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# Life Sciences

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# MEDIZEN HUMANCARE

## SPEARHEADING PRECISION MEDICINE

By Jeremy Williams

**A** new era of precision medicine is here. Futuristic approaches to predicting and preventing diseases with personalized care have become all the more possible with advancements in genetic testing.

MEDIZEN HUMANCARE, the largest genetic testing company in South Korea, is leading the charge in the new paradigm of precision medicine to change healthcare for the better.

A bio-research company and affiliated research institute, MEDIZEN HUMANCARE seeks to realize precision medicine based on personal genomic databases to provide proactive healthcare. It analyzes a patient's risk for diseases with genetic testing services. Based on their genomic analysis information, patients receive services geared toward the management of health. Through its premium healthcare service, MEDIZEN HUMANCARE Genomic Analysis, it analyzes and predicts an individual's vulnerability to inherited diseases.

Dong-Jik Shin, Ph.D.,  
CEO



“We provide genetic testing services based on a patient’s racial and ethnic genome data to facilitate precision medicine delivery and personalized self-care,” says Dr. Dong-Jik Shin, CEO of MEDIZEN HUMANCARE.

### **The Gateway to Personalized Care**

MEDIZEN HUMANCARE systematizes disease- and health-related genomic big data for 18 ethnic groups, including Korean, Chinese, Japanese, Mongolian, Southeast Asian and Central Asian. Developing and leveraging the race-specific analysis algorithm, it has secured genomic data on approximately 1.4 million Korean and Asian testers to date. The team discovers genomic new drug candidates for Asians through a questionnaire and family disease history information, while ensuring the data is obtained from individuals who have consented to statistical research.

Spearheading an era of precision medicine, MEDIZEN HUMANCARE synergizes science, IT and medicine. Next-generation sequencing technology is used to develop genetic variation chip (SNP-chip) related to disease susceptibility by race and ethnicity, based on human whole genome sequencing, genome-wide association study, and deep sequencing data. It provides genetic information and solutions for disease prevention and management.

Using the Gene Network System (GNS) and Multi-Stage Statistical Algorithm technique, the company has improved the probability of predicting disease occurrence by combining genetic and environmental factors. GNS refers to identifying the relationship between genes by forming a group based on the nature of ‘disease

and gene.’ The key genes among them are screened after analyzing the relationships in which each gene is linked to the occurrence of various diseases. The MEDIZEN HUMANCARE team infers the diseases and other vital information from the examined genes to give customers a multi-dimensional predictive healthcare program.



## **WE DO NOT DEFINE GENETIC TESTING AS A BUSINESS ARM, BUT A PLATFORM THAT ENABLES COLLABORATION WITH VARIOUS HEALTHCARE AND PHARMACEUTICAL COMPANIES**

Since analysis is done using a customized gene chip for each test item, the test period is short (within five to seven days) and provides quick results. To ensure the results are accurate, MEDIZEN HUMANCARE develops its algorithm using AI deep learning techniques based on health-related genomic data of each ethnicity, information from the questionnaire, and common clinical information. It prevents customers from undergoing unnecessary tests as they can look at its diverse list of test items and select only those they need in a do-it-yourself format.

The team further distinguishes familial diseases from spontaneous ones using various omics data, including genomic data related to disease and health. It also determines whether a disease stems from environmental factors, preventing delayed diagnosis or misdiagnosis and enabling effective treatment.

### **Results-Driven Genetic Testing**

In a particular instance, MEDIZEN HUMANCARE conducted genetic testing for a 34-year-old corporate employee and detected breast cancer. After the test, she underwent an ultrasound at



Seoul National University Hospital that diagnosed her with early-stage breast cancer. Since she had her gene testing reports, the doctor could note that she carried genetic risk and precisely examined her, contributing to her successful treatment.

On another occasion, MEDIZEN HUMANCARE helped a 55-year-old corporate employee detect a stroke early through gene testing. The team tested for 20 genetic risks to identify the signs of stroke. After the test, the employee discovered that he has a family history of stroke, and his brain CT result indicated brain-vascular contraction. Due to the early detection, he could avoid surgery and be treated through medication and regular exercise.

MEDIZEN HUMANCARE’s R&D aligns with the latest medical research trends in genomics. This helps the team highlight the efficacy of its testing services and positively transform numerous lives. Through biannual inspections conducted by the Ministry of Health and Welfare, MEDIZEN HUMANCARE ensures regulatory compliance and evaluates the quality and safety of genetic testing to maximize the laboratory’s analysis capabilities. The company regularly communicates new knowledge to patients who have undergone genetic testing and directly provides consultation to inquiring customers. When MEDIZEN’s new test product is released, its contents are explained to promote testing. It has consistently attained the highest grades, showcasing its unwavering commitment to quality excellence.

### **Precision Medicine Redefined**

Dr. Shin, who has majored in genetics and served as a professor at The Yonsei University Medical School in Korea, is instrumental in elevating the company’s service standards. With his vast industry experience, he brings deep understanding and expertise that improves patient outcomes.

Underpinning the success of MEDIZEN HUMANCARE is a team backed by his guidance. The team comprises professional researchers majoring in various subjects,

including genetics, molecular biology, clinical pathology, nursing, statistics, nutrition, physical education, and computer engineering. A part of its team comprises university hospital specialists, medical experts, professors at the College of Physical Education, nutrition experts, lawyers, and patent attorneys, forming an advisory committee to cooperate. The team also conducts joint research with each university and collects opinions on new technologies and research trends to enhance its offerings.

“We do not define genetic testing as a business arm, but a platform that enables collaboration with various healthcare and pharmaceutical companies,” says Dr. Shin.



## **WE PROVIDE GENETIC TESTING SERVICES BASED ON A PATIENT’S RACIAL AND ETHNIC GENOME DATA TO FACILITATE PRECISION MEDICINE DELIVERY AND PERSONALIZED SELF-CARE**

### **Toward a Healthier World**

Steering ahead, MEDIZEN HUMANCARE plans to expand its scope with more accurate and effective targeted anticancer drug treatments. The goal is to develop cutting-edge technologies like genomic pharmaceuticals, a novel form of bio-drug with minimal side effects and high treatment efficiency.

With the highest market share in genetic testing to predict disease outbreaks in Korea, the company is currently establishing joint ventures and labs in Indonesia, Malaysia, Mongolia, and Thailand. Carrying out cooperative projects in Vietnam and negotiating projects with

Turkey, Uzbekistan, and Australia, it intends to gradually expand into Europe, North and Central America, South America, and Africa.

At the same time, it is focused on collecting and analyzing genomic data of multiple ethnicities. With an aim to become the best data sales company, it is gearing up to establish a diverse and extensive global bio-big data banking for microorganisms, parasites, plants, animals, and endangered species.

Providing a ubiquitous healthcare system for preventative care, MEDIZEN HUMANCARE ultimately combines genetic information with precision care practices to improve the well-being of populations worldwide. **LS**

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