

Table S1: Molecular Diagnostic Tests for MERS-CoV

Commercial and regulated assays for MERS-CoV are presented. Legacy lab-developed tests and in-house assays are not presented here, as sensitivity/specificity/LOD data is lab-specific (see MERS-CoV Matrix of Suppliers.xlsx for further detail).

Commercial – single assays									
Developer	System	Regulation	Sample Type	Target	LOD	Sensitivity /PPA	Specificity /NPA	Specimens tested	Reference assay
Altona Diagnostics GmbH (GER)	RealStar MERS-CoV RT-PCR Kit 1.0 RealStar® (US EUA, EU versions)	FDA EUA 2016 CE-IVD WHO EUA	Extracted RNA is the starting material for the RealStar® MERS-CoV RT-PCR Kit 1.0	upE, orf1a (single assays)	upE: 0.54 copies/µl (540 copies/mL) orf1a: 0.93 copies/µl (930 copies/mL)	100% >2.25xLOD (in-house assay)	95%-100% clinical negative for 17 infective agents, incl CoV NL63, OC43, 229E, HKU-1, H3N2, H1N1, RSV A/B)	19 clinical samples from one patient tested at the Institute of Virology, University of Bonn Medical Centre	No true clinical samples - known spiked RNA
BioGX (USA)	MERS-CoV ORF1a, upE Open System Reagents for BD MAX™	RUO US export only	sputum	upE, orf1a	no info	no info	negative for 39 pathogens	no info	no info
BioinGentech (Chile)	HumqPCR-realtime™ MERS-CoV VetqPCR-realtime™ MERS-CoV	CE	no info	no info	no info	no info	no info	no info	no info
Bioneer (KOR)	AccuPower MERS-CoV (upE&ORF1a) Real-Time RT-PCR Kit	CE-IVD	sputum, nasopharyngeal swab and bronchoalveolar lavage	upE, orf1a	upE: 5.5 copies/test orf1a: 8.9 copies/test	no info	negative for 26 pathogens and human total RNA	no info	no info
BioSB / LifeRiver (USA) Shanghai ZJ Bio-Tech Co., Ltd (China)	MERS-CoV Real Time PCR Kit	CE-IVD	sputum, gargle or PBMC from non-heparin anticoagulation	upE, N	1×10 ³ copies/ml	no info	no info	no info	no info
Fast-track Diagnostics (Malta) (partnered with Siemens 2017)	FTD MERS-CoV also FTIyo MERS-CoV (master mix)	CE-IVD	throat/nasal swabs, bronchoalveolar lavage and sputum	upE	10 ³ copies/ml	87% (15 specimens - proficiency panel) 100% (10 samples, QMCD panel)	100% (77 clinical samples containing bacteria and viruses)	15 positive specimens, 20 negative specimens	no info
Genesig /Primerdesign (UK)	Human Coronavirus MERS kit (HCoV_2012) (also master mix option)	RUO	not listed	upE, orf1a/b	can detect < 100 copies of target template	no info	no info	no info	no info

KogeneBiotech (KOR)	PowerChek MERS Real-Time PCR kit (also upE-only and orf1a kits)	CE-IVD	no info	upE, orf1a	no info	no info	no info	no info	no info
Seegene (KOR)	Anyplex™ MERS-CoV (upE & orf1a) Real-time Detection (2nd gen)	CE-IVD	nasopharyngeal aspirate, nasopharyngeal swab, bronchoalveolar lavage, and sputum	upE, orf1a	50 copies/rxn	no info	negative for 86 pathogens	no info	no info
SolGent (KOR)	DiaPlexQ MERS Virus Detection kit	RUO	sputum	upE, orf1a/1b	no info	no info	no info	no info	no info
TIB MOLBIOL GmbH (GER) (partnered with Roche)	LightMix <i>UpE</i> LightMix <i>Orf1a</i>	RUO	nasopharyngeal or oropharyngeal swabs, lower respiratory tract tracheal aspirates or bronchoalveolar lavage, serum	upE, orf1a (single assays)	upE: 3.4 copies/rxn, 291 copies/mL of sample orf1a: 4.1 copies/rxn	1 clinical MERS specimen (detected by upE and orf1a but not orf1b)	100% orf1a: 42 clinical samples upE 92: clinical samples	1 clinical MERS specimen (in pub); 42 & 92 negatives	no info

Commercial – multiplex assays									
Developer	System	Regulatory status	Sample Type	Target	LOD	Sensitivity /PPA	Specificity /NPA	Specimens tested	Reference assay
BioFire /bioMerieux (USA)	FilmArray Respiratory Panel 2 plus (RP2plus) (MERS EU ONLY)	CE-IVD	nasopharyngeal swabs (NPS)	23 pathogens: MERS-CoV, Adenovirus, Coronavirus (229E, HKU1, NL63, OC43), Human Bocavirus, Human Metapneumovirus, Human Rhinovirus/Enterovirus, Influenza (A, A H1, A H1-2009, A H3, B), Parainfluenza (1, 2, 3, 4), RSV (A, B); Bordetella pertussis, Chlamydia pneumoniae, Mycoplasma pneumoniae	no info	no info	no info	no info	no info
Ecoli Ltd. (Slovak Republic)	AmpliSens Cov-Bat-FRT PCR kit, MERS + SARS	CE-IVD	nasopharyngeal and oropharyngeal swabs, blood plasma, sputum, feces	MERS-CoV: upE SARS-CoV: Pol gene	1 x 10 ³ GE/ml Genome equivalents (GE) of the pathogen agent per 1 ml of a sample.	98%-100% spiked specimens "The clinical specificity of AmpliSens® Cov-Bat-FRT PCR kit was confirmed in laboratory clinical trials."	98%-100% feline coronavirus (FC0 and FC1), canine coronavirus, avian coronavirus, Cov-E229, Cov-OC43, Cov-HKU1, Cov-NL63, influenza virus A and B, respiratory syncytial virus, methapneumovirus, parainfluenza viruses, ...	spiked biological samples with MERS-Cov RNA and SARS RNA	no info
GenMark Diagnostics, Inc. (USA)	ePlex respiratory pathogen panel (RP panel) (MERS EU ONLY)	CE-IVD	nasopharyngeal swabs (NPS)	22 pathogens: MERS-CoV, Bordetella parapertussis, Adenovirus, CoV (229E, HKU1, NL63, OC43), Influenza (A, A/H3, A/2009-H1, B), Human Metapneumovirus, Human Rhinovirus/Enterovirus, Parainfluenza (PIV1, PIV2, PIV3, PIV4), RSV A	no info	no info	no info	no info	no info

