

SUPPLEMENTARY TABLES

Supplementary Table 2. Primer and probe sequences used in the conventional RT-qPCR and lab-developed RT-qPCR.

LabTurbo™ AIO COVID-19 RNA Testing Kit			
Primer name	Target gene	Sequence (5'→3')	References
E_Sarbeco_F		ACAGGTACGTTAATAGTTAATAGCGT	
E_Sarbeco_R	<i>E</i> gene	ATATTGCAGCAGTACGCACACA	[7]
E_Sarbeco_P		/5HEX/ACACTAGCC/ZEN/ATCCTTACTGCGCTTCG/3IABkFQ/	
2019-nCoV_N1-F		GACCCCAAATCAGCGAAAT	
2019-nCoV_N1-R	<i>NI</i> gene	TCTGGTTACTGCCAGTTGAATCTG	[7]
2019-nCoV_N1-P		/56-FAM/ACCCCGCAT/ZEN/TACGTTTGGTGGACC/3IABkFQ/	
RP-F		AGATTTGGACCTGCGAGCG	
RP-R	<i>RNase P</i> gene	GAGCGGCTGTCTCCACAAGT	[7]
RP-P		/5Cy5/TTCTGACCT/TAO/GAAGGCTCTGCGCG/3IAbRQSp/	
WHO			
Primer name	Target gene	Sequence (5'→3')	References
RdRP_SARSr-F2		GTGARATGGTCATGTGTGGCGG	
RdRP_SARSr-R1	<i>RdRP</i> gene	CARATGTTAAASACTATTAGCATA	[14]
RdRP_SARSr-P2		FAM-CAGGTGGAACCTCATCAGGAGATGC-BBQ	
E_Sarbeco_F		ACAGGTACGTTAATAGTTAATAGCGT	
E_Sarbeco_R	<i>E</i> gene	ATATTGCAGCAGTACGCACACA	[14]
E_Sarbeco_P		/5HEX/ACACTAGCC/ZEN/ATCCTTACTGCGCTTCG/3IABkFQ/	
RP-F		AGATTTGGACCTGCGAGCG	
RP-R	<i>RNase P</i> gene	GAGCGGCTGTCTCCACAAGT	[7]
RP-P		/5Cy5/TTCTGACCT/TAO/GAAGGCTCTGCGCG/3IAbRQSp/	

Supplementary Table 3. Positive and negative agreement of conventional RT-qPCR versus lab-developed direct RT-qPCR used by COVID-19 RNA reagent and WHO.

	Conventional RT-qPCR				Lab-developed Direct RT-qPCR			
	COVID-19 RNA kit		WHO		COVID-19 RNA kit		WHO	
	<i>NI</i>	<i>E</i>	<i>Rdrp</i>	<i>E</i>	<i>NI</i>	<i>E</i>	<i>Rdrp</i>	<i>E</i>
Total positive (<i>n</i>)	116		116		111		111	
High (<20)	55	48	55	48	46	38	43	36
Ct value (<i>n</i>)	Medium (20–29)		52		35		37	
Low (30–35)	9	22	8	22	33	45	32	42
Total negative (<i>n</i>)	654		654		659		659	

Supplementary Table 4. Cross-reaction of conventional RT-qPCR and lab-developed RT-qPCR with known respiratory viruses in clinical samples/cell supernatants.

Viral pathogens	Convention RT-qPCR	Direct RT-qPCR
Influenza A (H1)	Not detected	Not detected
Influenza A (H3)	Not detected	Not detected
Influenza A (H1N1)	Not detected	Not detected
Influenza B	Not detected	Not detected
Rhinovirus/ Enterovirus	Not detected	Not detected
Respiratory syncytial virus	Not detected	Not detected
Parainfluenza 1 virus	Not detected	Not detected
Parainfluenza 2 virus	Not detected	Not detected
Parainfluenza 3 virus	Not detected	Not detected
Adenovirus	Not detected	Not detected
Coronavirus NL96	Not detected	Not detected