WORLD INSTITUTE OF KIMCHI

Global Kimchi Culture and Fermentation Science
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Greetings

The World Institute of Kimchi is tasked with the duty of contributing to the globalization of Kimchi through comprehensive R&D, fermentation and distribution technologies, relevant tests and evaluations, and technological support.

The institute was established as an annex of the Korea Food Research Institute (KFRI) on January 1, 2010 based on the government’s will to develop a world-class research agency specializing in fermented food (Oct. 14, 2008).

We take a comprehensive approach to Kimchi research through not only scientific R&D but also humanistic, social and scientific research. We also focus on research on Kimchi varieties, striving for the globalization of Kimchi.

We produced an array of results after establishment, including applications for a patent (103), registration (51), research papers (212 [114 SCI[E]]), signing of technology transfer contracts (12), etc. We operate the Hygienic Safety and Analysis Center (T. +82-62-610-1800) and the SME (Small & Medium-sized Enterprises) Services (T. +82-62-671-1379) to provide support for SMEs in the Kimchi industry. We have signed Memorandums of Understanding for business collaboration with 39 agencies (including the Kimchi Research Institute of Pusan National University, Sichuan Office of Science and Technology, China, Kimchi Association of Korea, Japan Food Research Laboratories) as part of the efforts for invigorating exchanges among businesses, universities, and research institutes.

We will continue to be among the world-class research institutes specializing in fermented food by operating the institute with open-mindedness and site-based R&D and training creative human resources.

General Director, Jaeho Ha, Ph.D.
01
Current Status of the Institute

06 History
06 Mission and Functions
08 Vision and Development Objectives
WIKIM History

World Institute of Kimchi, the center for Global Kimchi Culture and Fermentation Science

**2008.**
- Oct. 14
  The Korean government decided to establish a research institute specializing in fermented food with the aim of making it a first-rate one.

**2009.**
- Sep. 15
  The Ministry of Food, Agriculture, Forestry and Fisheries set up a master plan for the establishment of the World Institute of Kimchi (WiKim) and set the location.
- Dec. 23
  132nd session of the Board of Directors of the Korea Research Council for Industrial Science and Technology approved the establishment of WiKim.

**2010.**
- Jan. 01
  WiKim has been established as an annex of the Korea Food Research Institute (KFRI).
- Feb. 10
  Dr. WanSoo Park was inaugurated as the first General Director of WiKim.
- Mar. 10
  The opening ceremony of WiKim was held at KFRI.

Mission and Functions

**Purpose of establishment**
To enhance the country’s status as the leader in Kimchi production, spread the Kimchi-related culture worldwide, and develop the Kimchi industry through continued R&D efforts

**Key Functions**

- **Comprehensive R&D on Kimchi**
  - Scientifically clarifying research on the excellence of Kimchi
  - Development of technologies for the production of high-quality Kimchi in relation to raw materials, production process, microorganism/fermentation, storage/distribution/packaging, hygiene, and safety
  - Conducting research designed to enhance the status of the country as the leader in Kimchi and spread Kimchi-related culture throughout the world
World Institute of Kimchi

Mission

To engage in Kimchi-related R&D, join in efforts to innovate the country’s technologies, and develop the Kimchi industry as the engine of the country’s food industry

- Development of strategies for the promotion of Kimchi export and provision of marketing support for the glocalization of Kimchi
- Operation of DB and cooperative network of information, statistics, and academic resources for the promotion of Kimchi-related culture
- Research on convergence/innovative technologies for the development of the Kimchi industry (Kimchi production-related industries)
- Provision of technological support for Kimchi-making SMEs and education/training of their employees
- Training of experts and supporting establishment of relevant technology-related policies

2012.

May. 04
WiKim was designated as an agency for training Kimchi experts by the National Agricultural Products Quality Management Service.

Oct. 31
WiKim moved to the newly built building in Gwangju Metropolitan City.

2013.

Jan. 01
Microorganism and Gene Bank was established.

Oct. 30
Dr. WanSoo Park was reappointed as the second General Director of WiKim.

2014.

Jul. 07
A grade-2 LMO (Living Modified Organisms)-related research facility was approved.

2016.

Nov. 18
Dr. Jaeho Ha was appointed as the third General Director.
Vision and Development Objectives

**Vision**
The world's best Kimchi research institution that is leading innovations in the industry

**Management Goal**

**Promotion Strategies**

**Goal Details**

**Research Sector**
1. Identifying beneficial functions of Kimchi
2. Developing technologies for the improvement of Kimchi's quality
3. Invigorating the Kimchi industry

**Research Sector**
1. Fostering a research environment that focuses on assignments
2. Conducting more efficient operation
3. Results-oriented management and spreading the research results

**World-top**
Laying the groundwork of world-class research capabilities

**Innovation**
Creating innovative values based on openness and convergence

**Knowledge**
Broadening the knowledge on Kimchi fermentation

**Ideation**
Setting up a good environment for research

**Global Marketability**
Bolstering demand-based R&D
Key Research Achievements

10 Exploration of Kimchi lactic acid bacteria that’s good for atopic dermatitis

11 Quality standards for Kimchi exported to China – Customized strategies for specific countries

11 Exploration of functional starters – Production of good-quality Kimchi

12 Technology for high functional packaging for Kimchi – First step taken for the globalization of Kimchi
1. Exploration of Kimchi lactic acid bacteria alleviating atopic dermatitis

- As the alleviating effects of Kimchi lactic acid bacteria on atopic dermatitis were discovered, the scientific superiority of Kimchi was demonstrated.
  - Development of *Weissella cibaria* WiKim28, which reduces the symptoms of atopic dermatitis by 40% and suppresses the secretion of IgE in the blood by 50% - Onsite test for commercialization
  - The relevant results were published in the journals including Scientific Reports (a sister journal of NATURE) in January 2017 (five theses that rank among the top 20% in terms of impact factor)
  - Technology transfer: Bio businesses (July. 2017), approximately 820 million won

*Press reports: 26 cases reported by YTN News, the Chosun Ilbo, etc.*

1. Improvement of symptom of atopic dermatitis
2. Decrease of atopic dermatitis index
3. Decrease of atopic dermatitis index (IgE in blood)
2. Quality standards for Kimchi exported to China – Customized strategies for specific countries

- Survey among the Chinese on the types of Kimchi they like
  - Summary: Survey among Kimchi consumers in Beijing and Shanghai
  - Result: They like Kimchi with hot and sweet tastes

- Survey of customers’ level of satisfaction with the packaging
  - Result: Jar > Bottle > Pouch
  - Reason: Jars look classy and go well with Kimchi

- Press reports: 20 cases reported by KBS, Dong-A Ilbo, etc.

3. Exploration of functional starters – Production of good-quality Kimchi

- Securing Kimchi microbe-related resources and establishment of the relevant database
  - Securing 31,000 lactic acid bacteria from different types of Kimchi made in different areas
  - Establishment of Microorganism and Gene Bank (MGB) [2013]
  - Analysis of microbial community (275 types) associated with the Kimchi fermentation process

- Development of starter for quality improvement of Kimchi
  - Starters for improving flavor: Leuconostoc mesenteroides WiKim33
  - Starters for improving intestine-related diseases: Lactobacillus curvatus WiKim38

- Agreements on technology transfer: 2 cases
  - Starters for improving flavor: Kimchi manufacturers (Sep. 2016)
  - Starters for improving intestine-related diseases: Health food raw material manufacturers (Sep. 2016)
Key Research Achievements

4. Technology for high functional packaging for Kimchi – First step taken for the globalization of Kimchi

• Technology for the development of Kimchi packaging materials and films with deodorizing function
  - Finding optimal conditions (i.e., processing temperature and , ratio of mixing ingredients, etc.) for the production of packaging materials
  - Onsite test for commercialization
  - Patent registration of relevant technology
  - Technology transfer: Packaging/Container manufacturer (Apr. 2017)

• Development of Kimchi packaging containers that can absorb carbon dioxide
  - Development of masterbatch using materials that absorb carbon dioxide
  - Demonstration of Kimchi container safety and performance
  - Patent registration of the relevant technology
  - Technology transfer: Bio goods manufacture (Mar. 2014)
  - Commercialization of technology (Jul. 2016)

• Development of anti-swelling Kimchi pouch
  - Development of technology that prevents the swelling/bursting of Kimchi pouch (through the adjustment of extent of penetration)
  - Onsite test for commercialization
  - Patent registration of the relevant technology
  - Packaging pouch manufacturer (Dec. 2015)

① Masterbatch with deodorizing functional packaging materials
② Outline of packaging technology with capability of absorbing carbon dioxide
③ Outline of anti-swelling packaging technology
03 Research and Development

14. Research on Microbiology and Functionality
15. Research on New Production Process and Fermentation Technology
16. Research on Kimchi Culture Convergence
17. Research on Industrialization Technology
18. Research on Hygienic Safety and Analysis
Identification on the excellence of Kimchi as food

We are carrying out the development of basic and application technologies related to Kimchi microorganisms - such as isolation/identification, establishment of supply system of Kimchi starter cultures, and metabolic activity of Kimchi - by developing the core technologies for the screening of novel and excellent bioactive and metabolic products.

① Kimchi-related microbe genome analysis
② Development of Kimchi lactic acid bacteria which is good at treating atopic dermatitis
③ Operation of Microorganism and Gene Bank(http://mgb.wikim.re.kr); operation of Animal Research Facility (http://eanimal.wikim.re.kr)
Basic technology development of Kimchi processing

We conduct research on process development related to convergence technology, e.g., post-harvest management of Kimchi raw materials, the quality maintenance of commercial Kimchi and productivity improvement of Kimchi-manufacturing process, and industrialization of useful microorganisms such as mass production of Kimchi starters, the formulation technology for extension of shelf-life, and the establishment of their supply system.

1. Development of Kimchi starter’s mass production system
2. Development of technology for the automated production of Kimchi
3. Development of technology for the invigoration of Kimchi starter
Research on Kimchi Culture Convergence

Research on the cultural value of Kimchi and on turning Kimchi into a resource; Research on food cultures in and out of the country; Development of Kimchi-related cultural content, and all other convergence researches related to Kimchi culture.

Spreading the Kimchi culture worldwide

We strive to enhance the status of the country as the country where Kimchi has originated by up scaling the Kimchi culture, and secure Kimchi-related cultural resources. We also engage in research to contribute to the enhancement of Kimchi consumption rate both-inside and outside of the country and development of the industries relevant to Kimchi by using the secured Kimchi-related cultural resources.

① Exploration and digitalization of Kimchi-related cultural resources  
② Development and Support of Kimchi-related cultural content for vitalizing the Kimchi industry  
③ Global activities aimed at disseminating the Kimchi culture worldwide
Development of industrial technology for the application of Kimchi

We engage in efforts for the diversification of Kimchi products, improvement of Kimchi quality, and development of Kimchi-based products to enhance the global competitiveness of Kimchi manufacturers. We also carry out research to improve methods of storing and packaging Kimchi, process Kimchi in diverse ways, and develop Kimchi versions that meet the locals’ appetite in different parts of the world.
Research on Hygienic Safety and Analysis

Research on Kimchi-related harmful microbes; Research on new methods of analyzing food like Kimchi; Provision of support for food ingredient analysis and microbe inspection; Development of technology for securing hygienic safety

Securing hygienic safety

We are carrying out the development of original technologies to secure hygiene and safety such as monitoring hazards in the manufacturing process of Kimchi, researching on the detection and control of Kimchi-related hazardous microorganisms, etc. We also conduct research on how to analyze food ingredients and relevant educational support.

1. Research on the methods of analyzing food
2. Research on how to decrease microbes as well as prompt diagnosis of microbes
3. Efforts to acquire certifications from international test institutions
04 Industry Service

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23 Animal research facility, WiKimARF
SME (Small & Medium-sized Enterprises) Service

We are ready to work together with SMEs

We do our best to help SMEs with the problems they face and provide management/marketing-related support. We also engage in the following efforts for SMEs: survey of local quarantine/hygiene systems in foreign countries to help SMEs export their goods more easily; education for training Kimchi professionals; statistical survey of the Kimchi industry, etc.

1. Assistance for family businesses

- Provision of customized consulting, use of technology and management-related mentor pools
- Content of support
  - Diagnosis and provision of technology and management-related solutions
  - Subsidy of product evaluation expense (up to 5 million won per business)

2. One-stop on-site consulting on difficulties

- Helping SMEs solve the technology and management-related problems they face
- Supporting to solve them through reports or on-site consulting
- Provision of professional consulting service as required
- Publication of Kimchi FAQs on an annual basis
- How to apply
  - Homepage of the World Institute of Kimchi
  - http://www.wikim.re.kr ▶ Public Support ▶ SME Support ▶ Submittal of problems experienced at the site

3. Working-level export education

- Contribution to the higher export results of Kimchi manufacturers by helping them bolster their working-level export capabilities and take part in educational sessions and overseas expos
- Curriculum
  - Basic education: understanding of trade in practice, document drawing-up practice, development of Kimchi dishes, negotiation strategies, exhibition/publicizing skills, consumer survey methodology, how to contact and deal with buyers and so on.
  - On-site education: how to contact and deal with buyers, practice of exhibition/publicizing skills, Kimchi cooking demonstration, consumer survey, inspection visits to markets, etc.

4. Provision of labeling service for exported Kimchi

- Contribution to increased export of food including Kimchi through the provision of said service
- Service provided to: United States (number of countries to be increased gradually)
- Content of support
  - Facility registration with FDA
  - Labeling design
- Timing: the second half of 2017
Establishment of quality management system through food analysis service

We provide support for test analysis, microorganism analysis and experimental training concerning nutrients in food including Kimchi.

Support areas

Support for ordinary analysis

- Support for the analysis of components (e.g., nutritional/flavor/micro components) needed in diverse areas like food (including Kimchi) businesses and relevant research institutions

Support for test/analysis for SME Kimchi manufacturers

- Support for customized test/analysis about HACCP-related follow-up management for Kimchi manufacturers and product development
  - Microorganism and physicochemical analysis of Kimchi raw materials and products
  - Test/Analysis fee - 70% discount
- For details of support for test/analysis for SME Kimchi manufacturers, please visit our homepage (www.wikim.re.kr).

Items analyzed

Nutritional ingredients

Water content, crude fat, total nitrogen. Crude protein, ash content, sugars, dietary fiber, cholesterol, fatty acid, minerals, vitamins A, B, C, and D, etc.

Special ingredients

Composition amino acid, free amino acid, organic acid, odor component, capsaicinoid, alcohols, tar color, sulfur dioxide, anti-oxidant, nitrite ion, preservatives, heavy metal, mercury, artificial sweeteners, etc.

Microorganisms


Others

Acidity, salinity, pH, water activity, compressive strength, foreign objects (parasitic eggs contained in Kimchi), adulteration (red pepper powder), odor components (e-Nose), flavor marker substance (spices e-Tongue), sensory test.
Microorganism and Gene Bank

We operate a Kimchi Microorganism and Gene Bank in an effort to enhance the use of Kimchi microbes and create its industrial added value.

Adopting
- We supply ordinary microbes and Kimchi-derived microbe additives to the industry officers to aid them develop Kimchi-related products.

Deposition
- Normal deposit
  - Those donated: Microbes used for research, industry, and education related to bio engineering, genetics, food, and biochemistry deal with buyers and so on.
  - Deposited microbe strains are preserved in long term at WiKim Microorganism and Gene Bank (MGB); they are under provision of notify/preservation service to researchers at other researchers with free of charge.
- Safe deposition
  - Our MGB preserve bio resources safely after the enterprises or research institutes separate and deposit the industrially useful microbe strains.
- How to apply
  - Search resource on MGB Homepage (http://mgb.wikim.re.kr) Download an Adoption request application → Submit the completed application via fax (+82-62-610-1850) or email (mgb@wikim.re.kr)
To support animal research ranging from fundamental research to preclinical trials for the development of new food-derived materials

Phone number +82-62-610-1828 / FAX +82-62-610-1853 / Email eanimal@wikim.re.kr

Animal research facility, WiKimARF

To support animal research ranging from fundamental research to preclinical trials

We operate a Specific Pathogen Free facility (SPF) to carry out experiments on animals related to research on food including Kimchi. There we perform rodents raising & Genetically Engineered Mice (GEM) system management, and offer technical supports on experiments using films, radioactivity, and tissue pathology.

- World class in animal research facility (focus on study of rodents)
- Support well-established efficacy/safety evaluation
- Support animal research to meet requirement within the cluster
- Develop animal models of human disease and systemic protocols
- Test items: obesity, diabetes, hypertension, immune system, genetic toxicity etc.
- Animal research facility: It is a facility reported to the relevant authority as an ABL2 facility.

Promote the ethical animal research and support IACUC/IBC review

- Institutional Biosafety Committee (IBC): Management and supervision of research on hazardous organism and its use
- Institutional Animal Care and Use Committee (IACUC): Deliberation of scientific/ethical validity of experiments on animals
- How to apply
  - homepage [http://eanimal.wikim.re.kr](http://eanimal.wikim.re.kr) and Fax(+82-62-610-1853) or email eanimal@wikim.re.kr
05

Strategy & Planning and Management & Support

24 Strategy & Planning
   - Planning & Budget
   - Future Strategy

25 Management & Support
Strategy & Planning

Planning & Budget

We carry out planning and budget-related business such as regulations, organization, budget of the institute, and selection of research projects.

Key Functions

- Enactment and amendment of regulations and management of organization
- Matters concerning the formulation of project plans and budget
- Business concerning the disclosure of public institution management information and customer satisfaction survey
- Research program management and operation of research deliberation council
- Other matters concerning planning, budget, and research management

Future Strategy

We establish R&D policies and mid- and long-term development plans for the creative planning of R&D projects and efficient dissemination of research results. We also disseminate the results through the commercialization of technologies and by carrying out publicizing and cooperation.

Key Functions

- Planning of R&D policies and major programs
- Establishment of mid/long-term development plan and research capability development plan
- Management of research results and dissemination
- Business concerning cooperation with outside parties and PR
- Other Business related to research strategies and policies
Management & Support

We carry out administrative management-related business with focus on enhancing operational efficiency and accomplishing higher research results. Our business includes handling of matters such as welfare, purchase, asset/human resources management, information-related matters, and management of facility.

**Key Functions**
• Human resources/Operation of policies pertaining to personnel, education, service, and welfare
• Business pertaining to salary, national pension, and insurance
• Business pertaining to revenue, expenditure, accounting settlement, etc.
• Business pertaining to personnel general affairs and finance/accounting
• Other administrative affairs

**Key Functions**
• Purchasing contracts and asset management
• Management of employees’ business trips
• Business pertaining to information security and establishment/operation of computer system-related matters
• Others pertaining to purchasing and computer system

**Key Functions**
• Safety education, prevention of safety accidents and health management
• Facility maintenance/Security/management
• Energy/Environment management
• Others pertaining to safety and facility management
Activities
Holding academic events for the development and globalization of the Kimchi industry

**Conferences**
- Joint conference of Kimchi research institutions (WiKim, Apr. 11, 2013)
- Meeting for activating the Kimchi industry in Jeonnam Province (WiKim, Jun. 27, 2013)
- Establishment of the 2013 Kimchi expert training program (WiKim, Aug. 17 ~ Nov. 1, 2013)
- Collaboration debate conference for the development of the Kimchi industry in Jeonnam Province (Kim Dae Jung convention center, Nov. 8, 2011)
- Informal meeting to discuss how to invigorate the Kimchi industry (Korea Cultural House, Nov. 15, 2013)
- 2014 Kimchi expert training program (SME DMC Tower, Sep. 12 ~ Oct. 17, 2014)
- 2015 Kimchi expert training program-1 (KITA Trade Academy, Shanghai, China, Jul. 3 ~ 31, 2015)
- 2015 Kimchi expert training program-2 (KITA Trade Academy, Shanghai, China, Oct. 17 ~ Nov. 13, 2015)
- 2016 Kimchi expert training program - an educational course on working-level export business (Shanghai, China, Jun. 28 ~ Jul. 1, 2016)
- Sessions for exchange of Kimchi-related information in 2016 (Shanghai, China, Aug. 16 ~ 20)
- 2016 Kimchi expert training program – an educational course on Kimchi-related hygiene/quality management (WiKim, Sep. 21 ~ 23, 2016)
- Meeting between WiKim and Kimchi manufacturers (Osong Station, Apr. 5, 2017)
- Symposium titled “Re-enlightening of the identity and paradigm of Kimchi” (KFRI, Dec. 10, 2010)
- Symposium titled “Establishment of base for reforming the Kimchi industry” (Daejeon Expo Convention, Nov. 18, 2011)
- Symposium titled “Present and future of Kimchi packaging technology” (COEX, Dec. 9, 2011)
- Kimchi industry symposium themed “Kimchi and salt” (Busan Paradise Hotel, Dec. 6, 2013)
- 4th Symposium for Kimchi Industry Development themed “Strategy for the development of the Kimchi industry by coping with changes in the environment” (Gwangju Museum of Art, Oct. 7, 2014)
- Symposium titled “Kimchi 2014: Kimchi, beyond limits” (city hall new government building, Seoul, Nov. 6, 2014)
- Symposium for the stabilization of vegetable demand-supply (iAT center, Sep. 16, 2015)
- 5th Symposium for Kimchi Industry Development themed “Differentiation strategy for the pioneering of new Kimchi markets such as China” (Gwangju Kimchi-town, Oct. 25, 2015)
- International forum themed “Fermented Foods & Their Bright Future” (COEX, Nov. 18, 2010)
- International conference themed “Korean-Chinese science technology of contemporary Kimchi industry forum” (Sichuan Cheung-du, China, Jan. 11 ~ 12, 2011)
- International conference themed “Kimchi and human health” (iAT Center, Sep. 16, 2011)
- International conference themed “Kimchi from the East meets Pickles from the West” (Washington D.C. USA, Sep. 13, 2012)
- Symposium themed “Functional excellence of Kimchi” (national folk museum of Korea, Sep. 6, 2013)
- 1st Kimchiology Symposium themed “Supporting Kimjang culture to be registered with UNESCO and Kimchiology declaration” (national folk museum of Korea, Nov. 5, 2013)
- 2nd Kimchiology Symposium themed “Humanistic Understanding of Kimchi” (National Library, Nov. 26, 2014)
- International Kimchiology Symposium themed “Kimchi-related science and industry globalization” (Novotel Ambassador Busan Hotel, Oct. 5, 2014)
- 3rd Kimchiology Symposium themed “Perception, emotion, and change about Kimchi” (National Library, Oct. 29, 2015)
- Kimchi Health Symposium (Shenzhen, China, Aug. 8, 2016)
- 4th Kimchiology Symposium (iAT Center, Oct. 13 ~ 14, 2016)
Hosting or supporting domestic and international events aimed at disseminating the Kimchi culture worldwide

**Workshop among Businesses, Research Institutes, and Government**

- 1st collaboration workshop to enhance the competence of the Kimchi industry [Damyang resorts, Nov. 14 ~ 15, 2012]
- 2nd collaboration workshop for the development of the Kimchi industry [Holiday Inn Gwangju Hotel, Oct. 28 ~ 29, 2013]
- 3rd collaboration workshop to enhance the competence of the small and medium-sized Kimchi companies [Byeonsan Daemyung Resorts, Mar. 27 ~ 28, 2014]
- 4th collaboration workshop to enhance the competence of the small and medium-sized Kimchi companies [Hotel Interciti, Daejeon, Mar. 31 ~ Apr. 1, 2015]
- 5th collaboration workshop to enhance the export competence of the small and medium-sized Kimchi companies [Hotel Interciti, Daejeon, Mar. 11 ~ 12, 2016]

**Domestic Events**

- Namdo food culture expedition - Namdo culinary tourism [WiKim, Jun. 14 ~ 15, 2013]
- Gwangju World Kimchi Culture Festival 2013 [Junggo Park, Oct. 5 ~ 9, 2013]
- 2013 Korean Kimchi culture festival [Byeongbok Palace, Dec. 5 ~ 6, 2013]
- 2nd Science and Technology Meeting among Government-invested Research Institutes [Daejeon Convention Center (DCC), Jan. 28 ~ 31, 2016]

**International Events**

- Advertising the excellence of Kimchi internationally, demonstrating Kimchi making [Hong Kong, Oct. 23, 2012/Taipei, Taiwan, Oct. 25, 2012]
- Peru Kimchi experience event "I love Korea, I love Kimchi" [Lima, Peru, Jan. 31 ~ Feb. 1, 2013]
- Host France Kimchi advertising and experience event "I love Korea, I love Kimchi" [Paris, France, Nov. 14 ~ 15, 2013]
- Korean Kimchi Festival event support business [Sendai, Japan, Nov. 18 ~ 22, 2013]
- 2013 Taiwan Kimchi Business Conference [Taipei, Taiwan, Nov. 21 ~ 24, 2013]
- Hangzhou Kimchi advertising and experience event "I love Korea, I love Kimchi" [Hangzhou, China, Oct. 16 ~ 18, 2014]
- 2014 Korea and Japan Friendship Charity Event [Tokyo, Japan, Nov. 15 ~ 16, 2014]
- Kimchi Festival in Sendai, Japan [Sendai, Japan, Nov. 21, 2014]
- Hong Kong 2015 LOHAS EXPO Kimchi Business Conference [Wan Chai, Hong Kong, Feb. 5 ~ 7, 2015]
- 19th FHC China 2015, Kimchi Business Conference [Shanghai, China, Nov. 11 ~ 13, 2015]
- 3rd Kimchi Festival in Sendai, Japan [Sendai, Japan, Nov. 18, 2015]
- Kimchi localization event in Iran [Milad Tower, Teheran, Iran, May 2 ~ 4, 2016]
- 2016 Korea-China Food Culture Exchange Meeting [Kimchi seminar and business talks] [Beijing, China, Jun. 20 ~ 21, 2016]
- 20th FHC China 2016, Kimchi Business Conference [Shanghai, China, Nov. 7 ~ 9, 2016]
Activities

Sign of MoU for stronger collaboration among businesses, universities, and research institutes

- Japan Food Research Laboratories (May 24, 2017)
- REDSUN ITI Corporation (July 18, 2017)
- Kimchi Research Institute of Pusan National University (Dec. 1, 2010)
- Sichuan Office of Science and Technology, China (Jan. 11, 2011)
- Korean Society for Lactic Acid Bacteria (Feb. 10, 2011)
- Korea Society of Packaging Science & Technology (Oct. 24, 2011)
- Kimchi Museum of Sunchon National University (Oct. 25, 2011)
- Kimchi Research Center of Chosun University (Nov. 17, 2011)
- Korea Kimchi Seasoned Pickles Food Industry Cooperative Association (Jul. 27, 2012)
- Kimchi Association of Korea (Sep. 19, 2012)
- Gwangju Kimchi Academy (Dec. 20, 2012)
- Nam-gu Office of Gwangju (Apr. 16, 2013)
- National Food Cluster Support Center (Jun. 13, 2013)
- 25 government-funded research institutes of science and technology (Oct. 8, 2013)
- Sunchang-gun (Feb. 21, 2014)
- Gwangju/Jeonnam Regional Center, SMEs Integrated Support Center (Mar. 24, 2014)
- Macrogen Inc. (Apr. 10, 2014)
- Daesang FNF Co., LTD. (May 15, 2014)
- Kim & Kim Inc. (a Kimchi business in Vietnam) (Jul. 1, 2014)
- Nambu Fire Station, Gwangju (Dec. 23, 2014)
- National Fusion Research Institute (Feb. 16, 2015)
- Korea Basic Science Institute (KBSI) (Feb. 24, 2015)
- Food Research Institute of CJ Cheiljedang Corporation (Mar. 9, 2015)
- Global Technology Transfer Bank (Mar. 13, 2015)
- Solar Salt Research Center, Mokpo National University (Mar. 20, 2015)
- Industry-Academic Cooperation Foundation of CNU (May 12, 2015)
- Sunchang Health Longevity Institute (May 19, 2015)
- Nonghyup Food Safety Research Institute (May 28, 2015)
- HKTDC Korea, IPR Forum (Jul. 7, 2015)
- Korea Polar Research Institute (Jul. 7, 2015)
- Jeonbuk Bioindustry Development Institute (Jul. 16, 2015)
- Texas A&M Engineering Experiment Station (Jul. 22, 2015)
- Chung-ang Univ. Food Safety Center (Oct. 15, 2015)
- LG Electronics Appliance Research Center (Dec. 1, 2015)
- Cosmax Bio (Apr. 7, 2016)
- Raphas (Apr. 27, 2016)
- The Imsil-Gun Office, Imsil N Seasoned Food Business Corps, Imsil Seasoned Vegetable Producers Association (Nov. 4, 2016)
- Jiangzi Province Food Industry Association (Nov. 8, 2016)
- Pulmuone co., Ltd. (Dec. 8, 2016)
- chunlab Inc (May. 17, 2017)
- Japan Food Research Laboratories (May. 24, 2017)
- REDSUN ITI Corporation (July. 18, 2017)
07

Key Facilities

- Instrumental Analysis Lab
- Inorganic Analysis Lab
- Genome Research Lab
- Microbiological Analysis Lab 1
- Microbiological Analysis Lab 2
- Sensory Evaluation Lab
- Kimchi Dimibang (Kimchi culinary room)
- Pilot Plant
- Animal Research Facility
World Institute of Kimchi's Key Facilities

1. Instrumental Analysis Lab

Location
Room 225, 228, 2nd floor, research sector

Facilities
Approximately 20 pieces of equipment, such as various mass spectrometer system, chromatography system, spectrophotometer, texture analysis equipment, water activity tensiometer, etc.
- Joint use of cutting edge-research equipment for efficient Kimchi-related studies
- Supporting rapid and low-cost tests for Kimchi companies, procuring the safety of Kimchi, and sponsoring an official testing certification institute to strengthen the competence of Kimchi companies

2. Inorganic Analysis Lab

Location
Room 223, 227, 2nd floor, research sector

Facilities
Equipment for the analysis of inorganic or preconditioned substances in Kimchi
- Analysis of ingredients, and minerals and heavy metals in Kimchi products using ICP-MS
- Analytical services are available for both internal and external customers

3. Genome Research Lab

Location
Room 230, 2nd floor, research sector

Facilities
Equipment for extracting substances, Characterizing genome and proteome and metabolome
- The genome research lab consists of molecular biological analysis lab and cell culture lab. Research focused on the characterization of metabolites from Kimchi extract and lactic acid bacteria with genomic, proteomic, and metabolic information
4. Microbiological Analysis Lab 1

**Location**
Room 127, 1st floor, research sector

**Facilities**
- RT-PCR, PCR, microscopes, etc.
- For the analysis of hazardous microorganisms in Kimchi, it is divided into culture medium lab and microbiological analysis lab, and experiment/practice facilities and equipment such as RT-PCR, Clean Bench, incubators, etc., are available.
- It supports test inspection and experiment education for small & medium-sized Kimchi companies and plans to provide research support services and quality test business to address the difficulties of small Kimchi companies.

5. Microbiological Analysis Lab 2

**Location**
Room 125, 1st floor, research sector

**Facilities**
- Equipment for virus concentration, culture, and detection
- A lab studying the anti-virus effects of Kimchi as well as how to prevent/reduce Kimchi-related food poisoning virus (i.e., Norovirus; viral hepatitis A). It is equipped with experiment facilities like PCR, Clean Bench, incubators, etc.
- It also operates facilities including a hazardous microorganism analysis lab specially designed to prevent cross contamination that may occur in the course of viral analysis and relevant research.

6. Sensory Evaluation Lab

**Location**
Room 123, 1st floor, research sector

**Facilities**
- 15 booths for sensory testing
- Each booth of the Sensory Evaluation Lab has an exclusive sensory testing program, allowing scientific and systematic sensory evaluation.
World Institute of Kimchi’s Key Facilities

7. Kimchi Dimibang (Kimchi culinary room)
Location
Room 126, 1st floor, research sector
Facilities
gas ovens, refrigerators, microwave oven, dishwasher, etc
- Kimchi Dimibang has facilities for manufacturing Kimchi sample and serves as a preparation facility for sensory testing

8. Pilot Plant
Location
B1 floor, administration sector
Facilities
Kimchi manufacturing equipment, environmental temperature room(2), wet manufacturing room, dry manufacturing room, refrigeration room, freezer room(4) and component’s warehouse
- Equipment for processing, preconditioning of Kimchi ingredients and refrigerating units for the storage and preservation of prototype samples

9. Animal Research Facility
Location
Animal research facility
Facilities
Animal breeding room, stock feed manufacturing room, function testing lab, office, storage room, animal surgery lab, etc.
- Performing animal experiments to test the efficacy of Kimchi
- Planning to acquire AAALAC certificate for outside animal experiment requests