LEXOGEN
Enabling complete transcriptome sequencing

Comparison of COVID-19 test methods

	Lexogen Panel* (NGS, RNA-Seq)	PCR (RT-qPCR)	LAMP (RT-LAMP)	Antigen (Ag)	Benefit
Target	Viral RNA	Viral RNA	Viral RNA	Viral antigen	
Method	Targeted conversion of RNA to DNA, library preparation and ultra high-throughput sequencing, bioinformatic data evaluation.	Targeted conversion of RNA to DNA and amplification of DNA which is visualised on a real-time fluorescence measurement.	Conversion of RNA to DNA and amplification of DNA which is visualised by a color change in the reaction tubes.	Antibody binds to a protein on the surface of the virus and is visualised on a lateral flow strip.	
Sputum sampling (gargling)	✔	✔	✔	✖	• Sputum sampling by gargling is non-invasive and painless • Can be conducted anywhere (at home or at work) • No trained personnel with protective equipment needed
Nasal sampling (nasopharyngeal)	✔	✔	✔	✔	• Nasal (nasopharyngeal) samples have higher virus load and increase sensitivity of the assay but they can be very painful and require trained personnel with protective equipment
Testing at Point of Care (PoC)	✖	✖	✖	✔	• Testing at PoC is fast and yields results immediately • Performing and evaluating the test at diagnostic (Dx) labs allows for certified workflows
Testing site and trained personnel required for sampling	No	No / Yes	No / Yes	Yes	• De-centralised sampling at home and work reduces risk of infection at testing site and removes many logistical challenges
Max number of samples per run	36,864	96	96	1	• High multiplexing is necessary for ultra high-throughput
Pooling	of individual molecular-barcoded samples	of samples w/o retaining identity	of samples w/o retaining identity	N/A	• Early molecular barcoding allows batch processing of samples while retaining their identity
Sensitivity for samples with Ct ≤ 30	> 99%	100%	97.50%	84% - 97.6%	• high sensitivity = few false negatives • low sensitivity = some infected individuals are not detected
Specificity	99.80%	98% - 100%	99.70%	> 97%	• high specificity = few false positives • low specificity = non-infected potentially diagnosed as positive
Suitable for symptomatic individuals	✔	✔	✔	✔	• Identification of individuals with high viral load and symptoms
Suitable for asymptomatic individuals (screening)	✔	✔	✔	✖	• Identification of individuals with low viral load and without symptoms
Lab / Assay time	16 h	2 h	2 h	15 min	
Sample-to-result time	20 h	5 h - 2 days	6 h	15 min	• Time to result is important in PoC settings • Mass screening setups benefit from results in 24 h
Cost per sample	< € 12	€ 40 - € 60	€ 9 - € 12	€ 7.10 - € 13	
Additional technical costs	✖	RNA extraction	RNA extraction	✖	
Total cost per sample	< € 15	> € 110	> € 15	> € 20	
Further costs	sample transport	sample transport	sample transport	Testing sites to be set up and sampling done by trained personnel with protective equipment	

* The Lexogen panel refers to the QuantSeq-Pool Targeted SARS-CoV-2 Panel for Illumina®. Learn more about it.