

CORPORATE OVERVIEW 2020

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- + Pipeline
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- + Product Portfolio
- + Business Models

Multiplex Point-of-Care
Molecular Diagnostic Platform Experts

+ CORPORATE OUTLINE

About Genesystem

Founded in 2010, Genesystem is a biotech engineering company in South Korea specializing in molecular testing solutions to target multiplex on-site testing needs. Genesystem develops and markets state-of-the-art PCR platforms as well as related reagents and biochip products which are designed to enhance the health of human societies and ultimately improve the quality of human life.

The application fields that Genesystem targets include clinical diagnostics, food testing and veterinary diagnostics where it has been implementing successful partnerships with global partners to grasp huge potentials in rapidly growing point-of-care molecular testing market. Ongoing research and development efforts of Genesystem in accordance with its future-oriented business milestone will lead to the launch of variety of innovative products led by **GENECHECKER** series of PCR platforms, **SMARTCHEK** molecular testing assays and brand-new multiplex molecular testing biochips.

As the KINPEX 2013 grand prize awarded and ETRI family company (governmental research institute spin-off company), Genesystem assures its clients that its engineering expertise and know-how will come up with greater values for our client's applications.



Company History

- | | | |
|-------|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2019 | APR | Renewed its ISO certification with EN ISO 13485:2016. |
| | AUG | Commenced AOAC certification process for its SMARTCHEK pathogen detection assays. |
| | DEC | Launched GENECHECKER UF-300 real-time PCR system. |
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| 2018 | DEC | Launched SMARTCHEK series of assays for food safety testing. |
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| 2017 | DEC | Concluded technology transfer agreement with Korea Armed Force Medical Science Research Institute for the rapid molecular diagnosis of influenza virus. |
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| 2016 | AUG | Completed GMP certification. |
| | SEP | Launched GENECHECKER UF-150 real-time PCR system. |
| | OCT | Completed KFDA certification as medical device (GENECHECKER UF-150 real-time PCR system). |
| | NOV | Completed EN ISO 13485:2012 certification. |
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| 2015 | SEP | Concluded equity participation contract with ETRI and ETRI Holdings. |
| | OCT | Became ETRI family company (research institute spin-off company) certified by Ministry of Science, ICT and Future Planning of South Korea. |
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| 2013 | MAY | Launched GENECHECKER UF-100 PCR system. |
| | NOV | Ultra-fast PCR technology of the company was awarded with Presidential prize (grand prize) at KINPEX(Korea Invention and Patent Exhibition). |
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| 2010 | MAR | Genesystem was founded as a biotech start-up to serve molecular diagnostic industry. |

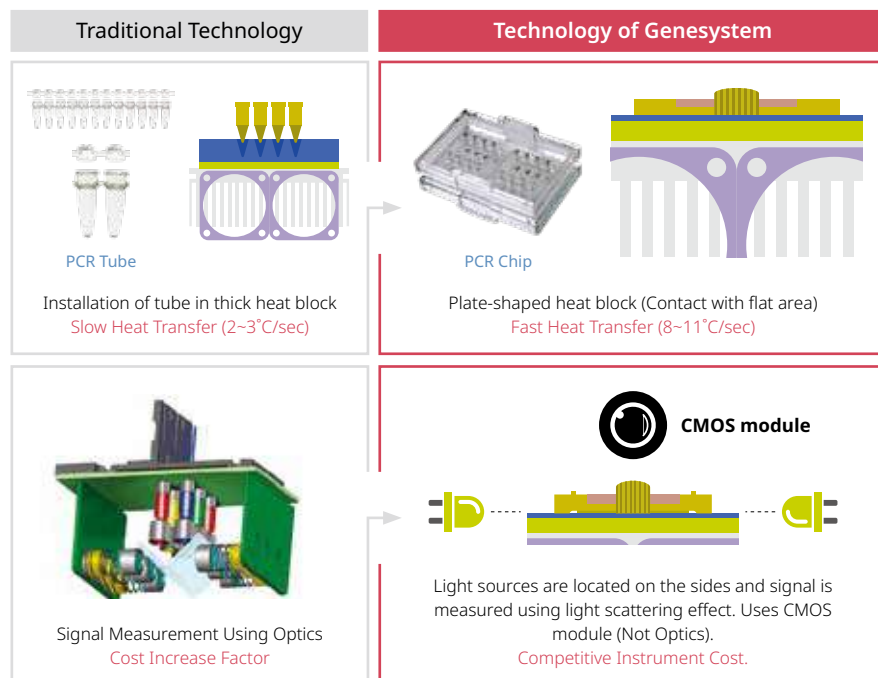
+ PIPELINE



+ CORE COMPETENCIES

Ultra-fast PCR Technology Ideal for On-site Molecular Testing

Long turn around time of PCR (Polymerase Chain Reaction) test and its bulky and heavy instrumentation have been the key factors limiting the spread of this highly precise and sensitive detection method in point-of-care diagnostic applications. Genesystem invented a microfluidic chip based PCR method associated with compact and sophisticated hardware mechanism which dramatically reduces the TAT of PCR testing down under 20 minutes. Based on this core technology, Genesystem has commercialized **GENECHELYER** PCR platforms to target on-site testing applications outside the laboratory environments as well as general molecular testing applications.

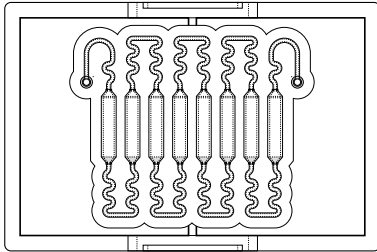


Miniaturized Heating Element for Handy Molecular Testing Platform

As a INNOPOLIS Research Institute Spin-off Company, Genesystem acquired the miniaturized heating element technology of ETRI (Electronics and Telecommunications Research Institute of South Korea) for the manufacture of handy molecular testing platform which is based on its ultra-fast PCR technology. This element is being evaluated to be ideal for handy molecular system as it has outstanding features of extremely

low electrical consumption and small dimension enabling to build a system for instant testing in any place. Genesystem already completed its development and performance validation of the handy molecular testing platform to apply this to field testing needs. Now, Genesystem is the process of preparing commercialization of this handy molecular testing system for the planned launch in 2020.



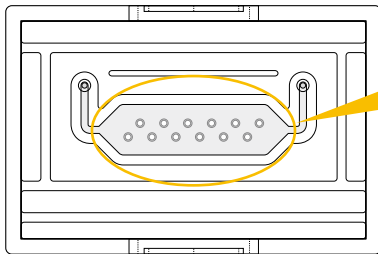


Design of biochip intended for multiplex testing (8 targets detection) from single sample. Number of targets can be customized in between 5 to 10.

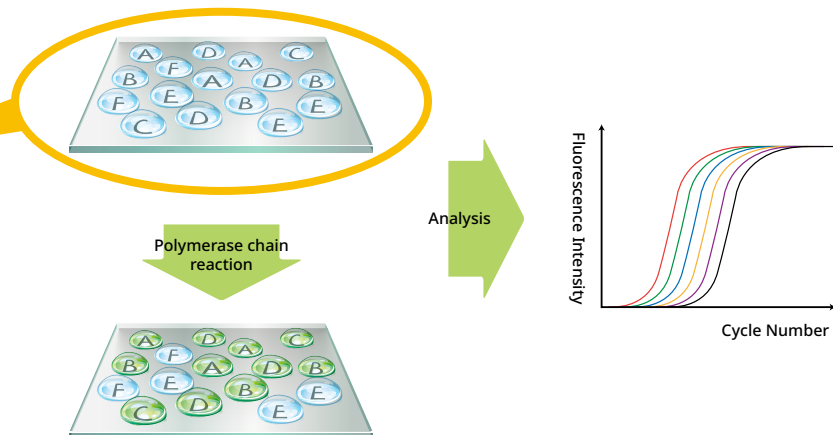
Biochip Technology Enabling Multiplex or High Multiplex Detection

Adding to the standard PCR chip products, Genesystem is proud to commercialize multiplex testing chip format which is utilizing its unique biochip designing and manufacturing capability. This multiplex testing chip is intended for detecting multiple targets up to 10 from single sample. In this format, target specific primer pairs are labeled on the internal surface of the chip and

get activated when the sample is loaded and heated during PCR process. This new multiplexing format provides highly precise and sensitive detection capability of assays as it fundamentally prevents the possibility of primer competition which is a common disadvantage of conventional multiplex PCR method.



Design of biochip intended for high multiplex testing (12 targets detection) from single sample. Number of targets can be customized in between 12 to 100.



Genesystem owns innovative technology enabling high multiplex detection which is essential component to design syndromic disease diagnostics panel. The key of this technology is solidifying primer pairs which is labeled on the internal surface

of the biochip designed by Genesystem. Genesystem can customize the design of the high multiplex detection biochip for the target numbers up to 100 depending on its client's panel design.

+ PRODUCT PORTFOLIO

GENECHECKER[®] PCR Platforms

Model UF-100 Thermal Cycler



Using innovative biochip technology and state-of-the-art hardware technology, ultra-fast PCR can be made with model UF-100 thermal cycler.

- Patented biochip based design and fast ramping of device provides rapid output (40 cycles in 20 minutes).
- Intuitive control with LED indicated jog-dial and LCD display
- Innovative PCR device at an affordable price

Model UF-150 Real-time PCR System



This platform is ideal for on-site molecular testing needs as it utilizes ultra-fast PCR mechanism and provides real-time PCR detection capability for qualitative and quantitative analysis.

- Small footprint (20cm x 20cm x 12.5cm) and light weight (2.6kg) for both laboratory and on-site testing use
- Real-time analysis through dedicated software, GeneRecorder
- DC power driven – battery operation possible

Model UF-300 Real-time PCR System



Genesystem is proud to announce the launch of its next generation platform, model UF-300 PCR platform intended for variety of point-of-care molecular diagnostic applications.

- Integrated LCD touch panel user interface for instrument control and result analysis
- Dual detection channel (FAM and ROX) available for clinical diagnostic applications.
- Key features of ultra-fast PCR capability and small footprint at earlier models are applied.

SMARTCHEK[®] Detection Assays

Foodborne Pathogen Detection Kits

Ultra-fast real-time PCR based food safety testing kits of Genesystem provide high efficiency along with the key advantages of real-time PCR detection method.

- Highly sensitive and specific assays for the detection of major foodborne pathogens in food industry
- Universal testing protocol for the different pathogens for easy runs

HALAL Assurance Testing Kit

The porcine detection system offered by Genesystem is ideal for the HALAL food producers and merchants who are not equipped with their in-house QC lab for DNA testing because the system is **affordable, compact and easy-to-use**.

- Ideal for on-site detection using model UF-150 based mobile lab system
- Whole testing can be finished in 40 minutes for meats and 60 minutes for processed foods.

Meat Species Identification Kits

Genesystem offers fast and affordable way of PCR based meat identification to food fraud monitoring application as well as food and feed industry to maintain good standards of quality control.

- Assays for identification of five meat species – beef, pork, chicken, sheep and horse
- Ideal for on-site detection as a part of food fraud surveillance activities.

+ BUSINESS MODELS

Genesystem is looking for the partnership to share its passion and vision.

Genesystem trusts there is no better tool than a good partnership to achieve a goal in highly competitive and volatile global market place. Since its establishment, Genesystem has been pursuing mutually beneficial partnerships with various entities in global market in order to create a new values together and turn the shared values into reality. According to thoroughly set up global market entry strategy, Genesystem is carrying its business forward in two directions.



Partnership with **Diagnostic Test Manufacturers**

Genesystem is looking for the partnership with PCR based diagnostic test companies which are willing to step into point-of-care molecular testing market with reliable and proven platform provider. Genesystem's track record and experiences in global market of *in-vitro* diagnostic test, veterinary diagnostics and food testing applications will be a good foundation for the success of the partnership.

Implementation of Strategic Partnership

Feasibility Tests and Optimization

Genesystem evaluates if partner's standard assays are properly working with its platforms. If needed, Genesystem can optimize the conditions and share the results with the partner.

Validation Study and Regulatory Approvals

Experts of Genesystem set up its platform at partner's site for the partner's evaluation of the platform with the optimized condition. The partner performs validation study and clear regulatory affairs if needed under the support of Genesystem.

Launching POC Molecular Testing System

The partner launches point-of-care molecular diagnostic system based on its assays and Genesystem's platform to be supplied under either OEM or ODM contract.

Product Addition

Test menu can be easily expanded by the same procedures.



Partnership with **Channel Partners**

Global presence of Genesystem has been expanded through solid partnerships with reliable and capable channel partners. Genesystem truly respects the partners' knowledge and experience in their market and welcomes the chance of collaboration to enhance its position in global market and grasp the rapidly growing opportunities in molecular testing world in these days.

Implementation of Strategic Partnership

Setting up Proper Business Strategy

Using the partner's knowledge and experience in the market both Genesystem and the partner set up appropriate strategy to successfully step into target markets.

Joint Marketing Activities

Genesystem believes there is no better way than having target customers try and experience actual benefits of the products as long as its products are considered to be innovative products. Genesystem performs joint marketing activities with its partners to promote the advantages of its product and technology.

Technical Support

Application support team of Genesystem provides the partner with its full technical support including product demo and training to directly address the key benefits of its products to target audiences.



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