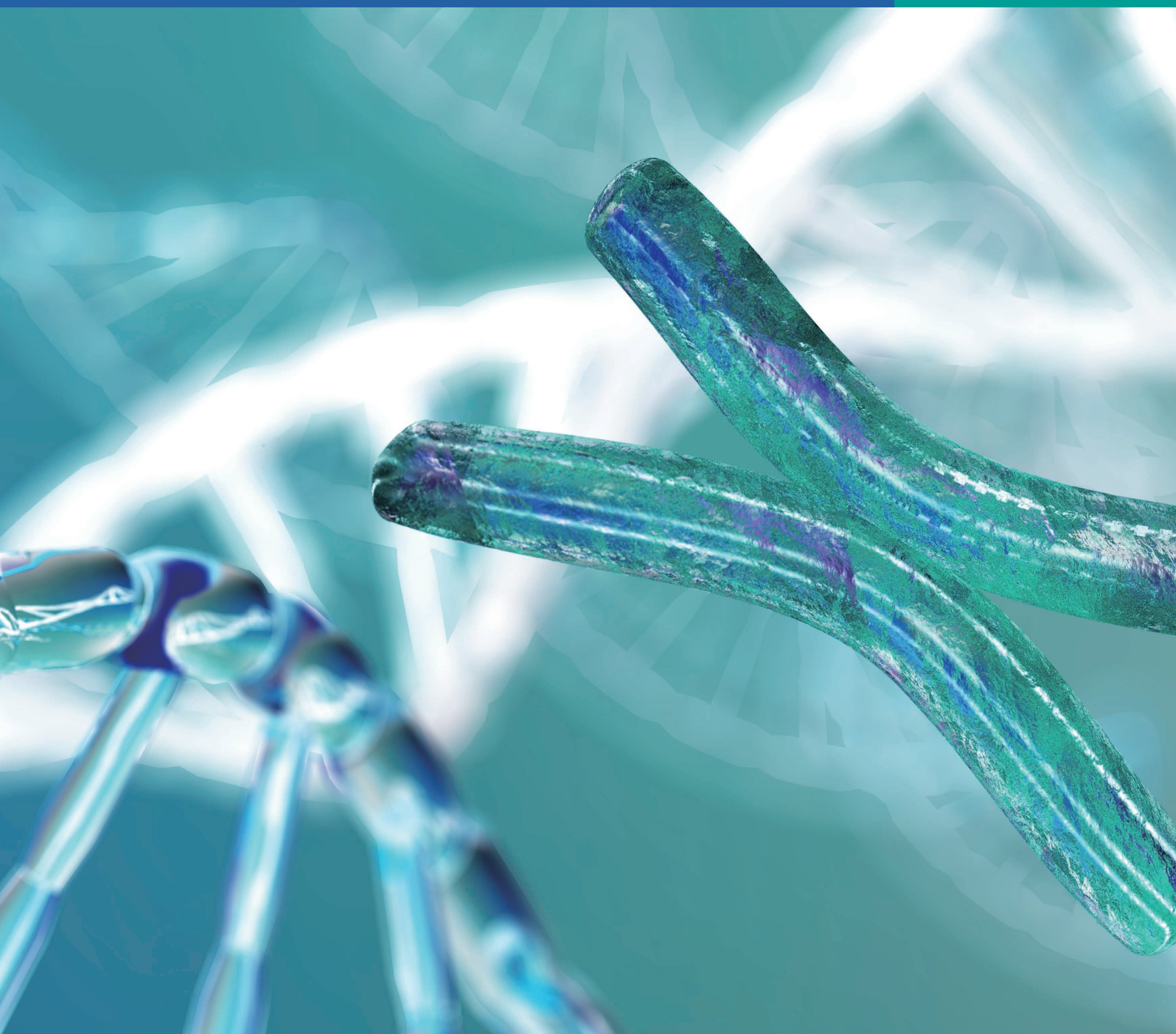
MGI
华大智造

PGS Total Solution

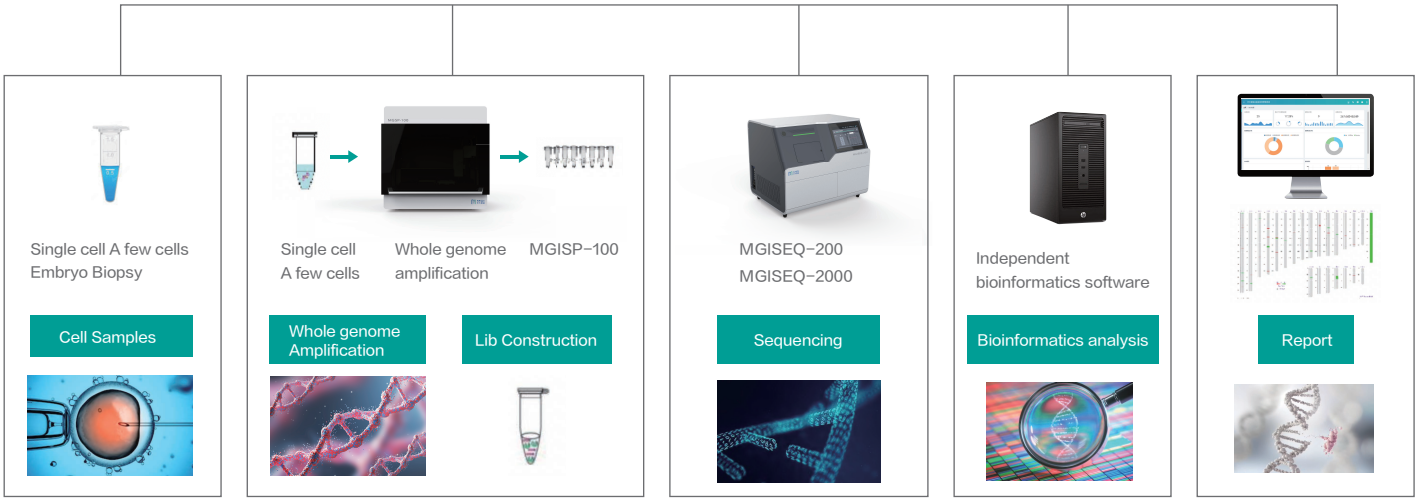
Achieve One-Stop Detection for Embryonic Chromosomal CNVs



Overview

PGS Total Solution is applicable for the detection of embryonic chromosomal copy number variations, providing customers with the automatic solution of the whole process from sample to report. This solution packed with the systems of sample accession, library preparation, sequencing and bioinformatics analysis. The TAT is nearly 24h.

1 Sample Collection and Accession ▸ 2 Whole Genome Amplification and Library Construction ▸ 3 Sequencing and Base -calling ▸ 4 Bioinformatics Analysis ▸ 5 Report



Advantages

PGS total solution is to detect chromosomal copy number variations in human embryos. It helps users quickly and accurately understand the genetic status of embryos. It makes the application of NGS in reproductive medicine readily available.

Independent technology

MGI automatic sample prep system, high-throughput sequencer and reagents.

Innovative analytical methods

Be able to detect embryonic chromosomal CNVs with size of 4M.

Convenient workflow

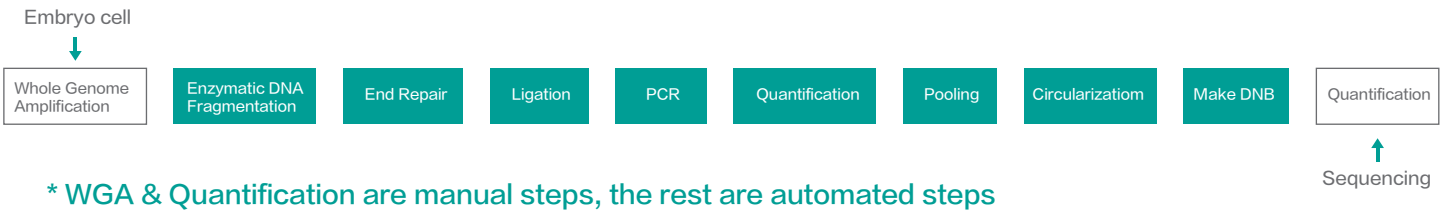
The whole process from sample to report can be easily realized locally in one-stop mode.

Independent platforms

MGI automatic sample prep system and high-throughput sequencer platforms easily realize the obtaining of high-throughput sequencing data locally. It makes the application of NGS in reproductive medicine readily available.

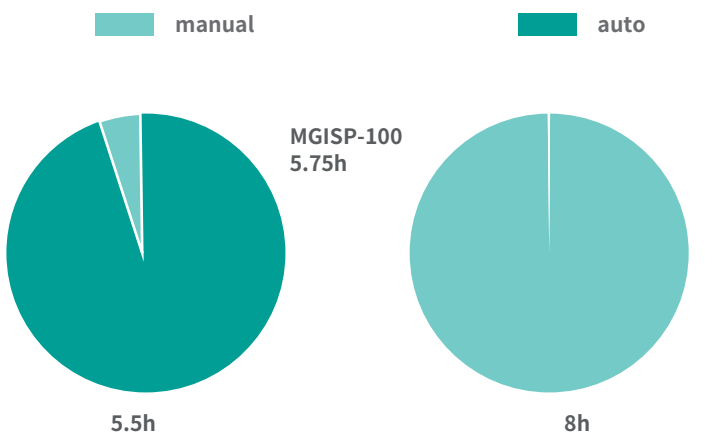
Automatic sample prep system:

MGISP-100 automatic sample prep system is an automated workstation focusing on the field of next generation sequencing. It can replace manual completion of a series of experimental operations such as library construction etc. It has the characteristics of fast, stable and efficient.



* WGA & Quantification are manual steps, the rest are automated steps

Sample preparation turnaround time (excluding WGA):



Automated Sample Preparation System
Certificates: NMPA, CE, CB, cTUVus

MGISEQ-200 sequencer:

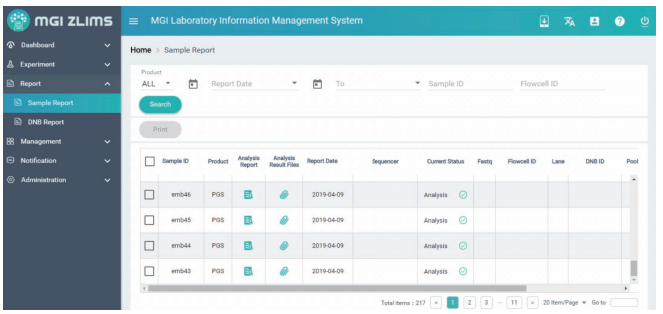
MGISEQ-200

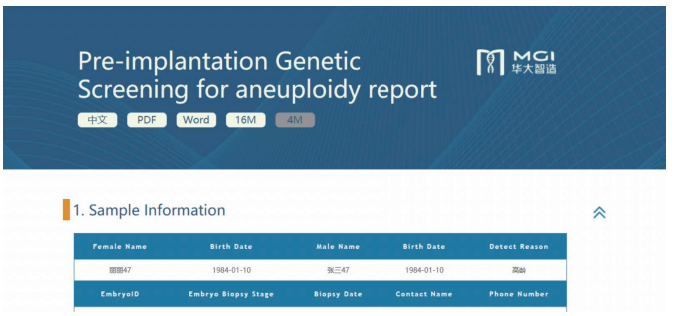
Certificates: NMPA, CE, CB, cTUVus

Sequencing Reagent Set	
Read length	SE50
Effective reads	>240 Million
Data output	>12 G
Sequencing run time	<12 hours
Q30	>80%
Throughput/run	16 samples/24 samples

Automated software

MGI independently developed the software to detect single cell CNVs ⩾4M. It can quickly, accurately and comprehensively determine embryonic chromosomal abnormalities, and automatically generate the test reports.





ZLIMS

MGI independently developed a laboratory information management system, code ZLIMS, as a control center, data center and quality control center to record and supervise the daily work of the laboratory. ZLIMS carrying PGS solution system can realize the whole process monitoring from sample reception, sample preparation, sample testing, task assignment, data analysis to report generation, tracking and recording the working task trajectory.

1 Sample collection and accession

2 Nucieic acid extraction and library preparation

3 Sequencing and base-calling

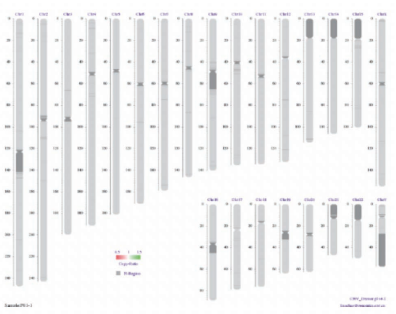
4 Bioinformatics analysis

5 Report

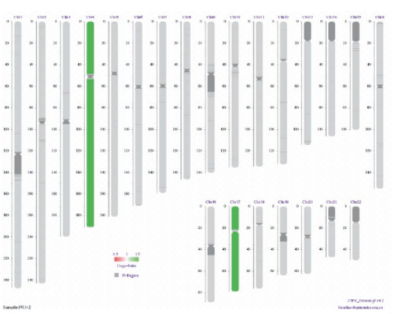
Case

A couple with maternal infertility undergone IVF treatment in hospital. The wife was diagnosed as translocation carriers of 46, XX, t (6; 7) (q21; q22). After IVF treatment, 6 blastocysts were obtained. The trophectoderm cells of D5 blastocysts were biopsied and embryonic chromosome abnormalities were detected by PGS solution. At the same time, the blastocysts were vitrified and frozen. Three blastocysts were reported as normal diploid karyotypes by PGS solution. Two normal diploid blastocysts (BLS1, BLS4) were selected according to morphology and implanted into maternal uterus. HCG and 12-week ultrasound were performed and confirm the success of single pregnancy. After follow-up, a healthy baby girl was born successfully.

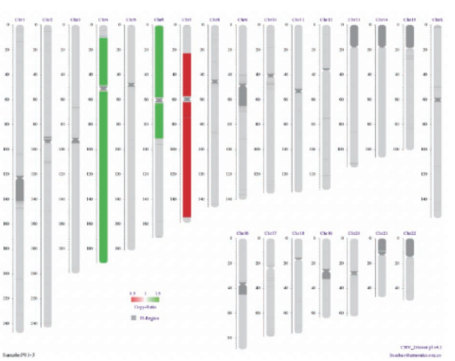
BLS1: 46,XY



BLS2: 48,XX,+4,+17



BLS3: 46,XX,+4(p16.1−qter), +6(pter−q15),−7(p15.3−qter)



BLS4: 46,XX

BLS5: 45,XX,−16

BLS6: 46,XY

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