The Frontier Company in
Genomic Diagnostics

GC Genome

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CAP ACCREDITED
COLLEGE of AMERICAN PATHOLOGISTS

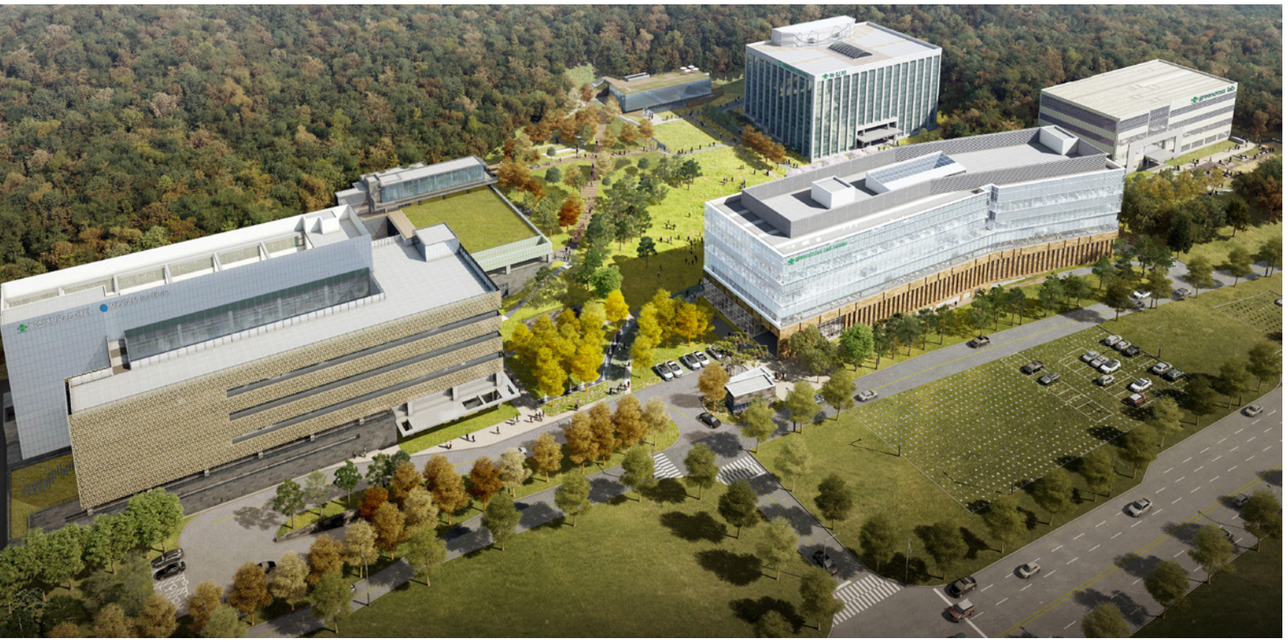
TURNS IDEA INTO A REALITY.

GC Genome

Green Cross Genome Introduction

As a subsidiary of Green Cross in the field of genome analysis,
Green Cross Genome is carrying out a project to provide a disease diagnosis service through genome analysis.
Green Cross Genome will transform paradigm of healthcare industry and become a leader of genome analysis market by realizing personalized treatment through the use of genome analysis information.

Establishment	August 2013
Website	www.gcgenome.com
Location	· Head Office (Yongin, South Korea) · Genome Research Center (Yongin, South Korea)
Business	· Prenatal & Neonatal Screening Test · Cancer Test (Hereditary cancer, Solid cancer, Hematologic cancer) · Rare Disease Test · Health Check Test · Disease-oriented Genome Diagnostics and Studies



History

2018

11 Launch : Risk Screen, Genome Screen

2016

05 Certified as Level A by Korean Institute of Genetic Testing Evaluation

03 Selected as demonstrating project center for NGS clinical testing by KFDA

2014

04 Launch : Genetic test services
- First diagnostic exome sequencing service provider in region
- Hereditary cancer test

2005

12 Green Cross Reference Lab - Obtained CAP accreditation

1997

09 Genetic Diagnosis Lab (affiliated with Green Cross Reference Lab) established

2015

12 Patent Application for NIPT technology

07 Awarded for grand prize from 10th Digital Innovation in biotechnology sector

06 Launch : Non-Invasive Prenatal Screening (G-NIPT)

2015

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06 Launch : Non-Invasive Prenatal Screening (G-NIPT)

2013

12 Green Cross Genome Research Center
- Approved for Annex Research Institute

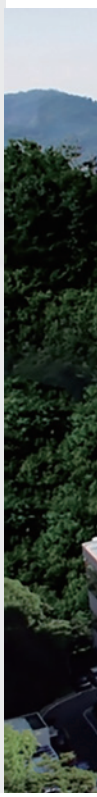
08 Green Cross Genome established

1999

10 Green Cross Reference Lab
- Obtained ISO 9001 for the first time as a Korean medical institution

1982

07 Green Cross Bio Science Lab established (first commercial laboratory in Korea)



Why GC Genome?

Clinical Experience + **Technology** + **Management**

Technology

Bio Technology
BT

+

Information Technology
IT

+

Medical Information
MI

Human Resource

Medical Doctor + Researcher + Genetic Counselor + Bio Informatician

GC Genome

Our Mission & Vision

Mission
Devotion to healthy lives of people

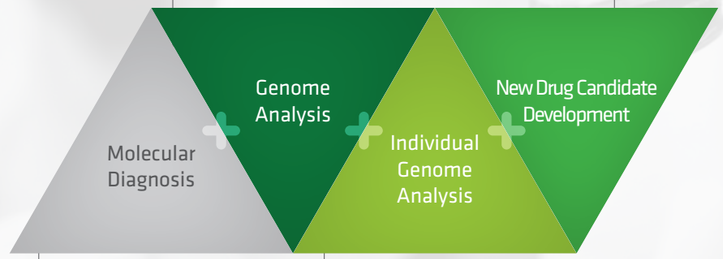
Vision
The frontier company in genomic diagnostics

4P Solution Provider
Diagnose diseases based on genetic information, suggest accurate treatments
→ Make personalized medicine a reality

- Diagnosis Application — Predictive Diagnostics
- Preventive Purpose — Preventive Diagnostics
- Personalized Treatment — Personalized Diagnostics
- Information Sharing — Participatory Diagnostics

Business Strategy

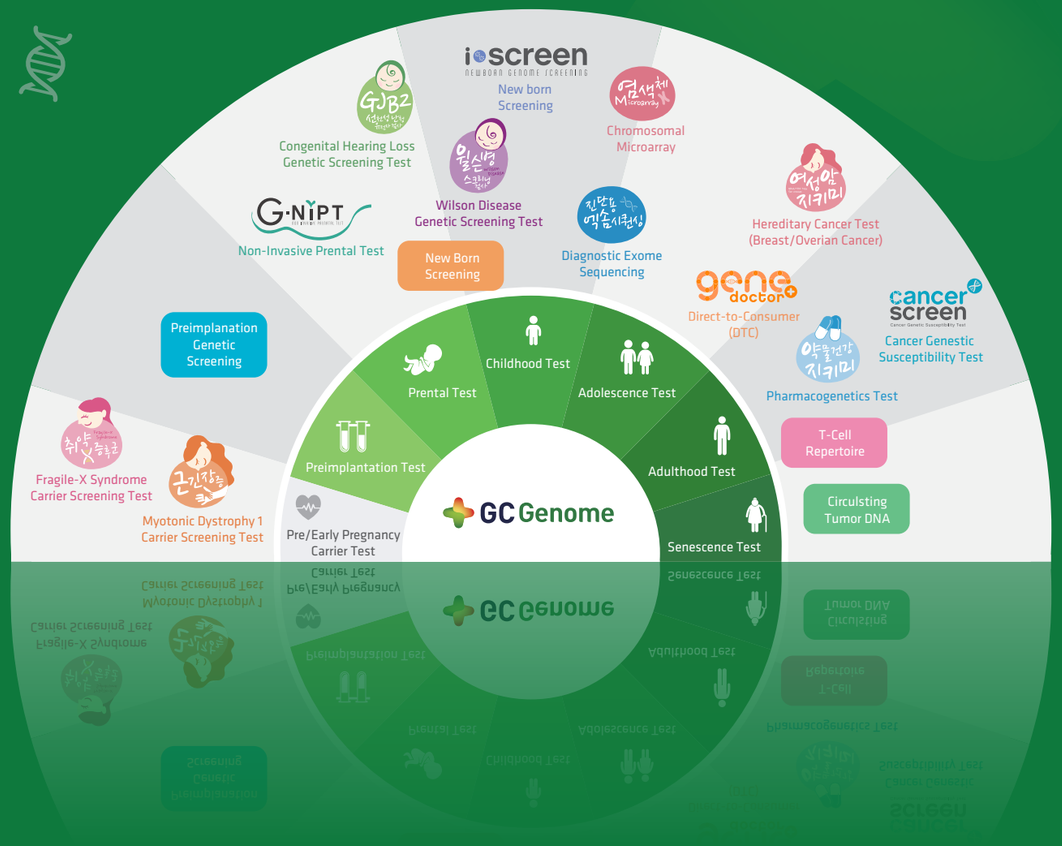
- Provide the best quality analysis service using diverse genomic analysis equipment
- Engage in government joint research to develop new drug candidates using genomic big data
- Develop new drug candidates based on the accumulated DB



- Develop new molecular diagnostic technologies
- Seek systems to enhance the quality of existing technologies

- Develop a differentiated service for individual genome analysis for personalized care

Overview



Fulfilling
Personalized Genomic Testing
throughout Lifetime

GC Genome

Product list

Category	Test	Disease	Method
Health Check	Genome Screen	Comprehensive Cancer, Female Cancer, Hyperlipidemia, Stroke, Eye, Heart	NGS
	Risk Screen	Cancer (Male),Cancer (Female), Hyperlipidemia, Stroke, Eye, Heart	Genotyping
	Pharmacogenetics	Personal genetic sensitivity for drugs	
	Genedoctor (DTC)	Personal genetic characteristics	
Pre/ Postnatal	G-NIPT	Down/Edward/Patau syndrome Sex chromosomal aneuploidy	NGS
	i-screen	Chromosomal deletion/duplication syndrome Chromosomal aneuploidy	
	Prenatal Chromosomal MicroArray	Chromosomal aneuploidy Chromosomal structural abnormalities Chromosomal deletion/duplication syndrome	Microarray
Cancer	Hereditary cancer	Hereditary breast and ovarian cancer, Li-Fraumeni syndrome, Lynch syndrome, Cowden syndrome, Hereditary diffuse gastric cancer, MUTHY-associated polyposis syndrome, Multiple endocrine neoplasia1/2, Peutz-Jeghers syndrome, etc.	NGS
	Hematologic cancer	Acute Myeloid leukemia (AML), Myelodysplastic Syndromes (MDS), Myeloproliferative neoplasm (MPN), Acute Lymphoblastic Leukemia (ALL), Lymphoma	
	Solid cancer	Gastric / Lung / Colorectal / Breast / Ovarian Cancer, malignant melanoma, gastrointestinal stromal tumor, Ganglioneuroblastoma Cerebral and spinal cord tumors, cancer of unknown primary site, etc.	
Hereditary (Rare) disease	Rare Disease Panel	Mendalian disorder	NGS
	WES (Whole Exome Sequencing)		
	DES (Diagnostic Exome Sequencing)		
	CMA (Chromosomal MicroArray)	Chromosomal aneuploidy Chromosomal structural abnormalities Chromosomal deletion/duplication syndrome	Microarray

Pre/Postnatal Test

Safe and Accurate Solution For Every pregnant Women and baby

Test for Pregnant Women

An essential test
at early pregnancy
for a safe and healthy delivery

Test for Fetus

Accurate Prenatal Test
to screen
Chromosomal Abnormality

Test for Newborn Baby

An essential test
after birth for the baby's healthy development

Definition	Tests are designed for women of childbearing age, pregnant women, and baby that provides information on the likelihood of diseases in the baby to be born and newborn. It allows early postnatal treatment to alleviate and treat the diseases.
Method	Next Generation Sequencing (NGS) / Chromosomal Microarray / SNP Genotyping
Required Documents	1. G-NIPT Referral Form 2. Informed Consent for Genetic Testing

Category	Test	Related Disease	Method	Specimen	Test Period & TAT*
Prenatal	G-NIPT	Down/Edward/Patau syndrome Sex chromosomal aneuploidy	NGS	cf DNA Tube Whole Blood 10ml	Mon~Thurs, 7days
	Prenatal CMA	Chromosomal aneuploidy Chromosomal structural abnormalities Chromosomal deletion/duplication syndrome	Microarray	Amniotic fluid 15ml	Mon~Fri, 10days
	FragileX screening Test	Fragile X syndrome	SNP Genotyping	EDTA Whole Blood 3ml	Mon~Fri, 5days
	DM1 screening Test	Myotonic Dystrophy Type 1	SNP Genotyping	EDTA Whole Blood 3ml	Wed, 7days
Postnatal	i-screen	Chromosomal deletion/duplication syndrome Chromosomal aneuploidy	NGS	EDTA Whole Blood 0.5ml	Mon~Thurs, 7days
	Wilson disease screening test	Wilson disease	SNP Genotyping	Blood paper 2 holes	Mon~Fri, 2days
	Hearing loss screening test	Hereditary Hearing loss	SNP Genotyping	Blood paper 2 holes	Mon~Fri, 3days

* This is for Korean results. It may takes longer for English results.

Representative Tests of Pre/Postnatal Test

G-NIPT

- Non-Invasive Prenatal Test :
  Safely examine genetic defects of prenatal through mother's blood sample
  - Trisomy 21/18/13
  - Sex Chromosome Aneuploidy : XO, XXY, XXX
- Genome-wide scanning is used to detect additional chromosomal abnormalities

Abnormality	Sensitivity	Specificity	PPV	NPV
Trisomy 21	100%	99.99%	99.14%	100%
Trisomy 18	100%	99.97%	92.16%	100%
Trisomy 13	100%	99.98%	71.43%	100%
Sex chromosome anueploidy	100%	99.92%	68.75%	100%

Prenatal CMA

- High resolution chip (100~400 Kbp) that specializes in prenatal (amniotic fluid) genomic test. (Only for prenatal test)
- Diverse genomic abnormalities detected
  - Chromosomal aneuploidy
  - Chromosomal structural abnormalities
  - Chromosomal deletion/duplication syndrome (CNV, UPD detection available)
- Can detect smaller parts in chromosomal microdeletion/duplications than Karyotyping, Fluorescence in situ hybridization (FISH), QF-PCR.

i-screen

- With only EDTA Whole Blood 0.5ml,
  We screen 23 pairs of chromosomes to examine mental retardation, development disorders and autism
- Chromosomal diseases can occur to anyone :
  we recommend this test to pregnant women who has trouble having baby and over 35 years old
- Providing to get proper treatment :
  Earlier you found these genetic disorders, more you can minimize the symptom

Cancer Test

Diagnose the Specific cancer type

Indication	• Patient interested in genetic testing for preventative reasons • Patient whose closely related family members or more than one generation have been diagnosed with cancer • Patient who want to diagnose/prognosis specific cancer, and want to know proper pharmeaceutial therapy
Method	Next Generation Sequencing (NGS)
Required Documents	1. Requisition Form 2. Informed Consent for Genetic Testing

Category	**Hereditary cancer**
Definition	The test predicts the likelihood of a variety of hereditary cancers by analyzing the sequence of causal genes from the blood of the testee.
Related Disease	Hereditary breast and ovarian cancer, Li-Fraumeni syndrome, Lynch syndrome, Cowden syndrome, Hereditary diffuse gastric cancer, MUTHY-associated polyposis syndrome, Multiple endocrine neoplasia1/2, Peutz-Jeghers syndrome, etc.
Sample specimen	EDTA Whole Blood 3ml
Shipping condition	Refrigerated (3 days)
Test period & TAT*	Mon~Fri, 14 days

Category	**Hematologic cancer**
Definition	The test observes and analyzes genetic mutations associated with acute myeloid leukemia (AML) and myelodysplastic syndrome (MDS).
Related Disease	Acute Myeloid leukemia (AML), Myelodysplastic Syndromes (MDS), Myeloproliferative neoplasm (MPN), Acute Lymphoblastic Leukemia (ALL), Lymphoma
Sample specimen	EDTA Whole Blood 3 ml, EDTA Bone Marrow 3ml
Shipping condition	Refrigerated (3 days)
Test period & TAT*	Mon~Fri, 21 days

Category	**Solid cancer**
Definition	The test observes and analyzes genetic mutations associated with gastric cancer, liver cancer, thyroid cancer, pancreatic cancer, colon cancer, and other cancers that develop in solid organs from the patient's cancer tissue.
Related Disease	Gastric / Lung / Colorectal / Breast / Ovarian Cancer, malignant melanoma, gastrointestinal stromal tumor, Ganglioneuroblastoma, Cerebral and spinal cord tumors, cancer of unknown primary site, etc.
Sample specimen	Formalin-fixed paraffin-embedded (FFPE) or Fresh tissue (biopsy)
Shipping condition	Formalin-fixed paraffin-embedded (FFPE) : Room temperature Fresh tissue (biopsy) : in a sterile tube with saline and refrigerated (frozen gel packs)
Test period & TAT*	Mon~Fri, 28 days

* This is for Korean results. It may takes longer for English results.

Cancer : Panel List

Category	Panel	Gene	Gene lists
Hereditary cancer	Hereditary cancer syndrome panel	25	ATM, BARD1, BRIP1, CHEK2, NBN, PALB2, RAD50, RAD51C, BRCA1, BRCA2, PTEN, CDH1, TP53, EPCAM, MLH1, MSH2, MSH6, PMS2, MUTYH, APC, MEN1, RET, SKT11, NF1, RAD51D
	Hereditary cancer syndrome panel (23)	23	ATM, BARD1, BRIP1, CHEK2, NBN, PALB2, RAD50, RAD51C, PTEN, CDH1, TP53, EPCAM, MLH1, MSH2, MSH6, PMS2, MUTYH, APC, MEN1, RET, STK11, NF1, RAD51D
Hematologic cancer	Acute Myeloid Leukemia panel	45	CEBPA, FLT3, IDH1, IDH2, JAK2, KIT, NPM1, RUNX1, TP53,ASXL1, ATRX, BCOR, BCORL1, BRAF, CALR, CBL, CBLB, CSF3R, DNMT3A, ETV6, EZH2, GATA1, GATA2, HRAS, JAK3, KDM6A (UTX), KRAS, MPL, NOTCH1, NRAS, PDGFRA, PHF6, PTPN11, RAD21, SETBP1, SF3B1, SMC1A, SMC3, SRSF2, STAG1, STAG2, TET2, U2AF1, WT1, ZRSR2
	Myelodysplastic Syndromes (MDS), Myeloproliferative neoplasm (MPN) panel	45	ASXL1, CALR, CSF3R, DNMT3A, JAK2, MPL, RUNX1, SETBP1, SF3B1, SRSF2, TET2,ATRX, BCOR, BCORL1, BRAF, CBL, CBLB, CEBPA, ETV6, EZH2, FLT3, GATA1, GATA2, HRAS, IDH1, IDH2, JAK3, KDM6A (UTX), KIT, KRAS, NOTCH1, NPM1, NRAS, PDGFRA, PHF6, PTPN11, RAD21, SMC1A, SMC3, STAG1, STAG2, TP53, U2AF1, WT1, ZRSR2
	Acute Lymphoblastic Leukemia (ALL) panel	50	ABL1, BRAF, BTG1, CDKN2A, CREBBP, CRLF2, DNM2, DNMT3A, EP300, ETV6, FBXW7, FLT3, GATA3, IDH1, ID, H2, IKZF1, IL7R, JAK1, JAK2, JAK3, KDM6A, KRAS, LEF1, MAPK1, KMT2D, NF1, NOTCH1, NRAS, PAX5, PHF6, PTEN, PTPN11, RB1, RUNX1, SH2B3, STAG2, TBL1XR1, TCF3, WHSC1 (NSD2), EZH2, KMT2A, LMO1, NT5C2, SETD2, STAT3, STAT5B, WT1, TP53, TPMT
	Lymphoma panel	50	ALK, ATM, B2M, BCL6, BIRC3, BRAF, BTK, CARD11, CD79A, CD79B, CREBBP, CXCR4, EGR2, EP300, EZH2, FAS, FAT4, FBXO11, ID3, IDH2, IKBKB, IKZF1, JAK3, KLF2, MYC, MYD88, NFKBIE, NOTCH1, NOTCH2, PLCG1, PLCG2, POT1, PRDM1, RHOA, RPS15, RRAGC, SF3B1, SOCS1, STAT3, STAT5B, TBL1XR1, TCF3, TET2, TNFAIP3, TNFRSF14, TP53, TP63, TRAF3, UBR5, XPO1
Solid cancer	Solid tumor panel I (50)	50	ALK, BRAF, EGFR, ERBB2, IDH1, IDH2, KIT, KRAS, NRAS, PDGFRA, MYC, MYCN, BRCA1, BRCA2,AKT1, APC, ATM, CDH1, CDKN2A, CTNNB1, ERBB4, ESR1, FBXW7, FGFR2, FGFR3, GNA11, GNAQ, GNAS, HNF1A, HRAS, KDR, MET, MLH1, NOTCH1, PIK3CA, PTEN, RB1, RET, SMAD4, SMARCB1, SMO, SRC, STK11, TP53, VHL, CCND1, CCNE1, GATA3, MSH2, NF1
	Solid tumor panel II (143)	143	ABL1, ACVRL1, AKT1, AKT3, ALK, APC, APEX1, AR, ARAF, ATM, ATP11B, AXL, BAP1, BCL2L1, BCL9, BIRC2, BIRC3, BRAF, BRCA1, BRCA2, BTK, CBL, CCND1, CCNE1, CD274 (PDL1), CD44, CDH1, CDK4, CDK6, CDKN2A, CHEK2, CSF1R, CSNK2A1, CTNNB1, DCUN1D1, DDR2, DNMT3A, EGFR, ERBB2, ERBB3, ERBB4, ERG, ESR1, ETV1, ETV4, ETV5, EZH2, FBXW7, FGFR1, FGFR2, FGFR3, FGFR4, FLT3, FOXL2, GAS6, GATA2, GATA3, GNA11, GNAQ, GNAS, HNF1A, HRAS, IDH1, IDH2, IFITM1, IFITM3, IGF1R, IL6, JAK1, JAK2, JAK3, KDR, KIT, KNSTRN, KRAS, MAGOH, MAP2K1, MAP2K2, MAPK1, MAX, MCL1, MDM2, MDM4, MED12, MET, MLH1, MPL, MSH2, MTOR, MYC, MYCL, MYCN, MYD88, MYO18A, NF1, NF2, NFE2L2, NKX2-1, NKX2-8, NOTCH1, NPM1, NRAS, NTRK1, NTRK3, PAX5, PDCD1LG2, PDGFRA, PIK3CA, PIK3R1, PNP, PPARG, PPP2R1A, PTCH1, PTEN, PTPN11, RAC1, RAF1, RB1, RET, RHEB, RHOA, ROS1, RPS6KB1, SF3B1, SMAD4, SMARCB1, SMO, SOX2, SPOP, SRC, STAT3, STK11, TERT, TET2, TIAF1, TP53, TSC1, TSC2, U2AF1, VHL, WT1, XPO1, ZNF217

Hereditary(Rare) Disease Test

Diagnose the Undiagnosed

Indication	Rare disease takes longer period to diagnose or undiagnosed cases can occur, therefore appropriate treatment, prediction of progress, and genetic counseling can be difficult. However, simultaneously sequencing human genes related genetic disorders using next generation sequencer and microarray can increase diagnosis yield in rare diseases.
Sample specimen	EDTA Whole Blood (WB) 3ml
Shipping condition	Refrigerated (3 days)
Method	WES, DES, Panel : Next Generation Sequencing (NGS) CMA : Microarray
Required Documents	1. Requisition Form, Medical Referral Form 2. Informed Consent for Genetic Testing

Category	Gene/CNV/SNP	Definition	Test Period & TAT*
WES (Whole Exome Sequencing)	> 20,000 genes	Perhaps the most widely used targeted sequencing method is exome sequencing. The exome (the protein-coding region of the human genome) represents less than 2% of the genome, but contains ~85% of known disease-related variants, making whole-exome sequencing a cost-effective alternative to whole-genome sequencing.	Mon~Fri 60 days
DES (Diagnostic Exome Sequencing)	4503 genes	The diagnosis of rare hereditary diseases is time consuming or simply impossible, making it very difficult to organize appropriate treatment, predict progress, or provide inheritance consultation. This test analyzes not the entire exome, but approximately 57,000 exons of a total of 4,503 genes that are known to be associated with human diseases.	Mon~Fri 30 days
CMA (Chromosomal MicroArray)	550,000CNVs + 200,000SNPs etc.	The test checks for the deletion/duplication of genes across the entire genome. It provides an accurate diagnosis of various genetic abnormalities such as hereditary diseases, developmental disorders, mental retardation, and congenital defects that cannot be diagnosed by previous existing chromosomal analysis.	Mon~Fri 10 days
Rare Disease Panel	Separated Panels	Choose a panel if patient's symptoms match diseases listed on each one * Please check next page for rare disease panel list	Separated Panels

* This is for Korean results. It may takes longer for English results.

Rare Disease : Panel List

NO	Panel	Gene	Indication	Category	Clinic
1	Arrhythmia panel	30	Long QT syndrome / Short QT syndrome / Brugada syndrome / Catecholaminergic polymorphic ventricular tachycardia"	Hereditary cardiac disorder	Cardiology
2	Cardiomyopathy panel	30	Hypertrophic cardiomyopathy / Dilated cardiomyopathy / Arrhythmogenic right ventricular cardiomyopathy / Restrictive cardiomyopathy		
3	Ataxia panel	30	Cerebellar ataxia, Episodic ataxia	Hereditary neuromuscular disease	Neurologics & Rehabilitation medicine
4	Charcot-Marie-Tooth disease panel	52	Charcot-Marie-Tooth disease		
5	Hereditary spastic paraplegia panel	30	Hereditary spastic paraplegia		
6	Muscular dystrophy panel	30	Congenital muscular dystrophy, Duchenne/Becker muscular dystrophy, Emery-Dreifuss muscular dystrophy, Limb-girdle muscular dystrophy		
7	Myopathy panel	30	Central myopathy (central core disease, multi-minicore disease), Myotubular myopathy, Myofibrillar myopathy, Nemaline myopathy		
8	Dystonia panel	29	Dystonia		
9	Parkinson's disease panel	15	Parkinson's disease		
10	Alzheimer's disease panel	6	Alzheimer's disease	Hereditary neurodegenerative disorder	
11	Dementia panel	14	Dementia		
12	Dermatology panel	26	Epidermolysis bullosa / Congenital ichthyosis	Hereditary dermatopathy	
13	Congenital adrenal hyperplasia panel	30	Congenital adrenal hyperplasia, 46XY Disorders of sexual deveolpment, Isolated Gonadotropin-Releasing Hormone (GnRH) Deficiency, Combined pituitary hormone deficiency, Bardet-Biedl syndrome	Hereditary endocrinopathy	Pediatrics
14	Hypothyroidism panel	23	Thyroid dysgenesis, Dyshormonogenesis, Iodide recycling defect, Defect of thyroid hormone transport, Resistance to thyroid hormone, Central hypothyroidism		
15	Inborn error of metabolism panel)	23	Amino acid, Organic acidemia, fatty acid beta oxidation defect		
16	Lysosomal storage disease panel	30	Glycogen storage disease, Mucopolysaccharidosis, Sphingolipidosis (Fabry disease, Gacher disease, Krabbe disease, etc.), other lipidosis (Niemann-Pick disease, Wolman disease), Galactosemia		
17	Proportionate short stature panel	30	3-M syndrome, Cornelia de Lange syndrome, Combined Pituitary hormone deficiency, Isolated growth hormone deficiency, Kabuki syndrome, Meier-Gorlin syndrome, Microcephalic osteodysplastic primordial dwarfism, Noonan syndrome, Schimke immunoosseous dysplasia		
18	Rasopathies panel	14	Cardiofaciocutaneous syndrome, Costello syndrome, Neurofibromatosis, Noonan syndrome		
19	Hypogonadotropic hypogonadism panel	30	Isolated gonadotroin-releasing hormone (GnRH) dificiency, combined pituitary hormone deficiency, bardet-biedl syndrome		
20	Maturity-Onset Diabetes of the Young, MODY panel	32	Maturity-Onset Diabetes of the Young		
21	Hearing loss panel	30	Hearing loss	Hereditary hearing loss	
22	Coagulation panel	17	Coagulation factor deficiency, von Willebrand disease	Hereditary coagulopathy	
23	Primary immune deficiency panel	30	Common variable immunodeficiency, Hemophagocytic lymphohistiocytosis, Hyper-IgE syndrome, Hyper-IgM syndrome, Inflammatory bowel disease, Lymphoproliferative syndrome, Severe combined immunodeficiency	Hereditary immune disorder	
24	Connective tissue disorder panel	30	Cutis laxa, Ehlers-Danlos syndrome, Loeys-Dietz syndrome, Marfan syndrome, Stickler syndrome, Familial thoracic aortic aneurysm	Hereditary skeletal & connective tissue disorder	
25	Skeletal dysplasia panel	30	Achondroplasia/hypochondroplasia, Chondrodysplasia punctata, FGFR-Related Craniosynostosis Syndromes, Multiple epiphyseal dysplasia, Multiple exostoses, Hypophosphatemic rickets, Osteogenesis imperfecta		
26	Epilepsy panel	30	Benign familial infantile seizures, Epileptic encephalopathy, Nocturnal frontal lobe epilepsy, Rett syndrome, Tuberous sclerosis		
27	Hereditary retinopathy panel	30	Usher syndrome, Joubert syndrome, Ceroid lipofuscinosis, Leber congenital amaurosis	Hereditary ocular disease	
28	Retinitis pigmentosa panel	88	Retinitis Pigmentosa		

Health Checkup Test

Check up your genetic condition for healthy life

Indication	• Patients who have family history for preventative reasons. • Healthy people who want to predict the risk of the disease.
Sample specimen	EDTA Whole Blood (WB) 3ml / Swab (Only in Korea)
Shipping condition	Refrigerated (3 days)
Method	Genome screen : Next Generation Sequencing (NGS) Risk Screen/Other : Genotyping
Required Documents	1. Requisition Form, Medical Referral Form 2. Informed Consent for Genetic Testing

Product	Definition	Test Period & TAT*
Genome Screen	Testing for pathogenic variants related to diseases by whole exome sequencing Providing well-grounded test report based on NCCN guideline and references *This test is recommended to those who have family history for preventative reasons.	Mon~Fri 21 days
Risk Screen	RiskScreen is for ordinary people / healthy people who do not have family histoy. This test is checking genetic factors which might increase the risk of developing of diseases based on meta-analysis. Test report includes information of general risk of disease	Mon, Wed, Fri 5 days
Other	Other test is SNP based test to check genotypes of 14 genes which have statistial association with chronic disease and health management. Understand personal genetic characteristics and risk of genotype so that improve quality of lifestyle by personalized health solutions. Suggest customized health management program, custom diet, related health supplements to each individuals.	7 days

* This is for Korean results. It may takes longer for English results.

Health Checkup Test : Item list

GenomeScreen	Gene	Definition
Comprehensive Cancer	25	Hereditary cancer (occurred by inherent genetic disorder) accounts for 5~10% of total cancer. Comprehensive Cancer panel test analyzes 25 genes related to hereditary cancer.
Cancer (Female)	3	BRCA1, BRCA2 is the main cause of hereditary breast cancer. TP53 is related to Li-Fraumeri syndrome. Cancer F panel Test analyzes these 3 genes related to female cancer.
Stroke	34	This test analyzes 34 genes related to 23 diseases having stroke symtoms including familial stroke for prediction and prophylatic measures. It reports identified pathogenic variants and the risk of developing stroke.
Hyperlipidemia	31	For prediction and prophylatic measures of circulatory system disease, Hyperlipidemia Genome Screen analyzes 31 genes related to Familial Hypertriglyceridemia and other 10 related diseases. It provides identified pathogenic variant in these 31 genes and the risk of developing hyperlipidemia.
Heart	32	For prediction and prophylatic measures of cardiovalcular disease, Heart GenomeScreen analyzes 32 genes related to cardiovascular disease. This test reports identified pathogenic variant which might occur sudden heart attack.
Eye Diesese		Coming Soon

Risk Screen	SNV	Definition
Cancer (Male)	6	This test screens SNPs related to cancer susceptibility for healthy people Male : Gastric cancer, Colorectal cancer, Lung cancer, Liver cancer, Thyroid cancer, Prostate cancer
Cancer (Female)	7	This test screens SNPs related to cancer susceptibility for healthy people Female : Gastric cancer, Colorectal cancer, Lung cancer, Liver cancer, Thyroid cancer, Breast cancer, cervical cancer
Stroke	5	This test is checking genetic factors which might increase the risk of ischemic stroke and genetic diseases having similar symtoms as stroke at a young age.
Hyperlipidemia	5	This test is checking genetic factors which might increase the risk of hyperlipidemia and the side effect of its medicine.
Heart		Coming Soon
Eye Diesese		Coming Soon

Others	SNP	Definition
Gene Doctor - Total	14	Understand personal genetic characteristics and risk of beauty/metabolic syndrome/skin/hair/obesity
Gene Doctor - Beauty	6	Understand personal genetic characteristics and risk of beauty (skin aging, skin elasticity, Hyperpigmentation, blood concentration of Vitamin C, hair loss, hair thickness)
Gene Doctor - Metabolism	6	Understand personal genetic characteristics and risk of metabolic syndrome (BMI, triglyceride, HDL-C, Fasting blood glucose, blood pressure)
Gene Doctor - Skin	4	Understand personal genetic characteristics and risk of skin (skin aging, skin elasticity, hyperpigmentation, blood concentration of Vitamin C)
Gene Doctor - Hair	2	Understand personal genetic characteristics and risk of hair (hair loss, hair thickness)
Gene Doctor - Obesity	1	Understand personal genetic characteristics and risk of obesity (BMI)
Pharmacogenetic	12	Testing 12 SNV relevant to 34 different drugs suggesting drug selection and dosage to each individuals.

Platform

Next-Generation Sequencing (NGS)

- Quick and precise technology to read out slices of DNA sequence
- Reducing cost and time needed for genome decipher
- Efficiently applicable for general genomic research and clinical genomic research due to feasibility of diverse application identification

Chromosomal Microarray

- Test method to detect CNV (Copy Number Variation)
- No need to culture cells – Rapid Turn-around time and improved accuracy
- Applicable for congenital disease diagnosis / Recently FDA approved

Sequencing by Synthesis (SBS)

NextSeq

MiSeq Dx

Pyrosequencing

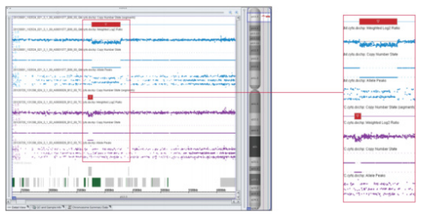
Ion PGM Dx

Base Sequence Variation

NGS Data

Cytoscan Dx

GCS 3000Dx

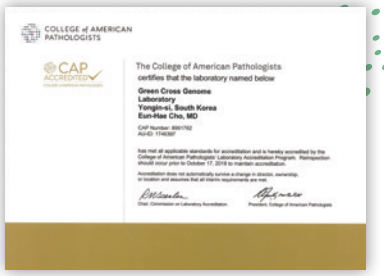


Chromosomal aberrations

Sample Preparation

Test	Sample Prep. & Shipping Method				
	Blood	Blood (Roche Tube)	Genomic DNA	Saliva	Plasma
Specimen labeling & availability	Please attach provided labels onto both specimen tube and test requisition form				
Container	EDTA tube (purple) Gently invert blood for 8-10 times after the blood is completely drawn	Roche cfDNA tube Immediately invert gently for 10 times after the specimen is extracted	Sterile plastic tube DNA quality : non-degraded, A260/A280 1.8 to 2.0 (SureSelect)	DNA Genotek Oragene DNA collection kit Adult: OG-500 Child: OG-575	1. Primary plasma separation: Centrifugation must be performed after 30 minutes or at least before 4 hours after blood draw at 1,600g, 10 minutes, and 4℃. (Leave 5mm at the bottom of the plasma layer to prevent the globule layer from blending and aspirate 1.1mL each into 2.0mL eppendorf tubes) 2. Secondary plasma separation: The extracted supernatant must be centrifuged at 16,000g, 10 minutes, and 4℃. (Leave 50-100㎕ of plasma at the bottom for prevention of globule layer from blending and aspirate 1mL each into unused 2.0mL eppendorf tubes)
Amount	Adult: 3mL Child: 1~2mL	8.5mL	Concentration: 30-50ng/㎕, 100㎕	Adult: 2mL / Child: 0.75mL Please fill up to marked line on the kit	Secondary separated plasma: 4mL 1mL each in E-tube
Shipping	Room temperature or ice pack ** If at room temperature, specimen must be shipped immediately after the blood is drawn	Room temperature (18~25℃) - during summer(> 35℃) wrap an ice bag - during winter(< 6℃) keep warm at room temperature using styrofoam box ** Must be shipped immediately after the blood is drawn	Roon temperature or ice pack ** If at room temperature, specimen must be shipped immediately after the DNA is ready	Room temperature shipment through general mailing services (UPS, FedEx, etc.)	** Must be shipped immediately after the plasma is ready
Storage	Temperature: 4℃ preferred (refrigerated at 2-8℃) DO NOT FREEZE	Temperature: 6~35℃ DO NOT FREEZE	Temperature: 4℃ or -20℃	Room temperature	Temperature: -20℃ KEEP FROZEN (-80℃ for long term storage)
Stability	Stable for 4 days refrigerated	Stable for 7 days at room temperature for plasma separation	Stable for 3-4 days if at room temperature Stable for 1 month at 4℃ Stable indefinitely at -20℃	Stable for years at room temperature	Stable for 7 days at -20℃

Overseas Business


COLLEGE of AMERICAN PATHOLOGISTS

CAP ACCREDITED

The College of American Pathologists certifies that the laboratory named below

Green Cross Genome Laboratory
Yongin-si, South Korea
Eun-Hae Cho, MD

CAP accreditation


유전자검사 정확도평가 인증서

Level A for Korean Institute of Genetic Testing Evaluation

2016.05	Certified as level A by Korean Institute of Genetic Testing Evaluation
2016.03	Selected as demonstrating project center for NGS clinical testing by Korean Ministry of Food and Drug Safety
2017.02	Accredited by College of American Pathology (CAP)
2017.03	Accredited for NIPT clinical testing lab by Korean Ministry of Food and Drug Safety