

RIDS pro

For the screening of susceptibility to respiratory infectious diseases

RIDS pro

Clinicians around the world have found that different people of the same gender and age had different outcomes when infected with SARS-COV2, even within the same family. Information on the genetic profile of the host (the infected subject) is becoming increasingly important, with the identification of specific genetic markers that can support the preventive identification of subjects at high or low risk.

According to recent studies, there is a strict correlation between genetic variants and:

- susceptibility to viral infection
- propensity to develop harmful pulmonary inflammation
- persistence of positivity
- vaccine resistance or development of adverse events

There are currently no solutions on the market that allow genetic profile screening. 4bases has developed a genetic test to meet this need: **RIDS (Respiratory Infectious Diseases Susceptibility) pro kit**. The tool is a complete solution from DNA extracted from blood or buccal swab, up to creation of a report.

RIDS pro solution

4bases has a consolidated experience in the development of CE-IVD genetic tests for the study of genetic predisposition to genetic diseases.

Thanks to the collaboration with two university hospitals, Tor Vergata and Bambin Gesù, 4bases is correlating anonymized key clinical data with the genetic markers obtained, to elaborate a genetic risk score.

RIDS pro does not stop at SARS-COV2, but the genetic markers contained in the kit correspond to variants of the immune system target also of other RNA viruses, such as the flu virus. This makes the project larger than the current pandemic and **RIDS pro** product a powerful tool applicable in the future to the prevention of infectious respiratory diseases, including the pandemics of the 2000s and new pandemics.

RIDS pro is a kit designed screen of genes involved in the infection pathway (predisposition or protection against infection), and in the host immune response to infection (predisposition or protection against a worse outcome).

The kit is validated for analysis of DNA extracted from different body tissues (blood, saliva, buccal swab, etc.).

RIDS pro kit contains all reagents required for the preparation of a specific bidirectional library of amplicons designed for the NGS analysis using Illumina.

Table 1: List of genes in **RIDS pro**

ACE2	FCGR2A	IFNL2	SLC6A20	UBE2V1
ADAMTS1	FLG	IFNL3	SMURF1	UNC93B1
APOE	FURIN	IFNLR1	SMURF2	VWF
CCL2	FYCO1	IFNW1	STAT1	WWP1
CCL5	GATA2	IFRD1	STAT2	WWP2
CCR1	HECW2	IL18	TBK1	XCR1
CCR2	ICAM3	IRF3	TICAM1	
CCR3	IFIH1	IRF7	TLR3	
CCR9	IFNA1	IRF9	TLR4	
CD14	IFNA17	LIMD1	TLR5	
CD209	IFNAR1	LZTFL1	TMPRSS2	
CHPF2	IFNAR2	MBL2	TNF	
CXCR6	IFNB1	MX1	TNFAIP3	
DBR1	IFNE	NEDD4	TNFSF13B	
DPP4	IFNG	NLRP1	TNRC6C	
DPP9	IFNGR1	OAS1	TRAF3	
ERAP2	IFNGR2	OAS2	TRAF3IP2	
F5	IFNK	OAS3	TRAF6	
FCER2	IFNL1	PEDS1	TYK2	

WORKFLOW

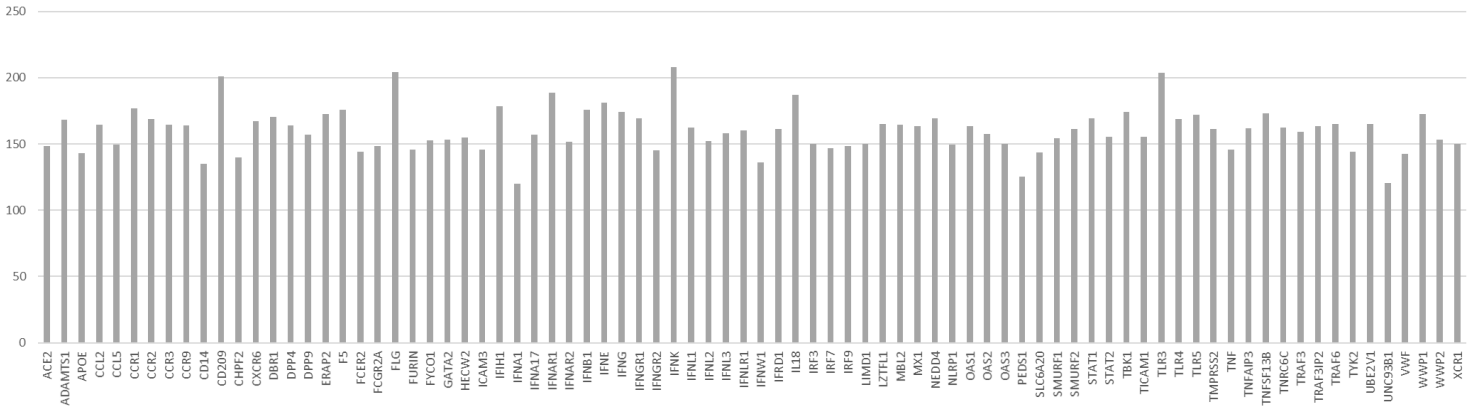
RIDS pro kit is part of a DNA-to-variant solution that offers streamlined content, easy-to-perform library preparation, push-button sequencing systems, and simplified data analysis. Library preparation follows a straightforward, capture-based protocol that can be completed in 1 day and a half, with a total hand on time of 5 hours. Resulting libraries can be normalized, pooled, and then loaded on to a flow cell for sequencing.

Prepared libraries are sequenced on any compatible Illumina sequencer.

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Figure1: Mean coverage on target at 50x >99%



Validation

To demonstrate assay capabilities, clinical samples were run in a clinical setting. DNA quality and quantity of the libraries prepared were verified using Qubit and Agilent Bioanalyzer.

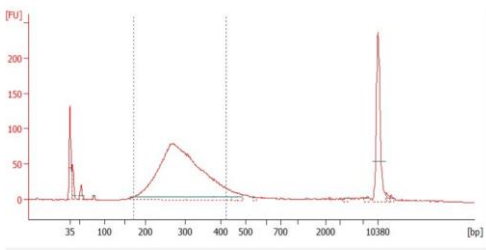


Figure 1. RIDS pro fragmented library Bioanalyzer profile.

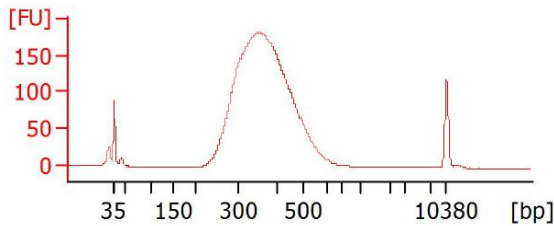


Figure 2. RIDS pro library Bioanalyzer profile.

SAMPLE PER RUN

Instrument	Sample per run
MiSeq Nano Kit v2 (300-cycles)	2
MiSeq Nano Kit v2 (500-cycles)	2
MiSeq Micro Kit v2 (300-cycles)	8
MiSeq Kit v2 (300-cycles)	32
MiSeq Kit v2 (500-cycles)	32
MiSeq Kit v3 (600-cycles)	48
MiniSeq Mid Output Kit (300-cycles)	16
MiniSeq High Output Kit (300-cycles)	48
iSeq 100 i1 kit (300-cycles)	8
NextSeq 550 Mid-Output Kit	288
NextSeq 550High-Output Kit	854

*the maximum number of samples per cartridge/chip estimated assuming an average depth of 300x for germline analysis. The optimal number of samples must be empirically determined on local setups.

Ordering Information

Product	REF
RIDS pro	C3000-16 (16 test)
RIDS pro	C3000-96 (96 test)
<i>For Illumina instruments</i>	
UDI Primers Set A (96 test)	7001
UDI Primers Set B (96 test)	7002
UDI Primers Set C (96 test)	7003
UDI Primers Set D (96 test)	7004
UDI Primers Set 16 (16 test)	7005

References

1. Anastassopoulou C et al, Human Genomics 2020;
2. Pairo-Castineira et al, Nature 2020;
3. Ellinghaus et al, Nature 2020;
4. Zhang et al, Science 2020