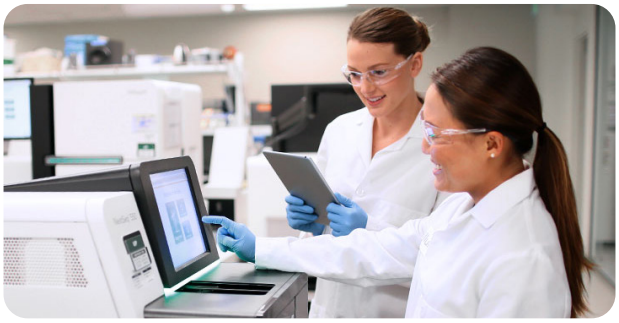
Illumina Respiratory Pathogen ID/AMR Panel

Comprehensive detection of SARS-CoV-2 variants, common and rare respiratory pathogens, and associated antimicrobial resistance (AMR) markers

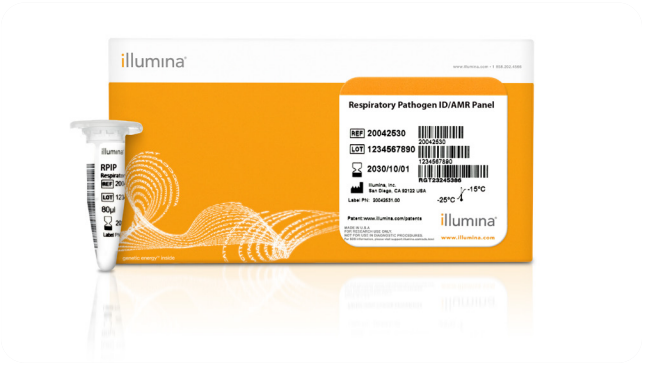


An unprecedented public health concern requires new testing capabilities

- Respiratory coinfections are a global health concern accelerated by COVID-19
- New, highly transmissible viral variants may impact effectiveness of diagnostic tests and vaccines[1]
- Increased antibiotic resistance is a global health threat

With the Respiratory Pathogen ID/AMR Panel, research labs can:

- Identify COVID-19 and determine viral variants and lineages
- Detect coinfections caused by viruses, bacteria, and fungi simultaneously
- Profile AMR gene expression to gain insights into pathogen antibiotic resistance
- Analyze a wide variety of sample types, including traditionally complex samples



- Report full genome coverage of SARS-CoV-2 and Influenza A/B viruses to surveil new variants and lineages

Streamlined, sample-to-results NGS workflow delivers results in under 24 hours

- Accurate, cost-effective detection of known and emerging respiratory pathogens with next-generation sequencing (NGS) combined with target enrichment and powerful, simple data analysis with the Explify platform

Prepare nucleic acid	Prepare cDNA	Prepare and enrich library	Sequence	Analyze data
Total nucleic acid extraction	Illumina RNA Prep with Enrichment with Illumina Respiratory Pathogen ID/AMR Panel		MiniSeq™ System Rapid Reagent Kit	Explify RPIP Data Analysis

For Research Use Only. Not for use in diagnostic procedures.

Analysis powered by Illumina

- Access in BaseSpace™ Sequence Hub
- Harness an easy-to-use solution for in-depth analysis with standardized interpretation using curated databases
- Issue results in four different formats:
  - Summary report (PDF)
  - Annotated mutation table for SARS-CoV-2 and Influenza A/B (TSV)
  - SARS-CoV-2 consensus genome (FASTA)
  - Detailed text-based report (JSON)

Pathogens targeted by the Respiratory Pathogen ID/AMR Panel

- Cost-effective detection of respiratory pathogens and associated antibiotic resistance genes in a single assay
- Broad targeting of DNA- and RNA-based pathogens, including 180+ bacteria, 40+ viruses, and 50+ fungi, and 2000+ AMR alleles with predicted resistance to 26 drug classes
- Comprehensive genome coverage of SARS-CoV-2 and Influenza A/B viruses enables surveillance of variants and lineages

Top targets on the Respiratory Pathogen ID/AMR Panel

Top bacteria[a]	Top viruses[a]	Top fungi[a]
Bordetella pertussis (5)	Adenovirus B, C, E	*Aspergillus fumigatus* (5)
Chlamydia pneumoniae (2)	Coronavirus 229E, HKU1, NL63, OC43	*Candida auris*
Coxiella burnetii	Cytomegalovirus (CMV)	*Coccidioides immitis* (1)
Enterobacter cloacae complex[b]	Enterovirus D68	*Fusarium solani* (3)
Francisella tularensis	Influenza A virus (H1N1, H3N2, avian)	*Histoplasma capsulatum*
Klebsiella pneumoniae (4)[b]	Influenza B virus	*Mucor racemosus* (2)
Legionella pneumophila (5)	Metapneumovirus	*Paracoccidioides brasiliensis*
Mycobacterium tuberculosis (9)	Parainfluenza virus 1-4	*Pneumocystis jirovecii*
Nocardia farcinica (9)	Respiratory syncytial virus A + B	*Rhizopus oryzae* (2)
Pseudomonas aeruginosa (2)[b]	Rhinovirus A, B, C	*Sporothrix schenckii*
Staphylococcus aureus[b]	SARS-CoV-2	*Talaromyces marneffei*
Streptococcus pneumoniae (7)[b]		

Number in parentheses indicates additional targeted species of the same genus.
a. Denotes leading causes of respiratory infections whether viral, fungal, or bacterial. Additional organisms that are known to cause infections are also targeted.
b. AMR markers included.

AMR markers targeted by the Respiratory Pathogen ID/AMR Panel

- Accurate prediction of resistance of 79 common common respiratory pathogens to 26 drug classes based on detection of > 2000 associated AMR markers

Drug classes on the Respiratory Pathogen ID/AMR Panel

Bacteria	*A. baumannii* *E. faecalis* *E. faecium* *E. cloacae* complex *E. coli* *K. pneumoniae* *P. aeruginosa* *S. aureus* *S. maltophilia* *S. pneumoniae*	Antibacterials	Aminoglycosides	Fosfomycin
			Beta-lactam + beta-lactamase inhibitor	Glycopeptides
			Carbapenems	Lincosamides
			Cephalosporins (1st generation)	Macrolides
			Cephalosporins (2nd generation)	Oxazolidinones
			Cephalosporins (3rd generation)	Penicillins
			Cephalosporins (4th generation)	Polymyxins
			Diaminopyrimidine	Sulfonamides
			Fluoroquinolones	Tetracyclines
Mycobacteria	*M. tuberculosis* complex *M. abscessus*	Antimycobacterials	First-line: Isoniazids Polyamine antibiotics Pyrazinamides Rifamycin antibiotics	Second-line: Ethionamides Para-aminosalicylic acids Aminoglycosides Fluoroquinolones
Viruses	Influenza A (H1N1) Influenza A (H3N2) Influenza A (H5N1) Influenza A H7N9)	Antivirals	Neuraminidase inhibitors	
			Endonuclease inhibitors	

Learn more

Full list of targets on the Respiratory Pathogen ID/AMR Panel

Illumina Repiratory Pathogen ID/AMR Panel

Explify RPIP Data Analysis on BaseSpace Sequence Hub

References

1. Washington NL, Gangavarapu K, Zeller M, et al. Genomic epidemiology identifies emergence and rapid transmission of SARS-CoV-2 B.1.1.7 in the United States. *medRxiv*. 2021;doi:10.1101/2021.02.06.21251159.

Illumina • 1.800.809.4566 toll-free (US) • +1.858.202.4566 tel • techsupport@illumina.com • www.illumina.com

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