Life Science Equipment

GeneQuest
Genetic Analyzer

GeneQuest Genetic Analyzer

Application

Unicorn provides Classic series genetic analyzer based on Sanger Sequencing Principle. We have made a breakthrough with the state-of-the-art Eight-color Fluorescence technology and optional 8-,16-, 24-, 96- (under research) channel analyzer, which can be applied in gene sequencing and fragment analysis. Therefore, it is suitable for basic Molecular Genetic Research, Clinical Medicine, Food Safety, Agricultural Science and other scenarios. Classic 108 and Classic 116 have been approved by NMPA and can be used for in vitro diagnosis.

Features (Continued)

- Equipped with multiple automatic warning functions such as low liquid level and replacement of reagent bottles, the preparation process is safe and reliable. Multi-channel split design has a high degree of configuration freedom and avoids frequent replacement of reagents.
- Multiple preparation methods can be set to achieve diversified preparations in different proportions, different volumes, and different times. Fifty thousand recipes can be preset and stored to simplify preparation.
- Using the Android operating system, it is easy to operate, easy to understand, and has a humanized interactive experience.

Technical Specifications

Model	ZPY-16
Preparation Channel	16
Sampling volume	0.1ml~999ml
Sampling accuracy	0.1ml
Sampling error	<1% (5ml)
Preparation volume	0.1~8000ml
Sampling speed	5~80ml/min
Power supply	100~240VAC, 50/60Hz, 75W

Infectious Disease

Diseases/Drugs	Detection Items	Clinical Significance
Hepatitis C	Genotyping of hepatitis C virus	Determine the illness, Assist in determining treatment optionsogrel
Hepatitis B	Hepatitis B virus drug resistance gene	Guidance of using medicine for Hepatitis B
Tuberculosis (TB)	Isoniazid resistance gene of Mycobacterium tuberculosis	Guidance of using Medicine for clinic
Tuberculosis (TB)	Mycobacterium tuberculosis is resistant to rifampicin	Guidance of using Medicine for clinic
Human papillomavirus infection	HPV genotyping	Early detection of HPV infection
Multiple respiratory infections	Common a variety of respiratory tract infection, respiratory tract bacteria, virus detection	Auxiliary diagnosis and differential diagnosis of respiratory tract infection
HIV/AIDS	Detection of drug resistance genotypes of human immunodeficiency virus type 1 (HIV-1)	Guidance for medicine using resistance

Oncology Department

Diseases/Drugs	Detection Items	Clinical Significance
Glioma	IDH1, IDH2, TERT gene	Classification and prognosis of glioma
Non-brainstem glioma/ giant cell tumor of bone	H3F3A, H3F3B genes	Assist in the diagnosis of non-brainstem glioma and giant cell tumor of bone
Gastrointestinal stromal tumor	KIT gene, PDGFRa gene	Efficacy of tyrosine kinase inhibitors. Prognostic assessment of disease
Breast cance	HER2, PIK3CA, CYP2D6, BRCA1/2 genes	Prediction of disease risk, prognosis and effective treatment plan
Non-small cell lung cancer	EGFR, K-RAS, B-Raf genes	Predicting the efficacy of targeted drugs; Prognostic evaluation of disease
Colorectal cance	K-ras, B-Raf, n-Ras genes	Prognosis evaluation and medication guidance
Targeted drugs/sorafenib, sunitinib, pazopani, bevacizumab, erlotinib, etc	PDGFRβ, VEGFR1, VEGFR2, EGFR, K-ras, B-Raf, PIK3CA, TTF-1, KIT, etc	Guidance for using targeted medicine
Chemotherapy drugs/platinum, taxus, fluorine, gemcitabine, purine, etoposide, teniposide, etc	ERCC1, ABCC2, XRCC1, GSTM1, XPD, GSTT1, GSTP1, BRCA1, etc.	Predict drug efficacy and reduce toxic and side effects
Irinotecan	UGT1A1 gene	Predict drug efficacy and reduce toxic and side effects

Reproductive Genetics

Diseases/Drugs	Detection Items	Clinical Significance
Trisomy 21 syndrome, Klinefelter syndrome, superfemale syndrome	Chromosome (13/18/21/X/Y) multiple STR genotyping	Prenatal and prenatal auxiliary diagnosis
Duchenne muscular dystrophy	DMD gene exon deletion, and repeat mutation detection	Differential diagnosis, prenatal screening
Brittle syndrome	Fragile X syndrome high-risk gene screening	Diagnosis and establishment of diagnosis, prenatal screening
Spinal muscular atrophy	Mutation detection of SMN1 and SMN2 genes	Prenatal genetic screening
Phenylketonuria	Detection of phenylketonuria gene mutation	Confirming diagnosis and directing treatment; eugenics
Deafness	Genetic testing for hereditary deafness	Genetic screening for neonatal deafness
Anemia	Detection of missing type α/β thalassemia (MLPA)	The differential diagnosis
Wilson's disease	ATP7B gene	Etiological diagnosis and early treatment; eugenics

Endocrinology Department

Diseases/Drugs	Detection Items	Clinical Significance
Adolescent onset of adult type diabetes	GCK, HNF1A, HNF4A, HNF1B, PDX1, NEUROD1 genes	Differential diagnosis of diabetes type and guidance of using medicine
Susceptibility to type 1 diabetes	MHC, CTLA4, TSHR genes	The great significant to evaluate the risk of GD
Papillary thyroid carcinoma, medullary thyroid carcinoma	RET gene	RET gene mutation is the molecular pathological basis of MTC
Multiple endocrine neoplasm	MEN1, RET gene	Prenatal diagnosis and provide the risk evaluation
Abnormal lipid metabolism	LDLR, APOB, LPL, ApoC ii, ABCA1, ApoC i, ApoC iii, ApoC iv, ApoC v genes	Effective screening of carriers, auxiliary diagnosis, early treatment
Diabetes	OCT2、CYP2C9、PPARγ、SLCO1B1	Personalized guidance of using medication
Congenital adrenal hyperplasia	CYP21A2 gene	Auxiliary diagnosis
Hyperuricemia, gout	HLA-B 5801	NCCN guidelines recommend hLA-B 5801 gene testing before allopurinol

Hematology Department

Diseases/Drugs	Detection Items	Clinical Significance
Primary test for acute myeloid leukemia (AML)	FLT3, KIT, TP53, RUNX1, CEBPA, ASXL1, NPM1, IDH1, IDH2 genes	Assist in diagnosis, medication guidance and prognosis assessment
Primary test for acute myeloid leukemia (AML)	DNMT3A, SF3B1, U2AF1, SRSF2, EZH2, WT1 genes	Assist in diagnosis, prediction of disease progression and prognosis assessment
Acute lymphoblastic leukemia (ALL)	BCR/ABL1, CRLF2, IKZF1, PRPS1, SH2B3, IL7R genes	Assist in diagnosis, prediction of disease progression and prognosis assessment
Primary myelofibrosis (PMF)	JAK2, MPL, ASXL1, EZH2, IDH1, IDH2, SRSF2, U2AF1, TP53 genes	Assist in diagnosis and condition evaluation
Polycythemia vera (PV)	JAK2, ASXL1, IDH1, IDH2, SRSF2 genes	Assist in diagnosis and prognosis
Primary thrombocytopenia (ET)	CALR、MPL、ASXL1、EZH2、SRSF2、U2AF1、TP53、SF3B1 genes	Assist in diagnosis, prognosis and progression
Myelodysplastic syndrome (MDS)	DNMT3A, ASXL1, EZH2, SF3B1, SRSF2, U2AF1, TP53, NRAS genes	Assist in diagnosis, prognosis and progression
Lymphocytic lymphoma/Fahrenheit macroglobulinemia (LPL/WM)	MYD88, CXCR4 gene	Auxiliary diagnostic LPL/WM
Chronic neutrophil leukemia (CNL)	CSF3R gene	Deterministic molecular abnormalities of CNL and atypical CML

Urology Department

Diseases/Drugs	Detection Items	Clinical Significance
Parkinson's disease	11 Parkinson's disease genes including SNCA	Genetic screening and early diagnosis of Parkinson's disease
Depression	CYP2D6 and four other genes	Guidance on antidepressant medication
Epilepsy	POLG and four other genes	Guidance of antiepileptic drugs
Mania	Two loci on GSK3B and NTRK2 genes associated with antimanic drugs	Guidance of using medicine for mania
Meningitis/encephalitis	Simultaneous detection of multiple encephalitis and meningitis pathogens	Etiological diagnosis of encephalitis and meningitise
Mental illness	SLC6A2 and 6 other genes	Guidance of using medicine for antipsychotic medication

Fragment Analysis of Flux and Performance Index

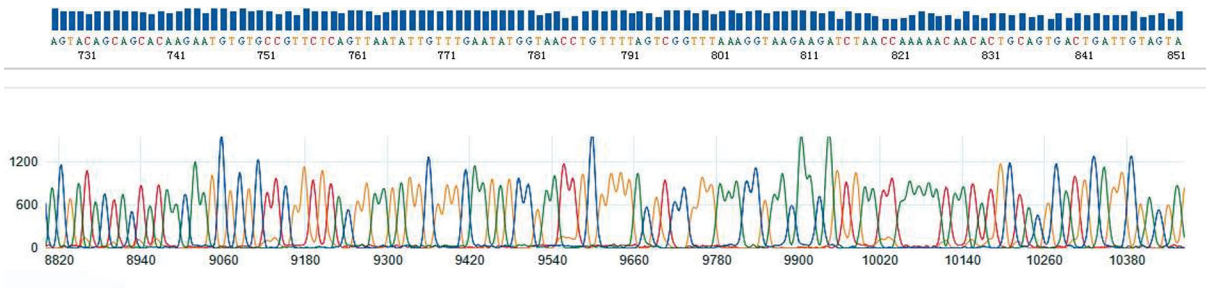
Operation Mode	Flux		Consumables		Performance				
					General performance		Accuracy of fragment size analysis(Standard deviation)		
	Average operation (min)	Maximum flux(sample /day)	Capill -ary length (cm)	Glue Type	Resolu -tion range	Longest fragment analysable	50-400 bp	401 -640 bp	640 -1200 bp
GeneScan36_S04	50	448	36	S04	40-640bp	640bp	＜0.15	＜0.3	N/A
GeneScan36_S07	35	656	36	S07	40-640bp	640bp	＜0.15	＜0.3	N/A
GeneScan50_S07	45	512	50	S07	40-640bp	640bp	＜0.15	＜0.3	N/A
GeneScan50_ S07Long	125	176	50	S07	40-1200bp	1200bp	＜0.15	＜0.3	＜0.35

Consumable Reagent

Consumable Reagent	Spec. Model	Unit	Code
16-Channel Capillary tube	36 cm	Set	S01C001
16-Channel Capillary Capillary Array	50 cm	Set	S01C002
10x buffer	500 ml	Bottle	S01C010
HD formamide	25 ml	Bottle	S01C008
S04 Polymer	3.5 ml	Bottle	S01C005
S07 Polymer	28 ml	Bottle	S01C006

Application cases

Sequencing Analysis



In standard sequencing mode, using bigdye terminator v3.1 for sequencing analysis. From the waveform data, we can note that the base-pair still has high separation capability and QV value above 850 BP.

Technical Specifications

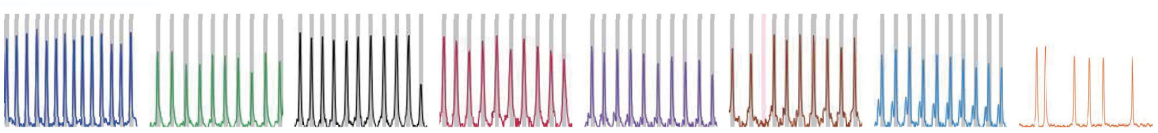
Model	GeneQuest
Dimensions(L×W×H)(mm)	Hatch closure: 610×532×812 Fully open: 1225×532×812
Weight	About 95KG
Channel	8/16
Fluorochrome No.	6/8
Capillary Length	36cm, 50cm
Sample Handling	Automatic, Compatible with 96-well plate(×2) and 8-strip tubes
Polimer-Injection Method	Automatic
Laser	Semiconductor Solid
Wavelength of laser source	505 nm
Wavelength of fluorescent dye	＞520 nm
Temp. accuracy	ΔT≤0.2℃
Resolution	1 bp
Read length	Above 800 bp
Power supply	220 VAC, 50 Hz; single phsae: 10 A, 2200VA
Ambient temp.	20℃-30℃, the temp. fluctuation would not be more than ± 2℃ during operation period
Relative humidity	20%-80%(non condensing)
Atmospheric pressure	86 kPa-106 kPa

performance

Gene Sequencing Flux and Performance Index

Operation Mode	Flux		Consumables		Performance
	Average operating time(min)	Maximum flux(sample /day)	Capillary length(cm)	Glue Type	Continuous reading length (CRL)
Sequence36_S07	35	656	36	S07	500bp
Sequence50_S07	120	192	50	S07	850bp
Fastseq50_S07	60	384	50	S07	700bp

Fragment Analysis



The Classic Series can support up to 8-color fluorescence, combining its self-produced AY60 fluorescence detection kit, it’s capable of constructing the database of autosomal plus Y chromosome simultaneously through one single reaction.

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