

SolGent

Company Profile

Your Solution for Genetic Technology

SolGent Overview




Company Name	SolGent Co., Ltd.	Date of Established	Aug, 2000 year
Chief Executive Officer	Do-su Seok, Jae-Hyung You	Corporation Capital	4.44 Billion Won (2019)



- **Research Reagents** : DNA amplification enzymes, DNA/RNA extraction kits, etc..
- **Molecular Diagnostic Reagents** : One step Multiplex RT- PCR Pre-mix, OEM/ODM/LDT
- **Molecular Diagnostic Kits** : ACD, ApoE, MTHFR, TB, CT/NG, STD, RV13, etc.
- **Identification Kits** : Korean native / Non native identify kits, Rice variety identify kits
- **Genome analysis service** : DNA sequencing service, Genotype analysis service

Vision	<ul style="list-style-type: none"> ▶ Prevention of disease for health care and human happiness. ▶ Contribution to biomedicine market development to design social responsibility
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Location	 <ul style="list-style-type: none"> • 43-10, Techno 5-ro, Yuseong-gu, Daejeon, 34014, South Korea
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INNOBIZ
기술혁신형중소기업



SolGent Overview



Total **54** employees (March, 2019)

Management & QM
13 employees

Research & Development
8 employees

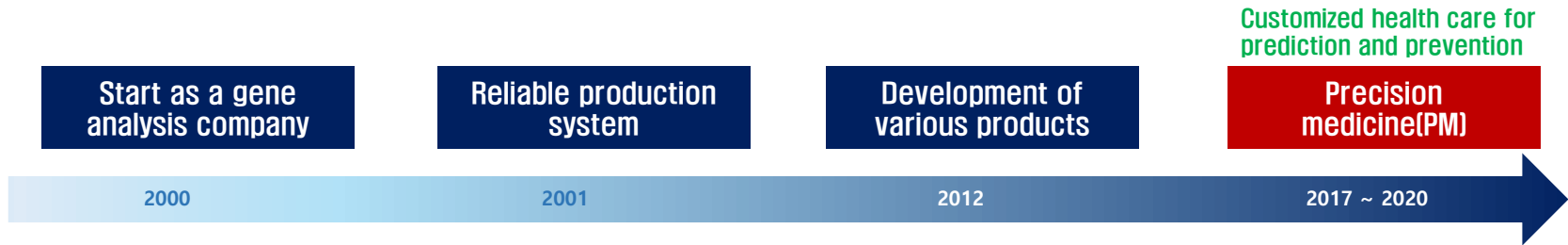
Sales & Marketing
9 employees

Sequencing Service
11 employees

Production
9 employees

CRS
4 employees





Service

- Sequencing
- Genotyping

Raw materials

- Polymerase
- Buffer
- dNTP

Pathogen/Mutation

- Pathogen Kit
- Genotyping Kit
- Identification Kit of Agricultural Products
- Identification of microorganism

Prevention

- 5 Corneal Dystrophy Kit
- G6PD deficiency Kit
- NGS reagent
- Bio sensor



MOLECULAR DIAGNOSTICS

Molecular Diagnostics

Development and production of PCR-based molecular diagnostic kits for diagnosing hereditary and infectious diseases

Raw Materials

Dye based Enzyme
Probe based Enzyme
Taq - Polymerase
Buffer
dNTP
Pre-Mix
Smart-Mix



GENETIC IDENTIFICATION

Genetic Identification

Identification of rice varieties and genetic testing of flora and fauna such as discrimination between Hanwoo / non Hanwoo. Please refer to Korean Page.

SERVICE

Sequencing

Identification of microorganism

PCR KIT

Conventional PCR
Real-time PCR
Direct PCR
Multiplex PCR
Megaplex PCR
Human Genotyping



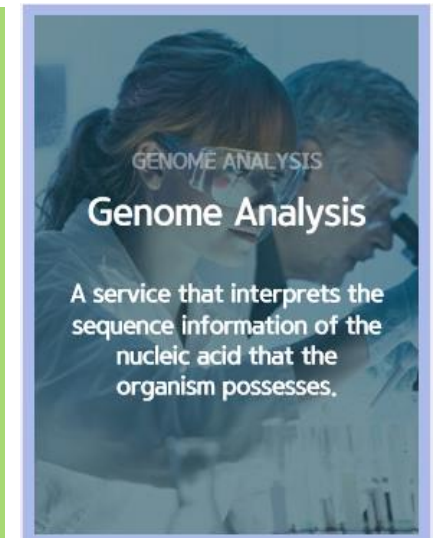
RESEARCH REAGENT, CHEMICAL

Research Reagent

Enzyme and raw material production required for various studies including molecular diagnostic kits

IDENTIFICATION KIT & SERVICE

RICE
Hanwoo
LIMS



GENOME ANALYSIS

Genome Analysis

A service that interprets the sequence information of the nucleic acid that the organism possesses.

Main Business 1 – Molecular Diagnostics (PCR KIT)



1. Pathogen Detection

Disease	Detection target	PCR type
Tuberculosis	MTC/NTM	Real-time PCR
	MTC/NTM	Conventional PCR
	MTB/M.Bovis	Conventional PCR
	M.Avium/M.Intracellulare	Conventional PCR
Respiratory Disease	RV16	Real-time PCR
	RV13	Conventional PCR
	MERS	Real-time PCR
	Influenza A/B & A Subtype	Real-time PCR
	Influenza A/B	Real-time PCR
	Influenza A/B	Conventional PCR
	Influenza A Subtype	Real-time PCR
	Influenza A Subtype	Conventional PCR
	Entero	Real-time PCR
Sexually Transmitted Infection	STI 12	Real-time PCR
	STI 6	Real-time PCR
	HPV	C (Screening)
	HPV	C (Genotyping)
Others	PneumonoPatho 13	Real-time PCR
	ZCD (Zika, Chikungunya, Dengue virus)	Real-time PCR
	Malaria	Conventional PCR
	CRE	Conventional PCR

2. Human Genotyping

Disease	Detection target	PCR type
Corneal Dystrophy	Avellino Corneal Dystrophy	Real-time PCR
		Conventional PCR
	5 Types Corneal Dystrophy	Real-time PCR
Alzheimer	ApoE	Real-time PCR
		Conventional PCR
Hyperhomocysteinemia	MTHFR	Real-time PCR
		Conventional PCR
G6PD Deficiency	G6PD (Asian)	Conventional PCR
	G6PD (African)	Conventional PCR



No.	Product	Certification	Date
1	DiaPlexQ™ MTC/NTM Detection Kit - Ver. 4.0	CE	2018.10.05
2	DiaPlexQ™ Entero Virus Detection Kit	CE	2018.10.05
3	DiaPlexQ™ 5 Types Corneal Dystrophy Detection Kit	CE	2018.08.16
4	LytePrime™ Mplex ZCD RT-PCR Kit 1.0 (ZIKV/CHIKV/DENV)	CE	2017.08.31
5	DiaPlexQ™ MTC/NTM Detection Kit - Ver. 4.0	CE	2017.03.28
6	LyteStar™ TB/NTM PCR Kit 4.0	CE	2016.10.25
7	LyteStar™ TB/NTM PCR Kit 3.0	CE	2017.08.10
8	LyteStar™ TB/NTM PCR Kit 2.0	CE	2014.03.14
9	DiaPlexQ™ MTC/NTM Detection Kit	CE	2013.12.09
10	DiaPlexC™ MTC/NTM Detection Kit	CE	2012.07.23
11	DiaPlexC™ MTB/M.bovis Detection Kit	CE	2012.07.23
12	DiaPlexC™ M.Avium/M.Intracellulare Detection Kit	CE	2012.07.23
13	DiaPlexQ™ RV16 Detection Kit	CE	2016.08.23
14	DiaPlexC™ RV13 Detection Kit	CE	2012.09.25
15	DiaPlexQ™ Influenza Virus A/B Detection Kit	CE	2013.04.08
16	DiaPlexC™ Influenza Virus A/B Detection Kit	CE	2012.05.08
17	DiaPlexQ™ Influenza Virus A Subtype Detection Kit	CE	2013.04.08
18	DiaPlexC™ Influenza Virus A Subtype Detection Kit	CE	2013.04.08
19	DiaPlexQ™ ZCD Detection Kit (ZIKV, CHIKV, DENV)	CE	2016.02.26
20	DiaPlexQ™ Dengue Virus Detection Kit	CE	2013.04.08
21	DiaPlexC™ Malaria Detection Kit	CE	2012.07.23
22	DiaPlexC™ CRE Detection Kit	CE	2012.09.19
23	DiaPlexQ™ Ebola Virus Detection Kit (Zaire)	CE	2014.11.27

Molecular Diagnostic Product CE-marking



No.	Product	Certification	Date
1	DiaPlexQ™ Avellino Corneal Dystrophy (ACD) Real-Time PCR Genotyping Kit	CE	2012.02.02
2	DiaPlexC™ Avellino Corneal Dystrophy (ACD) Genotyping Kit	CE	2012.02.02
3	DiaPlexQ™ ApoE Genotyping Kit	CE	2012.02.02
4	DiaPlexC™ Apolipoprotein E (ApoE) Genotyping Kit	CE	2012.02.02
5	DiaPlexQ™ MTHFR Genotyping Kit	CE	2012.11.09
6	DiaPlexC™ MTHFR Genotyping Kit	CE	2012.11.09
7	DiaPlexC™ G6PD Genotyping Kit (Asian type)	CE	2012.02.02
8	DiaPlexC™ G6PD Genotyping Kit (African type)	CE	2012.02.02



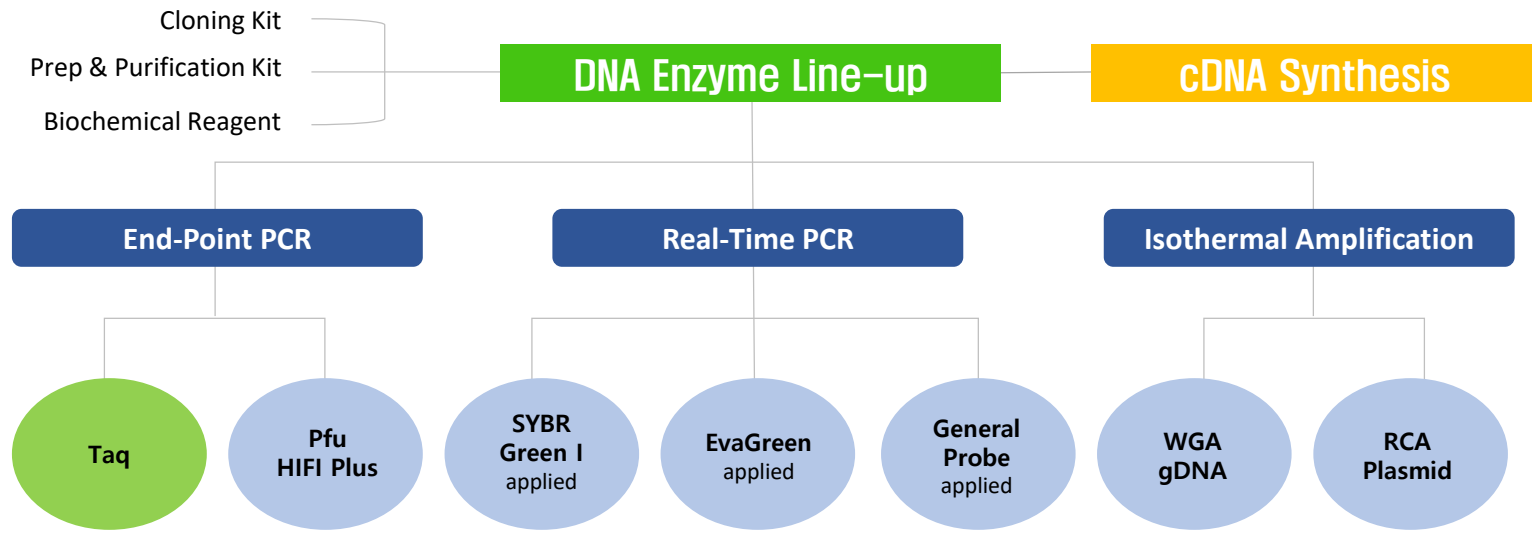
Pathogen

No.	Product	Certification Authority	Date
1	DiaPlexC™ RV13 Detection Kit	Ministry of Food and Drug Safety	2013.01.02
2	DiaPlexQ™ MTC/NTM Detection Kit	Ministry of Food and Drug Safety	2016.04.11

Genotyping

No.	Product	Certification Authority	Date
1	DiaPlexQ™ Avellino Corneal Dystrophy Genotyping Kit	Ministry of Food and Drug Safety	2013.01.02
2	DiaPlexC™ Avellino Corneal Dystrophy Genotyping Kit	Ministry of Food and Drug Safety	2013.01.02
3	DiaPlexQ™ ApoE Genotyping Kit	Ministry of Food and Drug Safety	2013.05.06
4	DiaPlexC™ ApoE Genotyping Kit	Ministry of Food and Drug Safety	2014.02.18
5	DiaPlexQ™ MTHFR Genotyping Kit	Ministry of Food and Drug Safety	2013.02.15

Main Business 2 Research Reagents



Product example



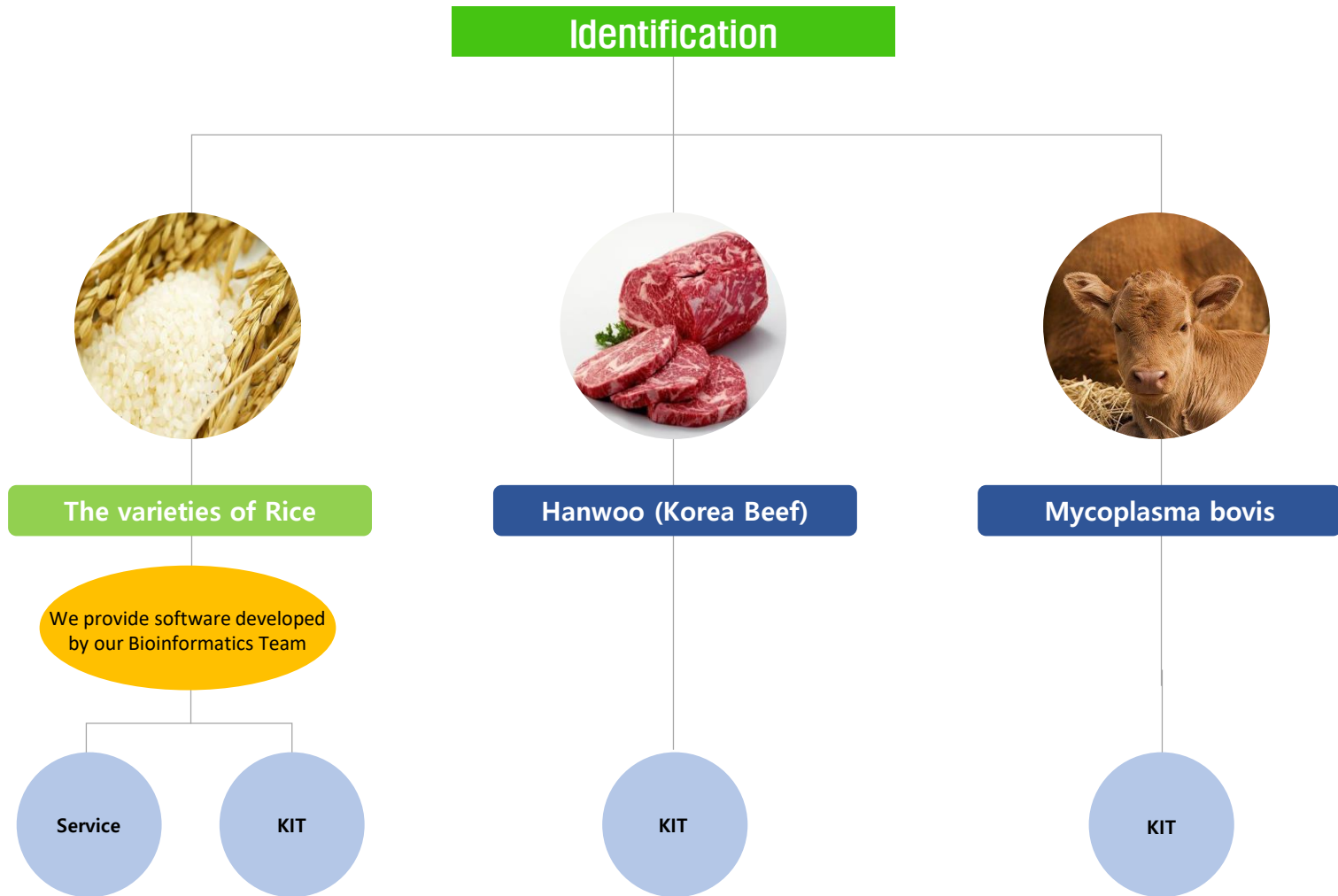
[STD] Solg™ Taq DNA Polymerase
The basic Taq DNA Polymerase



[SET] Solg™ e-Taq DNA Polymerase
The most economic Taq DNA polymerase



[SEF] Solg™ EF-Taq Polymerase
PCR enzyme for long fragment amplification



We can identify more than 190 varieties of rice

Successful progress in Ministry of Agriculture projects for identifying the varieties of rice. (2018)



Sequencing

- A service for analyzing the sequence of 4 bases A, G, C, T constituting DNA

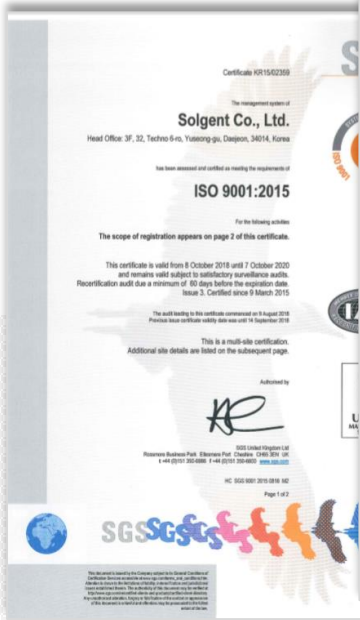
Genotyping

- Based on the results of sequence analysis, we provide various genetic analysis services such as genetic classification, genetic mutation, genetic relationship analysis, and diversity analysis through molecular markers

Identification of microorganism

- Through analyzing the nucleotide sequence of the separated microorganisms, provide a confirmation the species and subspecies of microorganisms by comparing with the established DB

Certificates



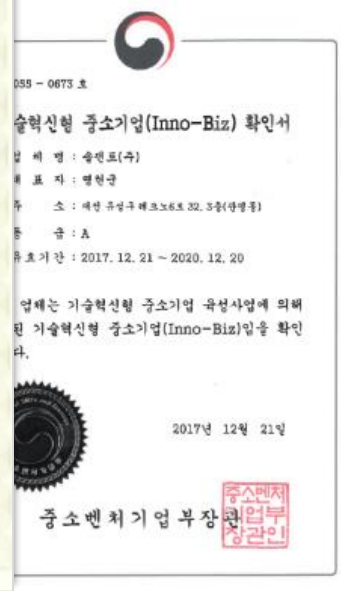
ISO9001:2015



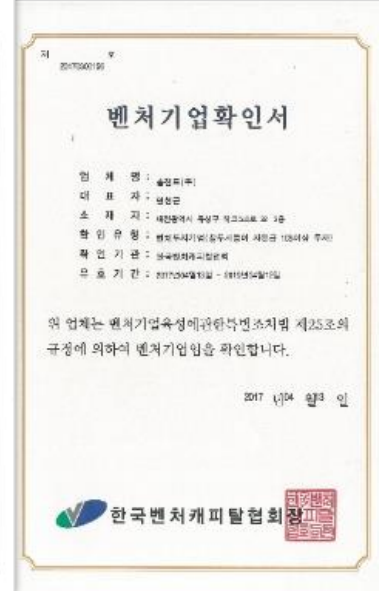
ISO13485:2016



KGMP



INNO-BIZ



VENTURE



Title Of Invention	Right Holder	Type	Legal Status	Registration Number
Diagnostic Kit for Simultaneously Detecting Mycobacterium complex, Non-tuberculosis Mycobacteria and Multidrug-resistant Tuberculosis	Solgent Co.Ltd.	Patent	Registered	1018658990000
Diagnostic Kit for Simultaneously Detecting Mycobacterium Complex and Non-tuberculosis Mycobacteria	Solgent Co.Ltd.	Patent	Registered	1018658980000
Method for Detection of Food Poisoning Bacteria By Using Gene Amplification and Kit for Use in The Same Method	Solgent Co.Ltd.	Patent	Registered	1018147400000
Diagnostic Kit Useful for Allelic Discrimination of Avellino Corneal Dystrophy Genotype	Solgent Co.Ltd.	Patent	Registered	1014805220000
Method for Detecting and Identifying Quinolone Resistant Campylobacter From Biological Sample Using Polymerase Chain Reaction and Kit Used for The Same Method	Animal and Plant Quarantine Agency, Solgent Co.,Ltd.	Patent	Registered	1013740450000
Single Nucleotide Polymorphism Marker Useful for Identification of Hanwoo from Imported Cow and Its Use	National Agricultural Products Quality Management Service, Solgent Co.Ltd.	Patent	Registered	1013559140000
PCR Primer for Genotyping the Mouse Lep Gene and the Kit Comprising the Same	Solgent Co.Ltd.	Patent	Registered	1010741180000
Method for Concentration and Detection of Norovirus or Hepatitis A Virus	Korea Basic Science Institute, Industry Foundation Of Chonnam National University	Patent	Registered (Exclusive License)	1015481670000
Specific primers for diagnosing CMV resistance in red pepper, and uses thereof	Seoul National University R&DB Foundation	Patent	Registered (Non-Exclusive License)	1010469600000
Primer set, method and kit for selecting ChiVMV-resistant pepper cultivar	Seoul National University R&DB Foundation	Patent	Registered (Non-Exclusive License)	1009203690000
Method for Purification of DNA Free-Polymerases and Accessary Enzymes For Molecular Diagnosis Using Polymerase Chain Reaction	Solgent Co.Ltd.	Patent	Unexamined	1020150127850 (Unex. Pub.)



01. Quality management system

More than ten years of skilled staff are concentrating on quality control. Strict quality control is being carried out based on ISO through QC team.

ISO9001:2015, ISO13485:2016, KGMP

02. Advanced PCR technology

We have technology for PCR as a whole, including qPCR, Real-Time PCR, Fast PCR, and Direct PCR, and we use it to produce products. In addition, we develop and produce PCR products that are user-friendly through Hot Start PCR, High-Fidelity PCR, Multiplex PCR, and Megaplex PCR.

Genome & Cellomics
Genomics & Cellomics
Genomics & Cellomics
Genomics & Cellomics



03. High reliability

We are producing PCR raw materials such as buffers, polymers and dNTP. The production of these raw materials improves the quality of our PCR kits. We have been steadily supplying these to examination centers, universities and government research institutes under the brand Solg™ and DiaStar™ for more than 10 years.

04. More than 40 developed kits and consistent R&D efforts

More than 40 PCR kits have been developed to diagnose various diseases. Based on the know-how and skills we gained during the existing development process, we are currently working on developing kits for other diseases.

Genetic Disease Diagnostic Kits

Development of Kits and Reagents for 16-Channel PCR Equipment of M Company

Sales Form	Milestone + OEM
Disease	RSV, RV, MTC/NTM, ZCD, STI, Influenza
Target Market	Brazil, India, Indonesia

Applied to 16-channel plastic chips



PCR장비



PCR장비

China L Company **AIGS** (Automatic Integrated Gene Detection System)

Development of kits and reagents to be applied to L company's equipment optimized for Rapid POCT diagnosis

User-friendly PCR equipment.

Because prep process can be omitted, efficiency is high both in time and space.

On 25 January 2019 framework agreement

Agree to develop kits and reagents for AIGS based on Real-Time PCR and GeneReady based on Direct PCR.

Furthermore, we will cooperate with each other on CFDA certification and joint marketing.



AIGS – 400C



Optimizing



DiaPlexQ™ 5 type Corneal Dystrophy(ACD) Genotyping Kit





LytePrimer™ Mplex ZCD RT-PCR Kit 1.0 (ZIKV/CHIKV/DENV) → CE marking

Completed 105 clinical laboratory tests from a Mexican company.

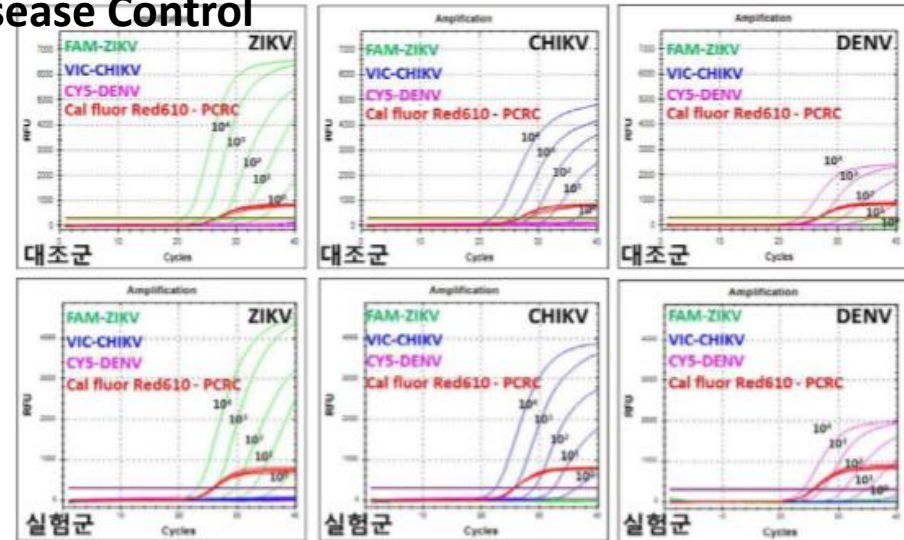


Application of M company's equipment
Target: South American Market

- Development of Polymerase, Specific Probe, Primer for RT-qPCR
- High efficiency, High Sensitivity**

Infectious Disease Control

Zika virus, Chikungunya virus and Dengue virus RNA transcripts spiking test (Ct value)						
Products	Detection Target	10 ⁴	10 ³	10 ²	10 ¹	10 ⁰
Control	ZIKV	21.8	24.2	27.8	31.1	35.1
	CHIKV	22.1	25.8	28.8	31.8	36.1
	DENV	23.9	27.1	30.9	35.4	-
Test	ZIKV	22.4	25.6	29.6	32.4	36.0
	CHIKV	22.3	25.9	29.3	31.7	36.2
	DENV	23.8	26.4	30.7	35.2	-



ZCD RNA transcripts spiking test results

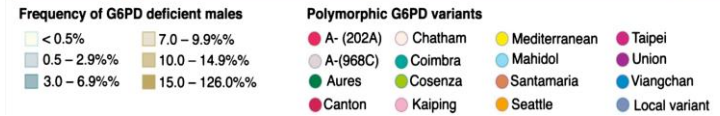
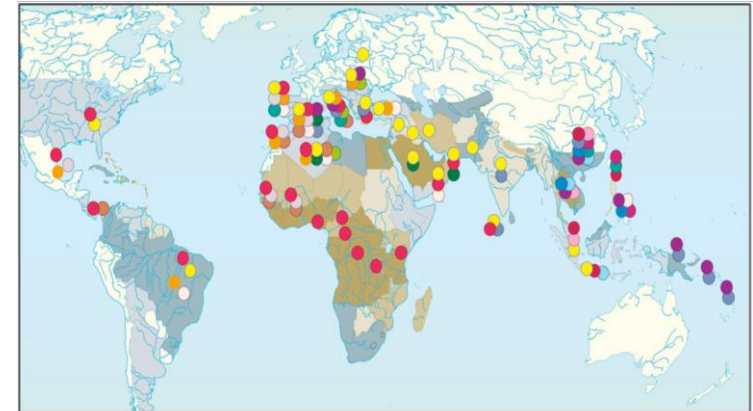


G6PD deficiency diagnosis market with steady demand

- G6PD deficiency gene has more than 400 million people worldwide.
- They are mainly located in Africa, Southeast Asia, South America, the Middle East, China, and the Mediterranean Sea.
- There are any female patients, but women may not have symptoms because they may be just carriers. (X-linked)
- It is usually treatable by folic acid application, but in severe cases, it can die from hemolysis, hemolytic anemia and jaundice symptoms.



The G6PD deficiency is related to genes, so there is no medicine to solve it at present. Therefore, care needs to be taken not to trigger the disease.



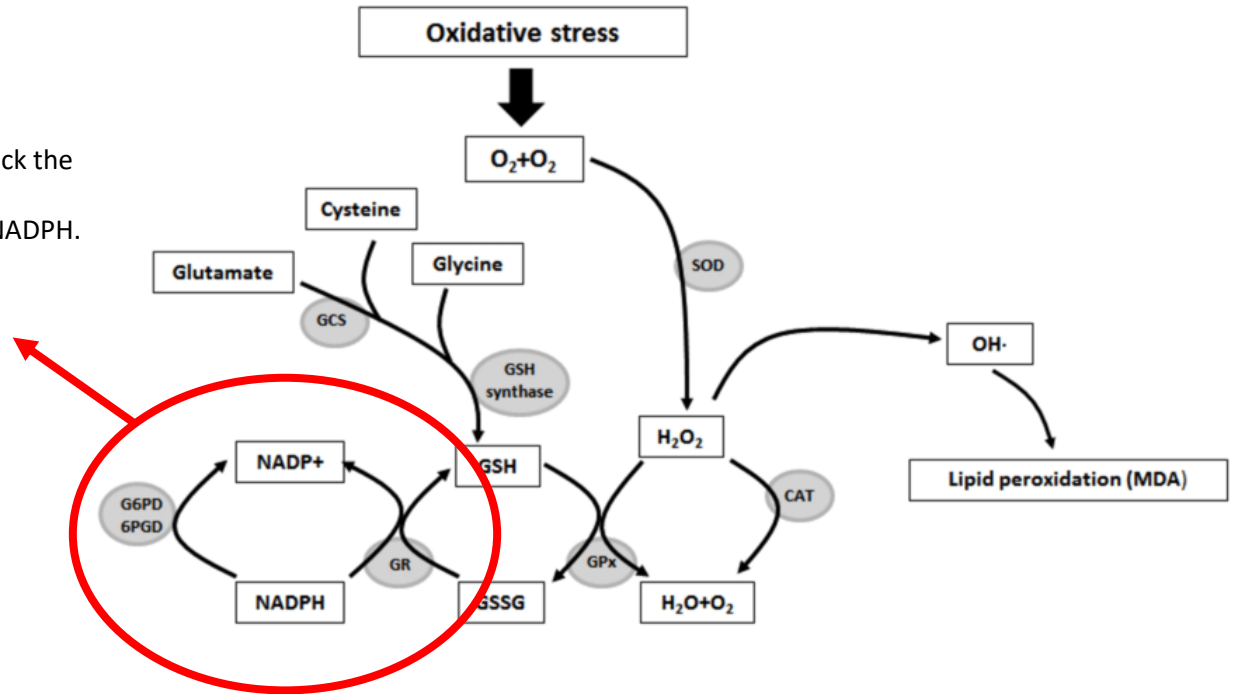
We intend to develop device and kit that diagnose G6PD deficiencies in a way that is different from conventional methods.

Method	Weakness
DNA Analysis	<ul style="list-style-type: none"> ▪ Requires a variety of equipment and space ▪ Test after symptoms have already been shown ▪ Possibility that other factors may have caused symptoms
CBC (Hb, Htc)	
LDH, Haptoglobin	
Urine	
Peripheral blood smear	



The product we are trying to develop is free of time and space constraints, and can diagnose G6PD deficiency quickly and accurately.

Use the fluorescent protein mBFP to check the quantitative response values of NADP⁺/NADPH.

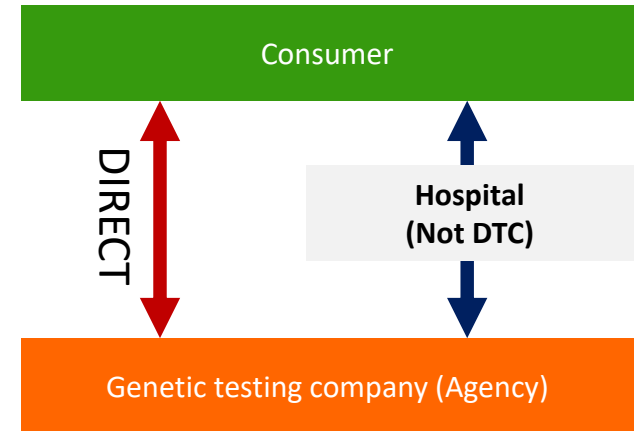


Human Genotyping: DTC service



In 2019, the government's pilot project for the establishment of a certification system for genetic testing agencies was launched.

We are exploring the optimum time of entry by detecting trends in the market, and building a PCR system for genes of promising items.



 : completed PCR set-up

No.	Category	Genes							
1	BMI	FTO	MC4R	BDNF					
2	Neutral fat	GCKR	DOCK7	ANGPTL3	BAZ1B	TBL2	MLXIPL	LOC105375745	TRIB1
3	Cholesterol	CELSR2	SORT1	HMGCR	ABO	ABCA1	MYL2	LIPG	CETP
4	Blood sugar	CDKN2A/B	G6PC2	GCK	GCKR	GLIS3	MTNR1B	DGKB-TMEM195	SLC30A8
5	Blood pressure	NPR3	ATP2B1	NT5C2	CSK	HECTD4	GUCY1A3	CYP17A1	FGF5
6	Chromatic deposition	OCA2	MC1R						
7	Hair loss	chr20p11(rs1160312, rs2180439)	IL2RA	HLA-DQB1					
8	Hair thickness	EDAR							
9	Skin aging	AGER							
10	Skin elasticity	MMP1							
11	Vitamin C Concentration	SLC23A1(SVCT1)							
12	Caffeine metabolism	AHR	CYP1A1-CYP1A2						

[Allowed DTC genes (Korea)]

THANK YOU!

www.solgent.com