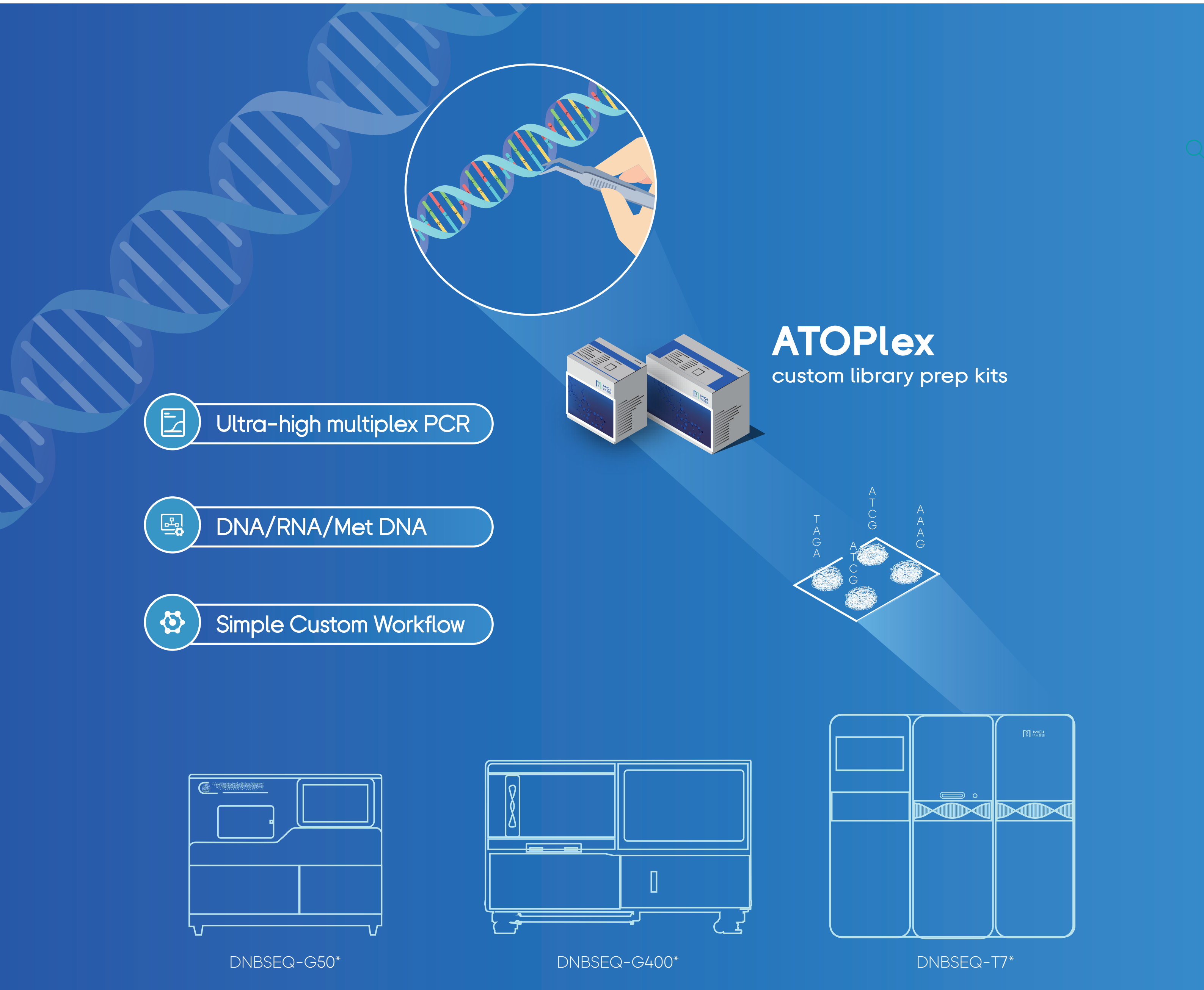
ATOPlex Platform

Targeted Sequencing · As Your Decision

MGI
ATOPlex Platform

Your accessible expert for customizing library prep reagent

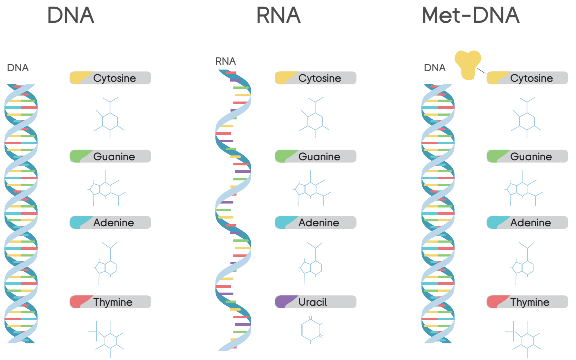


ATOPlex
custom library prep kits

- Ultra-high multiplex PCR
- DNA/RNA/Met DNA
- Simple Custom Workflow

INTRODUCTION
ATOPlex Platform

ATOPlex platform, based on MGI's self-developed ultra-high multiplex PCR technology, offers targeted library prep kits customized service with technologies such as Auto-workflow, Trace-samples, One-tube and Pure-PCR. It covers DNA, RNA and DNA methylation and can be applied in medicine, research, public health, food safety, DTC (direct to customer) and other gene detection demand.



SINGLE TUBE
Ultra-high Multi-PCR Technology

Own many core technologies to achieved primer auto-design, reducing dimer effectively during one-tube operation.

Simple workflow	Single tube Two steps
Ultra-high Panel Size	10-20000X
Less Sample Input	Minimum 0.1 ng or a few cells

Auto-workflow

Automated design workflow

Trace-samples

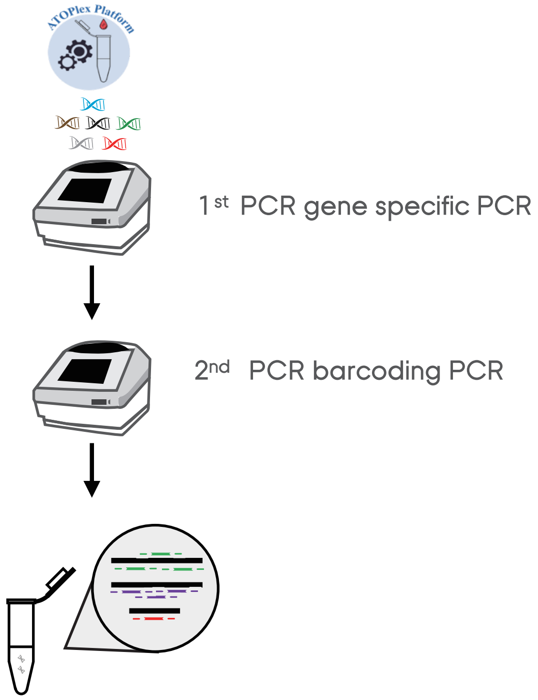
Diverse trace samples

Ont-tube

Amplified in one tube

Pure-PCR

Efficiently eradicate aerosol amplicons

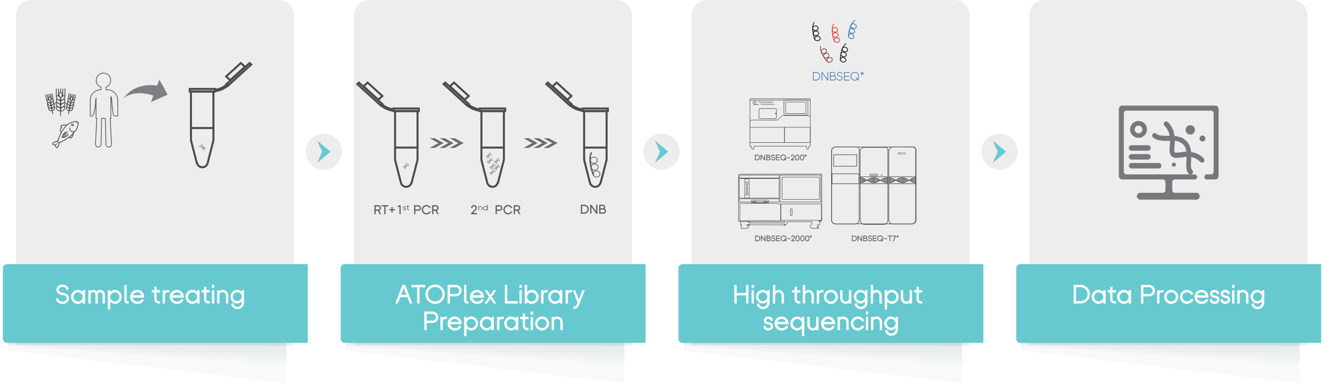


Excellent parameters

ATOPlex Custom Panel for targeted sequencing	
Platform	DNBSEQ-G50*/DNBSEQ-G400*/DNBSEQ-T7*
Sample type	Blood, blood plaque, free nucleic acid, FFPE samples and environmental extracts, etc
Panel size	10-20000X
Tubes	1 tube
Input	Recommend 10 ng input. Minimum input is 0.1 ng or single cell
Detection type	SNVs, indels, STRs, SNPs, mtDNA detection, CNV, hotspot fusion
Amplicon size	60-500 bp
Performance	≥95% coverage, ≥95% specificity, ≥90% uniformity
Field	Medicine, research, public health, food safety, etc.

WORKFLOW
Experiment and Order

Experiment-Easy and fast



Sample treating › ATOPlex Library Preparation › High throughput sequencing › Data Processing

0.5hour
4-6hours
10-48hours
1-2hours

Customized-Auto-design and standardized producing

Auto-design
Design report
Contract
Test
Producing
Delivery

Automized design website ATOPlex.mgi-tech.com


atoplex.mgi-tech.com

XXX@mail.com

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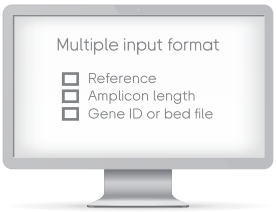

Multiple input format

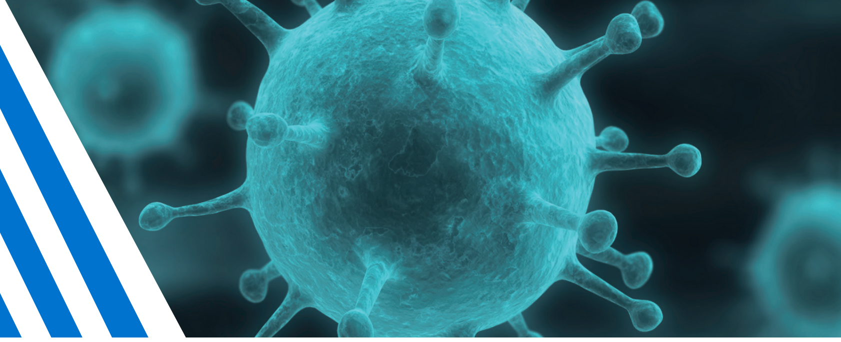
☐ Reference
☐ Amplicon length
☐ Gene ID or bed file


Detailed evolution report

Log in › Submit › Report

APPLICATION

Infection Research



ATOPlex RNA Virus whole genome amplicon panel

ATOPlex panel, aimed at designing covering whole genome of virus, amplifies the whole virus genome in one tube and gets mutation information through high throughput sequencing, applying to virus evolution research.

High sensitivity: minimum virus capacity is 10 copies/mL, applicable for many trace samples.

Accurate quantification: based on synthetic external standard, quantify the virus capacity in sample.

Outstanding performance: ＞99%virus whole genome coverage

Parameter	Specification
Aera	virus whole genome
Amplicon size	106-199 bp
Amplicon number	273X
Input amount	10 μL
Detection type	SNV Indel
Sample type	Swab, plasma, alveolar lavage fluid, environmental extracts, etc
Library prep time	6 h prep+1 h DNB
Handmade time	2.5 h
Uniformity	≥98%, 100copies
Specificity	≥95%, 100copies

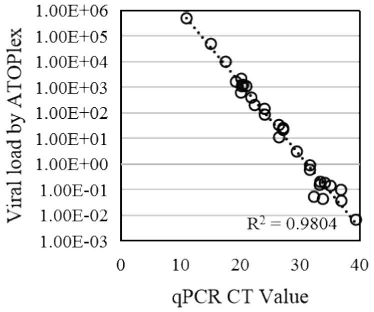
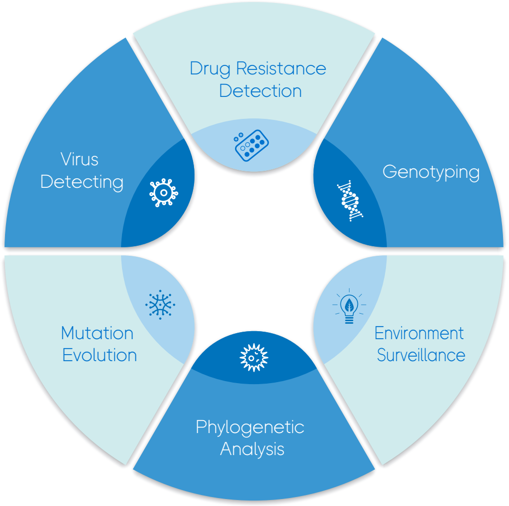


Figure 1-1 Virus quantification. ATOPlex quantification results are consistent with RT-qPCR well (R^2=0.99).



Drug Resistance Detection

Virus Detecting

Genotyping

Mutation Evolution

Environment Surveillance

Phylogenetic Analysis

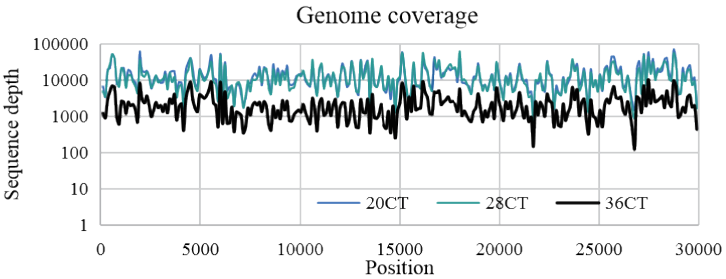
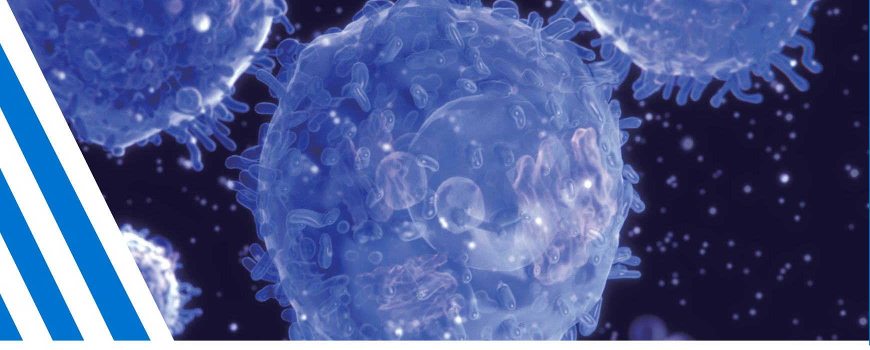


Figure 1-2 Genome assembly. In whole genome, 100X coverage can be achieved, and the depth gap between different position is within 2 orders of magnititude.

APPLICATION
Tumor Research



ATOPlex 53 tumor hotspot gene detection Panel

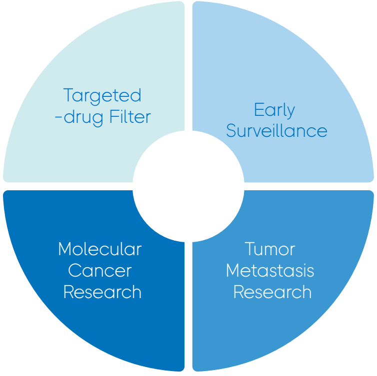
Aiming at 53 key genes in treating cancer and covering 2877 hotspot mutation, ATOPlex can get genetic information from FFPE sample through high-throughput sequencing, which can diagnose the genetic type of the patient and further achieve customized treatment.

Simple process: directly prepare library for FFPE sample

Effective detection: revise base damage in FFPE sample

Clean operation: control the aerosol pollution risk.

Parameter	Specification
Aera	>2800 COSMIC mutation hotspot
Amplicon size	130-187 bp(average155 bp)
Amplicon number	223X
Input amount	10 ng
Detection type	SNV Indel
Sample type	gDNA, Blood, FFPE
Library prep time	3 h prep+1 h DNB
Handmade time	1.5 h
Uniformity	≥96%
Specificity	≥98%



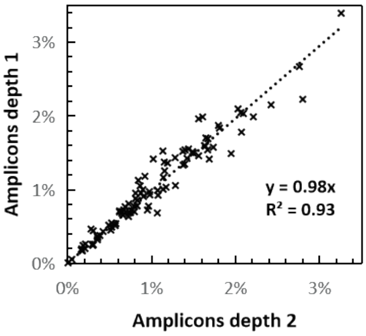


Figure 2-2 The stability of two experiments. Amplicon depths of the same sample in different experiments have good stability.

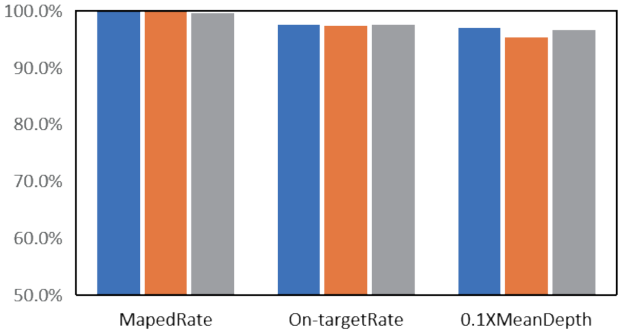


Figure 2-1 Basic performance parameter. The detection performance compare rate, specificity and uniformity are all over 95%.

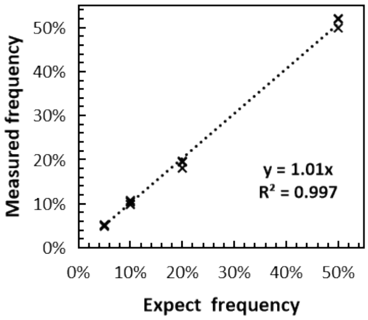


Figure 2-3 Mutation detection uniformity. Actual detecting frequency is highly consistent with theorical predicting detecting frequency.

APPLICATION
Human Identification

ATOPlex Signature Identification Panel

Aiming at specific SNPs, mitochondrial hypervariable region and common STR region design, ATOPlex panel can finish three different types of markers in one tube, able to detect blood, blood spot, environmental extracts, fair and other types of materials, applicable for forensic, signature identification and archaeology appraisal.

High sensitivity:

minimum initial mass is only 0.1ng, able to detect environmental sample

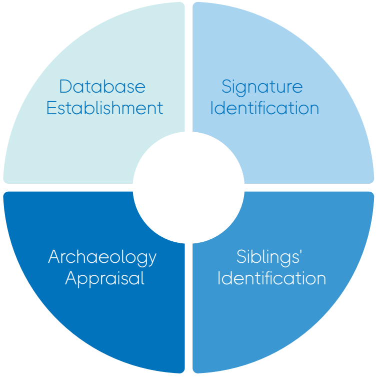
Accurate identification:

SNP/STR detection consistence > 99%

Anti-interference:

effectively avoid the influences from other impurities in sample

Parameter	Specification
Aera	131STR 215SNP and mtDNA area
Amplicon size	60-353 bp
Amplicon number	358X
Input amount	0.1 ng
Detection type	SNV STR mtDNA
Sample type	DNA, Blood Card (filter and FTA card)
Library prep time	3 h prep+1 h DNB
Handmade time	1.5 h
Uniformity	≥95%
Specificity	≥95%



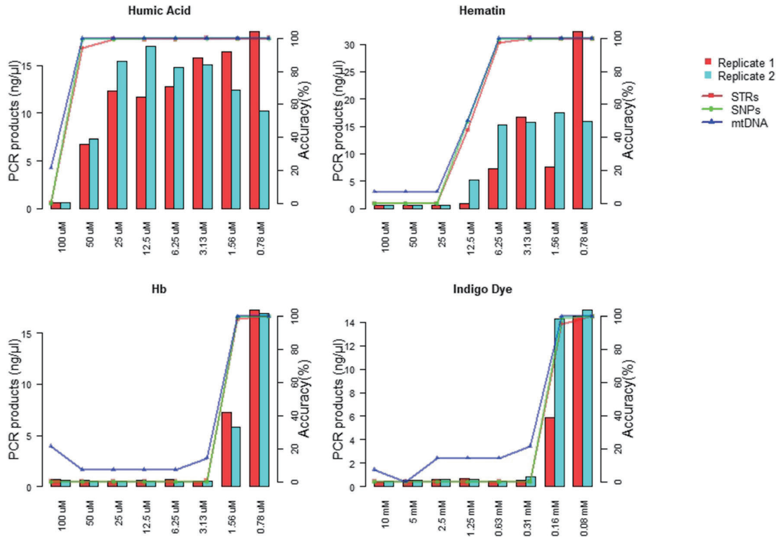


Figure 3-1 Amplicon anti-interference testing.
Good anti-interference against humic acid (50 μM), heme (12.5 μM), hemoglobin (1.56 μM), indigotin (0.16 mM)

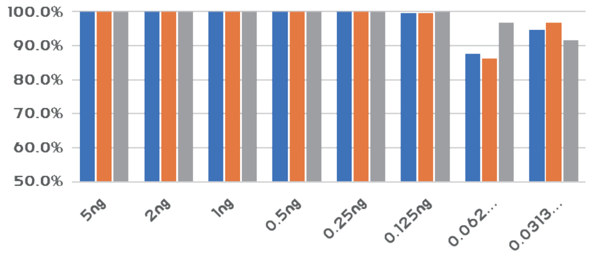


Figure 3-2 Detection accuracy.
When DNA input is down to 125pg,
the detection accuracy of SNP > 99%

Publication

[1]. Li, Ran, et al. "Developmental validation of the MGIEasy Signature Identification Library Prep Kit, an all-in-one multiplex system for forensic applications." **International Journal of Legal Medicine** 135.3 (2021): 739-753.

[2]. Li, Qian, et al. "Prolonged shedding of severe acute respiratory syndrome coronavirus 2 in patients with COVID-19." **Emerging microbes & infections** 9.1 (2020): 2571-2577.

[3]. Xiao, Minfeng, et al. "Multiple approaches for massively parallel sequencing of SARS-CoV-2 genomes directly from clinical samples." **Genome medicine** 12.1 (2020): 1-15.

[4]. Yang, Yong, et al. "Serological investigation of asymptomatic cases of SARS-CoV-2 infection reveals weak and declining antibody responses." **Emerging Microbes & Infections** 10.1 (2021): 905-912.

[5]. Souza, Thiago, et al. "Human endogenous retrovirus K activation in the lower respiratory tract of severe COVID-19 patients associates with early mortality." (2021).

[6]. Ni, Gaofeng, et al. "Novel Multiplexed Amplicon-Based Sequencing to Quantify SARS-CoV-2 RNA from Wastewater." **Environmental Science & Technology Letters** 8.8 (2021): 683-690.

[7]. Yang, Lin, et al. "Simultaneous detection of fetal aneuploidy, de novo FGFR3 mutations and paternally derived β - thalassemia by a novel method of noninvasive prenatal testing." **Prenatal diagnosis** 41.4 (2021): 440-448.

Order information

Product Number	Product Name
1000025301	ATOPlex DNA Custom Panel Design A (50X)
1000025302	ATOPlex DNA Custom Panel Design B (100X)
1000025303	ATOPlex DNA Custom Panel Design C (200X)
1000025304	ATOPlex DNA Custom Panel Design D (500X)
1000025305	ATOPlex DNA Custom Panel Design E (1000X)
1000025306	ATOPlex DNA Custom Panel Design F (1500X)
1000025307	ATOPlex DNA Custom Panel Design G (2000X)
1000025241/2	ATOPlex DNA Custom BC Library Prep Set

More

Website: https://www.mgi-tech.com/products/atoplex/
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Start ATOPlex Panel Design

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