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Genetron S2000 Gene Sequencer

High throughput sequencing applications

Product Features

- High-quality data – Bridge amplification generates DNA clusters while preserving genomic information; reduced duplication rates and minimized index hopping
- Flexible throughput options – Medium- and high-throughput sequencing chips with single- or dual-chip modes and multiple read length configurations.
- User-friendly operation – Manual or automated chip loading, modular sequencing reagent kits, and integrated visualization-based analysis tools
- Broad research applications – Suitable for targeted sequencing, whole-exome sequencing, whole-genome sequencing, and other genomic research applications



Introduction

The Genetron S2000 Gene Sequencer is a medium- to high-throughput sequencing platform based on combinatorial Probe-Anchor Synthesis (cPAS) technology. The system provides accurate and comprehensive sequencing capabilities. Built on proprietary DNBSEQ™ sequencing technology, it supports two chip configurations and a dual-chip independent operation mode, enabling efficient medium- and high-throughput sequencing with high-quality data output. The system is compatible with reagent kits supporting applications such as targeted sequencing, whole-exome sequencing, and whole-genome sequencing, providing flexible sequencing capabilities for genomic research laboratories.

High-Quality Data

The Genetron S2000 uses proprietary DNBSEQ™ sequencing technology and advanced biochemical and optical systems to generate high-quality sequencing data characterized by high accuracy, low duplication rates, and reduced index hopping. Over 500 publications using this technology have been reported, including studies in journals such as Nature and Cell.

High Accuracy

DNBSEQ™ uses rolling circle amplification (RCA) with low-error DNA polymerase, using circular single-stranded DNA as the template to reduce error accumulation. SNP detection accuracy is >99.9%, and InDel detection accuracy is >99%

Low Duplication Rate

Sequencing duplication rate is <3%, indicating efficient data utilization and high sequencing quality

Low Index Hopping

DNBSEQ™ uses rolling circle amplification (RCA) to generate DNA nanoballs (DNBs). This linear amplification method significantly reduces index hopping. Single-index sample misassignment rate is approximately 0.0001%–0.0004%, helping maintain sequencing accuracy and reducing sample cross-contamination.

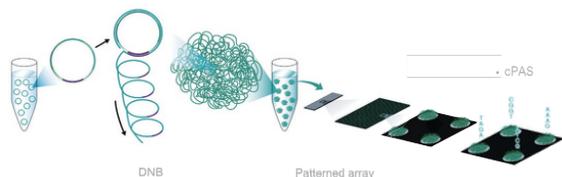


Figure 1. GENETRON S2000 Core Sequencing Principle

Medium to High Throughput, Flexible Options

The Genetron S2000 supports two sequencing chip types (FCS and FCL) and single- or dual-chip operation. Different read lengths can be selected to support medium- and high-throughput sequencing workflows.

FCS Chip



550M effective reads	55-180G data output range
PE100/150/300 SE100 Sequencing strategies	

FCL Chip

75-720G data output range	1500-1800M effective reads
PE100/150 SE50/100/400 Sequencing strategies	



Figure 2. Medium and High Throughput Sequencing Chips

Table 1. GENETRON S2000 Chip Specifications

Chip Type	FCS		FCL	
Number of lanes	2		4	
Effective reads	550M		1500-1800M	
Sequencing Strategies and Performance	Strategy	Data Output	Q30*	Run Time**
	SE50-FCL	75-90 Gb	>90%	~14 h
	SE100-FCL	150-180 Gb	>90%	~25 h
	SE400-FCL	600-720 Gb	>70%	~109 h
	PE100-FCL	300-360 Gb	>85%	~35/38 h
	PE150-FCL	450-540 Gb	>85%	~50/56 h
	SE100-FCS	55 Gb	>85%	~13 h
	PE100-FCS	110 Gb	>85%	~22/26 h
PE150-FCS	165 Gb	>80%	~31/37 h	
PE300-FCS	180 Gb	>80%	~98 h	

* The percentage of bases with Q30 or higher is calculated based on a standard library averaged across the entire run. Actual performance may vary depending on factors such as sample type, library quality, and insert length.

** Run time is calculated based on the dual-cartridge mode and includes sample loading, sequencing, base calling, and data processing.

*** The run times of 35 h, 50 h, 22 h, and 31 h refer to the operating times after upgrading to the latest script version.

Easy to Use

The Genetron S2000 Gene Sequencer provides a highly flexible and simplified sequencing workflow and is a sequencing platform designed for genomic research applications.

The platform supports both manual and automated chip loading modes to meet different sequencing needs. The S2000 system can automatically load DNBs, with the entire process taking only about 2 minutes, enabling fast and efficient operation. For special multi-lane chip loading requirements, an optional manual loading system (MGIDL-200H) can be used. This device is compact, does not require external power, and allows loading different DNB samples into separate lanes within 2 minutes.



Figure 3. Diagram of the MGIDL-200H Manual Loading System (Optional Device)

The platform uses ready-to-use modular sequencing reagent kits and includes an integrated operating system that enables one-click sequencing and real-time monitoring with visualized information display. Through the Multi-thread Parallel Compression algorithm and optimized execution efficiency, the system enables real-time image processing and base calling, accelerating data processing speed. The Genetron S2000 is an easy-to-use and efficient sequencing platform suitable for molecular analysis workflows.



Figure 4. Internal Structure Diagram of the GENETRON S2000

Broad Applications

The GENETRON S2000 sequencing platform, based on proprietary DNBSEQ™ technology, supports a wide range of genomic research applications. The platform supports targeted sequencing panels covering large sets of genes associated with genomic research studies and can be applied to various sequencing-based research workflows.

In addition, the system can support diverse genomic research applications including genomic variation studies, microbial genomics research, and other sequencing-based investigations.

GENETRON S2000 Product Specifications

Parameter	Specification
Compatible Chips	FCS & FCL
Laser Classification	Class 1
Dimensions	1086 mm (L) × 756mm (W) × 710 mm (H)
Net Weight	200 kg
Touchscreen	Type: LCD Size: 20 inches Resolution: 1920 × 1080
Power Supply	Voltage: 100 – 240 V Frequency: 50/60 Hz Rated Power: 1200 VA
Operating Environment	Temperature: 19 °C – 25 °C Relative Humidity: 20% RH – 80% RH, non-condensing Atmospheric Pressure: 70 kPa – 106 kPa * For indoor use only; reagent cartridges should be stored and transported at –25 °C to –15 °C without cryoprotectant.
Transport / Storage Environment	Temperature: –20 °C – 50 °C Relative Humidity: 15% RH – 90%RH, non-condensing Atmospheric Pressure: 70 kPa – 106 kPa Maximum Altitude: 3000 m

For more information, visit <http://www.genetronhealth.com>

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