

Table S2: Serology Tests

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 ELISA and IFT/IFA									
Developer	System	Regulatory status	Sample Type	Target	LOD	Sensitivity /PPA	Specificity /NPA	Specimens tested	Reference assay
Alpha Diagnostic International (US)	Camel Anti-MERS-NP IgG ELISA Kit	RUO	serum, plasma or other biological fluids	Recombinant (sf9), purified (95%, ~46 kda), full length MERS-NP protein MERS-CoV ([Human betacoronavirus 2c EMC/2012]) is used as antigen.	<0.75 ug/mL IgG or IgM	no info	no info	no info	no info
Alpha Diagnostic International (US)	Human Anti-MERS-RBD IgG ELISA Kit	RUO	serum, plasma or other biological fluids	Recombinant purified (95%, MERS-CoV-RBD, 383-502 aa ~14.5 kda) protein (Human betacoronavirus 2c EMC/2012) is used as antigen.	<0.75 ug/mL IgG or IgM	no info	no info	no info	no info
Alpha Diagnostic International (US)	Human Anti-MERS-S2 IgG ELISA Kit	RUO	serum, plasma or other biological fluids	Recombinant (sf9), MERS-S2 (95%, ~66 kda, full length) MERS-S2 protein (Human betacoronavirus 2c EMC/2012) is used as antigen.	<0.75 ug/mL IgG or IgM	no info	no info	no info	no info
EUROIMMUN (GER) (acquired by Perkin Elmer 2017)	Camel Anti-MERS-CoV-ELISA (IgG)	CE-IVD	Camel serum or plasma	purified spike protein domain S1 antigen of MERS coronavirus (MERS-CoV S1)	The lower detection limit of the Anti-MERS-CoV ELISA (IgG) is ratio 0.04.	100% (151 specimens)	100% (33 specimens)	Sera from 184 camels (151 positive, 33 negative)	in-house assays (rIFA, vIFA) of the Institute of Virology, University of Bonn, Germany
EUROIMMUN (GER) (acquired by Perkin Elmer 2017)	Camel Anti-MERS-CoV IIFT (IgG, IgM)	CE-IVD	Camel serum and plasma	MERS coronavirus-infected and non-infected cells (species EU 14)	Titer < 1 : 100	99.4%	100%	Sera from 196 camels (163 positive, 33 negative)	in-house assays (rIFA, vIFA) of the Institute of Virology, University of Bonn, Germany
EUROIMMUN (GER) (acquired by Perkin Elmer 2017)	Human Anti-MERS-CoV-ELISA (IgG)	CE-IVD	Human (serum)	purified spike protein domain S1 antigen of MERS coronavirus (MERS-CoV S1)	The lower detection limit of the Anti-MERS-CoV ELISA (IgG) is ratio 0.04.	100% (4 specimens)	99.8% (500 specimens)	Sera from four patients with MERS and 500 blood donors with other infections	in-house assays (rIFA, vIFA) of the Institute of Virology, University of Bonn, Germany

EUROIMMUN (GER) (acquired by Perkin Elmer 2017)	Human Anti-MERS-CoV IIFT (IgG, IgM)	CE-IVD	Human serum and plasma	For the detection of antibodies against MERS coronavirus by indirect immunofluorescence, MERS coronavirus infected cells (species EU 14) are used	MERS IgG: Positive reaction at 1:100 indicates former or acute infection. MERS IgM: Positive reaction at 1:10 indicates acute infection	100% sens	100% spec	IgG: 29 clinically characterized MERS positive; 264 negative samples IgM: 5 clinically characterized MERS positive; 165 negative samples	in-house assays (rIFA, vIFA) of the Institute of Virology, University of Bonn, Germany
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Commercial RDT

Developer	System	Regulatory status	Sample Type	Target	LOD	Sensitivity /PPA	Specificity /NPA	Specimens tested	Reference assay
BioNote Inc. (KOR) subsid of SD Biosensor	Camel Rapid MERS-CoV Ag Test (BioNote, RG1805SG)	RUO OIE 2016	camel nasal swab	MERS-CoV antigen	3.125 ng/mL of recombinant nucleocapsid Ag of MERS CoV	93.9%	99.6% (OIE value) bovine/canine/feline corona virus	66 pos, 523 neg	UpE and Orf1A rRT-PCR
SD Biosensor (KOR)	Human SD Q Line MERS-CoV Ag	RUO (?)	sputum and bronchoalveolar lavage, tracheal aspirate and pleural fluid	MERS-CoV antigen	no info	no info	no info	no info	no info