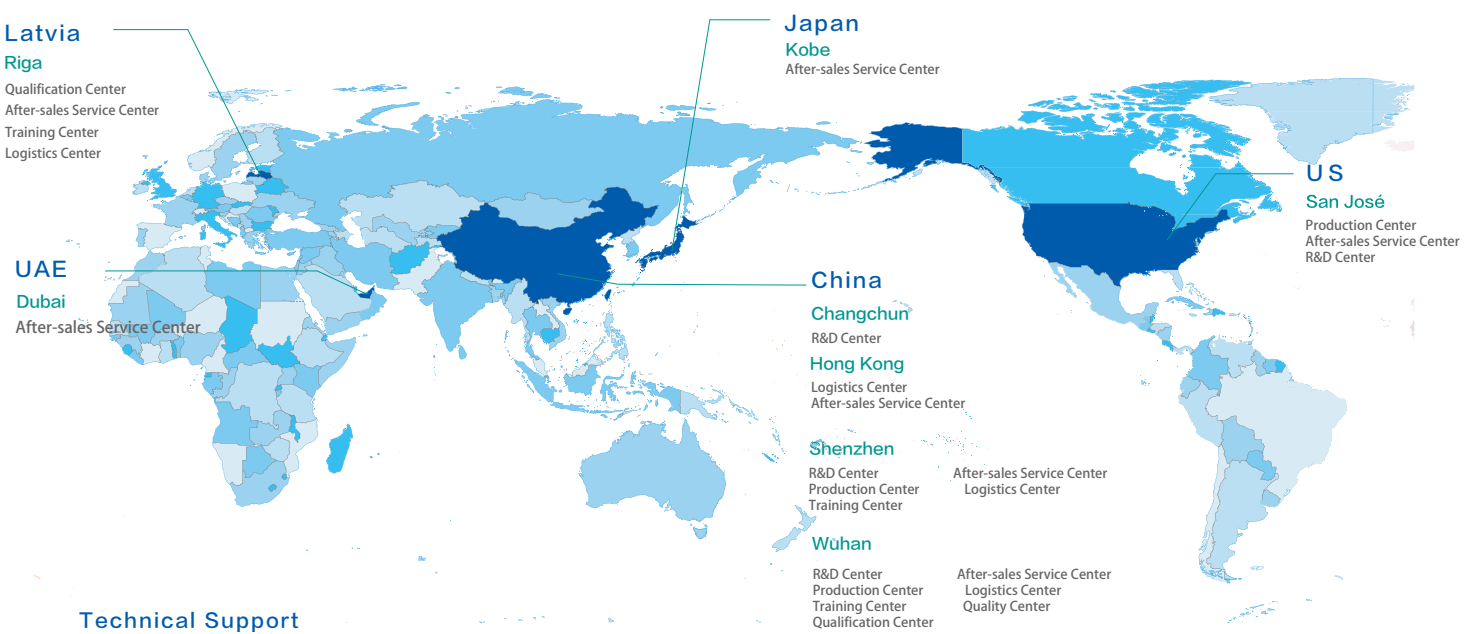## MGI Modular laboratory

MGI focuses on providing laboratory solutions with innovative concepts, it brings users a more convenient and more efficient experience in research and clinic settings. The GPMCC Modular Laboratory is a new design concept to meet the increasingly diversified needs. With mix & match of standardized partitioning of multiple different functions, it integrates comprehensive and extensive experimental scenarios, adapted to a variety of operating environment. With this leading concept, multiple modular laboratory projects are launched, including mobile healthcare vehicles, container laboratories and offshore experimental vessels.

Hardware Parameters

Model*	Model	Intended Market
	DNBSEQ-G400	IVD
	DNBSEQ-G400RS	RUO
	DNBSEQ-G400RS FAST	RUO
Dimensions	Length: 1086 mm, Width: 756 mm, Height: 710 mm	
Net Weight	200 kg	
Power	Type	100~240V, 50/60Hz
	Rated Power	1200VA
Operating Environment Requirements**	Temperature	19 ~ 25℃
	Relative Humidity	20 %RH~80 %RH, non-condensing
	Atmospheric Pressure	70-106 kPa
	Waterproof Rating	IPX0
	CPU	Intel Xeon E5 10Core×2 2.2GHz
Control Computer Configurations***	Internal Storage	256GB RAM
	HDD	16TB
	SSD	480G
	Operating System	Windows 10 Enterprise

* Only for model classification
** For indoor use only ; The Flow Cells can be stored and transported at room temperature. No liquid medium is needed
*** Supporting the computer's configurations and system updates

MGI Global Presence

Latvia
Riga
Qualification Center
After-sales Service Center
Training Center
Logistics Center

Japan
Kobe
After-sales Service Center

US
San José
Production Center
After-sales Service Center
R&D Center

UAE
Dubai
After-sales Service Center

China
Changchun
R&D Center

Hong Kong
Logistics Center
After-sales Service Center

Shenzhen
R&D Center   After-sales Service Center
Production Center   Logistics Center
Training Center

Wuhan
R&D Center   After-sales Service Center
Production Center   Logistics Center
Training Center   Quality Center
Qualification Center

Technical Support

The technical support team has a complete global coverage including technical services centers and multiple locations in major international regions to maximize customer satisfaction.

- Multiple international locations to provide timely and effective customer services , include training, after-sales service, and general enquiries;
- Spare part centers in Shenzhen, Wuhan, Qingdao, Tianjin, Hong Kong (China); Brisbane (Australia); and Riga (Latvia), to ensure sufficient supply of parts for machine maintenance;
- A fully-functional call centre is set up in the headquarters in Shenzhen, China. Free Hotline (+86) 4000-966-988(9AM-12PM,1PM-6PM , Beijing time , workdays)

After-Sales Services

Please be advised to communicate in advance for all international regional orders prior to the proposal commitment, which leaves time to set up service capability in Europe , Asia Pacific and North America.

- We offer free installation and installation validation services, including all the reagents required for delivering such services;
- Within 12 months upon installation or 15 months upon delivery (whichever comes first), all repair costs in relation to manufacturing flaws and malfunctions are covered by the warranty . Under warranty MGI is responsible for the related labor , parts and travel costs;
- The warranty includes one preventative maintenance;
- Outside the warranty, multiple extended warranty plans packages are also available. please reach your local MGI representaive.

DNBSEQ-G50	DNBSEQ-G400RS FAST	DNBSEQ-G400	DNBSEQ-T7
DNBSEQ-G50 Integrated solution for small scale genome sequencing.	DNBSEQ-G400RS FAST Small and medium scale genome sequencing, simple operation and quick results.	DNBSEQ-G400 A core platform for large and medium scale genome sequencing, flexible and stable.	DNBSEQ-T7 A ultra-high throughput sequencer in the world, and the best choice for large scale genome sequencing.

Wechat

https://www.linkedin.com/company/mgi-bgi
https://twitter.com/MGI_BGI

Genetic Sequencer
DNBSEQ-G400 Series
Versatility to satisfy multiple needs

CB   CE   NMPA

DNBSEQ-G400 FAST

DNBSEQ-G400

- 75~1440GB per run
- PE150 sequencing at full capacity in only 38 hours
- Supports sequencing and data analysis in a wide range of areas including basic research, clinical research, forensics and agriculture
- Supports a range of read lengths, including SE50, SE100, SE400, PE100, PE150, PE200

DNBSEQ-G400 series include DNBSEQ-G400 and DNBSEQ-G400RS FAST. This series utilizes an innovative Flow Cell system which can support various sequencing modes, and an optimized optical and biochemical system that enables the whole sequencing process to be completed within a short period of time, offering the user a simplified and streamlined sequencing experience.
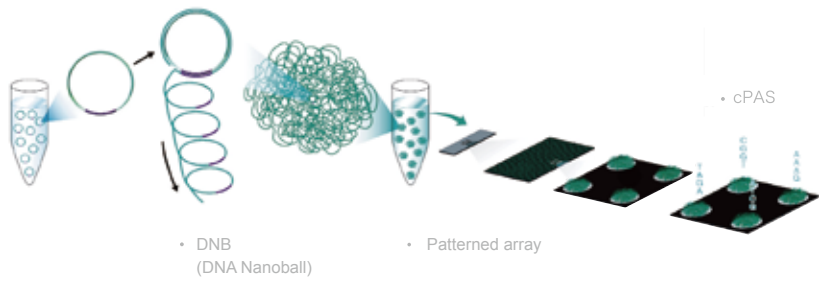
Hardware

- ① Laser
- ② High resolution camera
- ③ Injection pump
- ④ Dual Flow Cell compartment
- ⑤ Control computer
- ⑥ Touch screen monitor
- ⑦ Reagent container
- ⑧ Reagent compartment door
- ⑨ Reagent Kit

DNBSEQ-G400 Series Specifications

Model	DNBSEQ-G400RS FAST	DNBSEQ-G400	
No. of Flow Cell per run	2	2	
Type of Flow Cell	FCS	FCS	FCL
No. of lanes/ Flow Cell	2	2	4
Max reads/ Flow Cell *	550M	550M	1500M-1800M
Read lengths	SE100 PE100 PE150	SE100 PE100 PE150	SE50 SE100 SE400 PE100 PE150 PE200

* The maximum number of effective reads are based on the sequencing of an internal standard library. Actual output may vary depending on sample type and library preparation method.

DNBSEQ-G400 Series Performance Parameters

Read Lengths	Data Output	Data Quality Q30 *	Run Time **
SE50-FCL	75-90G	>85 %	~16h
SE100-FCL	150-180G	>85 %	~28h
SE400-FCL	600-720G	>70 %	~109h
PE100-FCL	300-360G	>85 %	~54h
PE150-FCL	450-540G	>75 %	~78h
PE200-FCL	600-720G	TBD	TBD
SE100-FCS	55G	>85 %	12-14h
PE100-FCS	110G	>85 %	~26h
PE150-FCS	165G	>75 %	~38h

* The percentage of base above Q30 is the average of an internal standard library over the entire run. The actual performance is affected by factors such as sample type, library quality, and insert fragment length.

** Run time was calculated based on Dual-Flow Cell mode, and includes sample loading, sequencing, base calling and data processing.

DNBSEQ-G400

FLEXIBLE
POWERFUL

DNBSEQ-G400RS FAST

SWIFT
FOCUSED

MGI'S PROPRIETARY
DNBSEQ ™
TECHNOLOGY

- · cPAS
- · DNB (DNA Nanoball)
- · Patterned array

INCREASED ACCURACY

No PCR amplification required. Our unique Rolling Circle Replication (RCR) technology employed in DNBSEQ™ library construction eliminates errors associated with PCR. Only the original template DNA is used to generate copies and therefore amplification errors do not accumulate, resulting in greater accuracy for detection of significant mutations such as Indels and SNPs.

DECREASED DUPLICATES

Optimized Patterned Array ensures that only one single DNB is attached at each spot, which results in greater saturation of DNB on the Flow Cell with unprecedented uniformity. This enables an industry-leading detection capability and an average WGS duplicate rate below 3%.

REDUCED INDEX HOPPING

MGI platform's unique library preparation and RCR amplification results much in lower index hopping rates compared with other platforms, at a rate of 0.0001%~0.0004%.

Whole Genome Sequencing (WGS)

- Sample：Human Cell Line NA12878
- Kit：MGIEasy Universal DNA Library Prep Set
- Sequencing：High-throughput Sequencing Set (PE150)
- Data Analysis：MegaBOLT+GATK

Sample	PE150-1	PE150-2
Mapping rate	99.54%	99.55%
Duplicate rate	2.19%	2.24%
Average sequencing depth	31.05	31.02
Coverage	98.99%	98.99%
Coverage at least 4X	98.44%	98.44%
Coverage at least 10X	97.45%	97.44%
Coverage at least 20X	92.69%	92.72%
SNP_Precision	99.50%	99.51%
SNP_Sensitivity	99.68%	99.67%
Indel_Precision	94.47%	94.22%
Indel_Sensitivity	96.09%	96.06%

- Sample：Human Cell Line NA12878
- Kit：MGIEasy PCR-Free DNA Library Prep Set
- Sequencing：High-throughput Sequencing Set (PE150)
- Data Analysis：MegaBOLT+GATK

Sample	PE150-1	PE150-2
Mapping rate	99.15%	99.31%
Duplicate rate	0.97%	0.89%
Average sequencing depth	30.57	30.68
Coverage	99.18%	99.17%
Coverage at least 4X	99.02%	99%
Coverage at least 10X	98.7%	98.65%
Coverage at least 20X	94.17%	93.95%
SNP_Precision	99.95%	99.94%
SNP_Sensitivity	99.44%	99.45%
Indel_Precision	99.11%	99.1%
Indel_Sensitivity	98.26%	98.17%

Whole Exome Sequencing (WES)

- Sample：gDNA，FFPE，Frozen Tissue
- Kit：MGIEasy Exome Universal Library Prep Set Commercial Capture Probe
- Sequencing: High-throughput Sequencing Set (PE150)

Sample Type	gDNA	FFPE	Frozen
Q20_clean	96.56%	96.05%	96.56%
Q30_clean	88.71%	87.81%	88.79%
GC_clean	50.65%	53.85%	50.32%
Mapping_Rate	99.26%	98.88%	99.40%
Duplication_Rate	18.02%	20.36%	22.21%
Capture_Rate_on_Reads	72.98%	73.95%	74.12%
Average_depth(rmdup)	1100.61	1012.5	1100.78
Coverage(>=1X)	99.78%	99.99%	99.99%
Coverage(>=4X)	99.75%	99.96%	99.97%
Coverage(>=10X)	99.73%	99.86%	99.95%
Coverage(>=100X)	99.30%	89.90%	99.49%
Uniformity(>0.2f)	98%	88.90%	98.14%

Targeted Sequencing

- Sample：MGI Standard Sample，FFPE and cfDNA
- Kit：Customer self-developed kit
- Sequencing：High-throughput Rapid Sequencing Set (PE150)

Category	MGI Standard Sample	Customer Sample
Cycle Number	310	310
Total Reads (M) / Lane	350.77	330.27
Q30 (%)	90.44	90.33
Split Rate (%)	98.58	98.93
ESR (%)	87.74	82.32

DNBSEQ-G400 Series Total Solution

- Blood
- Nasopharyngeal swab
- CSF
- BALF
- Feces
- Tissue
- ...

Sample collection

MGISP-100，MGISP-960

Portable DNB Loader MGIDL-200H

Nucleic acid extraction Library construction

DNBSEQ-G400

DNBSEQ-G400RS FAST

High-throughput sequencing

ATCGATCGATCG
GACGCTTGAACA
TTACAACTGTAG
CCGATCGGACGT
ATGGTTCAATCC

MegaBOLT Bioinformatics analysis accelerator

BGI Online

Data analysis

ATCGATCGATCG
Sequences to be tested

CCGATCGGACGT
Standard sequences of database

Final report

① Sample Preparation
② Library construction
③ Sequencing
④ Data analysis
⑤ Final report

Graphical User Guide, simple and easy to operate

1.User Login
2.Click Sequence
3.Scan Sample ID

- User

- Wash / Sequence

4.Scan Reagent Kit ID
5.Scan Flow Cell ID
6.Run