;92(6):2741-51

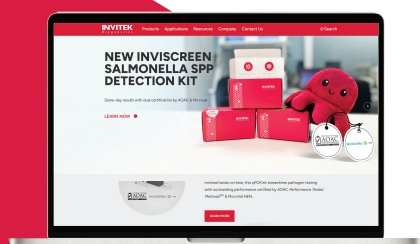
¹⁹ Stock culture heterogeneity rather than new mutational variation complicates short-term cell physiology studies of Escherichia coli K-12 MG1655 in continuous culture. Nahku R, Peebo K, Valgepea K, Barrick JE, Adamberg K, Vilu R. Microbiology (Reading). 2011 Sep;157(Pt 9):2604-2610

²⁰ Virulence gene profiling of enterohemorrhagic (EHEC) and enteropathogenic (EPEC) Escherichia coli strains: a basis for molecular risk assessment of typical and atypical EPEC strains. Bugarel M, Martin A, Fach P, Beutin L. BMC Microbiol. 2011 Jun 21;11:142

²¹ Comparing the genomes of Helicobacter pylori clinical strain UMO32 and Mice-adapted derivatives. Khosravi Y, Rehvaty V, Wee WY, Wang S, Baybayan P, Singh S, Ashby M, Ong J, Amoyo AA, Wee SS, Choo SW, Perkins T, Chua EG, Tay A, Marshall BJ, Loke MF, Goh KL, Petterson S, Vadivelu J. Gut Pathog. 2013 Aug 19;5(1):25

Ordering information

Product	Package size	Catalogue No.
Invisorb® Spin Universal Kit (CE-IVD)	50 preps 250 preps	1050100200 1050100300
InviMag® Universal Kit/ KF96 (CE-IVD) (for use on KingFisher™ 96 and KingFisher™ Flex, Thermo Fisher Scientific)	5 x 96 preps	7450300200
InviMag® Universal Kit/ KF96 w/o plastic (CE-IVD) (without KingFisher™ plastic)	5 x 96 preps	7450300250
RTP® Pathogen Kit (CE-IVD)	50 preps 250 preps	1040500200 1040500300
InviMag® Universal Kit/ IG (CE-IVD) (for use on the InviGenius® PLUS, Invitek Molecular GmbH)	8 x 12 preps	7450300200



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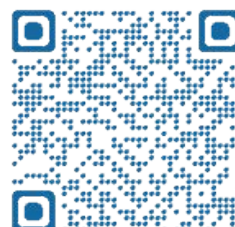


In compliance with REGULATION (EU) 2017/746 on in vitro diagnostic medical devices. Not for in vitro diagnostic use in countries where the REGULATION (EU) 2017/746 on in vitro diagnostic medical devices is not recognized.

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