

Introduction to BES 4000 Sequencer

CapitalBio BioelectronSeq 4000 System is a next generation sequencing system developed and produced by CapitalBio Corporation in collaboration with Thermo Fisher Scientific Inc. in China. The system adopts Semiconductor Sequencing Technology. Working with clinical testing kits and automated data analysis & management software, it is ideal for clinical laboratories. BES 4000 system has obtained CFDA Certificate in Feb. 2015.

BES 4000 Sequencer Features

Sequencing throughput is moderate

Based on the innovative semiconductor chip sequencing technology, the base sequence is obtained by detecting the pH change caused by the H⁺ ion current generated during DNA replication in real time. Select different types of chips, a run can produce 10Gb ~ 60Gb data, which is ideal for independent clinical diagnostic laboratories.

Short Sequencing Time

The entire sequencing process takes only 2.5 hours, 2 runs per day can be completed, allowing clinical laboratory staff make full use of daily working hours and improve work efficiency.

Long Read Sequencing

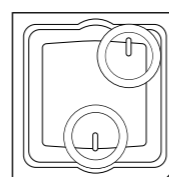
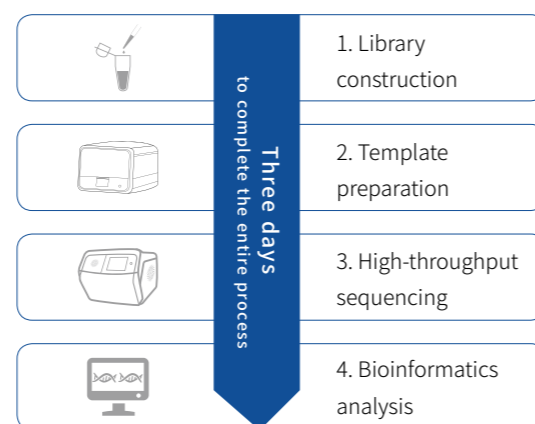
Sequencing average read-length up to 200bp, capable of sequencing the whole length of plasma cell-free DNA.

High Scalability

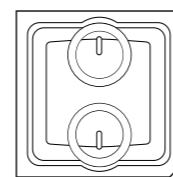
Read sequencing of different sequencing and data throughput applications can be attained by only using different throughput sequencing chips without any change in the host hardware.

Friendly Interface

Easy operating system, friendly interface design, training, proficient use of the system after one-day training.



PI Chip:
165 million reaction wells
15 to 18 non-invasive test samples



PII Chip:
660 million reaction wells
50 to 60 non-invasive test samples

Specifications for BioelectronSeq 4000 Sequencer

Dimensions	Width *Depth*Height (cm): 61.8*75.0*50.7
Working environment (for indoor use only)	Temperature: 68 –77° F (20 –25° C); Humidity: 40–60%, noncondensing; Altitude: <6,500 ft (2,000 m) Clearances: 12 in (30.5 cm) in rear; 4 in (10 cm) on left side; 4 in (10 cm) on right side; 4 in (10 cm) from front edge of bench to sequencer bezel; 36 in (90 cm) aisle in front of bench for operator access
Power	Voltage: 100 V (min) to 240 V (max) Current: 14 A (max) Frequency: 50/60 Hz Power draw: 1,350 W
Gas supply	Connection: 0.25 in push-to-connect fitting Pressure: 30 psi Composition: nitrogen (grade 4.8, 99.998% or better)
Other connections	Ethernet: 1 GigE USB: 2x USB 2.0
Instrument computer hardware	Processor: Dual 8-core Intel® Xeon® Sandy Bridge Memory: 128 GB RAM FPGA: Dual Altera® Stratix® V GPU processor: 1x NVIDIA® Tesla® C2075 Storage: 11 TB (SSD and HDD) Operating system: Ubuntu® 11.10

Performance specifications of BioelectronSeq 4000 System

Output	PI chip: ≥ 10Gb PII chip: ≥ 60Gb
Read length Reads	PI chip: Up to 200 bases PII chip: Up to 100 bases
Reads	PI chip: ≥ 80 million PII chip: ≥ 200 million
Run time	2.5 hours
Library solutions	Ion AmpliSeq™ Library Kit Ion Xpress™ Plus Fragment Library Kit Ion TargetSeq™ Exome Kit Ion Total RNA-Seq Kit
Data analysis solutions	Torrent Browser allows users to remotely access instrument status and monitor sequencing process using network connection; Variety of clinical data analysis plugins can complete clinical personalized data analysis automatically and rapidly
Data Format	FASTQ, SFF, BAM and VCF etc.

Clinical Application

Chromosomal disease detection

Chromosome Aneuploid Noninvasive Prenatal Genetic Testing
Chromosome Microdeletion /Microduplications Non-invasive Prenatal Genetic Testing
Chromosomal Abnormalities Detection
Preimplantation Genetic Screening and Diagnosis (PGS / PGD)

Genetic Disease Genetic Testing

Hereditary Deafness Panel
Duchenne / Behrens Muscular Dystrophy (DMD / BMD) Panel
17 Common Inherited Disease Panel
3,500 Single Gene Disease Panel
Exome Panel

Tumor-related Gene Testing

Hereditary Breast / Ovarian Cancer Panel
18 Inherited Cancer Panel
Human Papillomavirus (HPV) Genotyping Test
Tumor Individualized Chemotherapeutic Drug Genetic Test
Lung Cancer Individualized Targeted Drug Detection
Tumor Specific Targeted Drug Detection (50 Genes)
Tumor Specific Targeted Drug Detection (409 Genes)

Microbial Genetic Testing

Intestinal Flora Detection

Order Information

Product	Cat. No	Size
BioelectronSeq 4000 System	180010	1 System
Data Analysis & Management Software for Noninvasive Prenatal Testing		Preinstalled in BioelectronSeq 4000 System



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CapitalBio® BioelectronSeq 4000 Sequencer

High-throughput sequencing system for independent use in clinical laboratories

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CapitalBio Technology
CapitalBio Genomics