

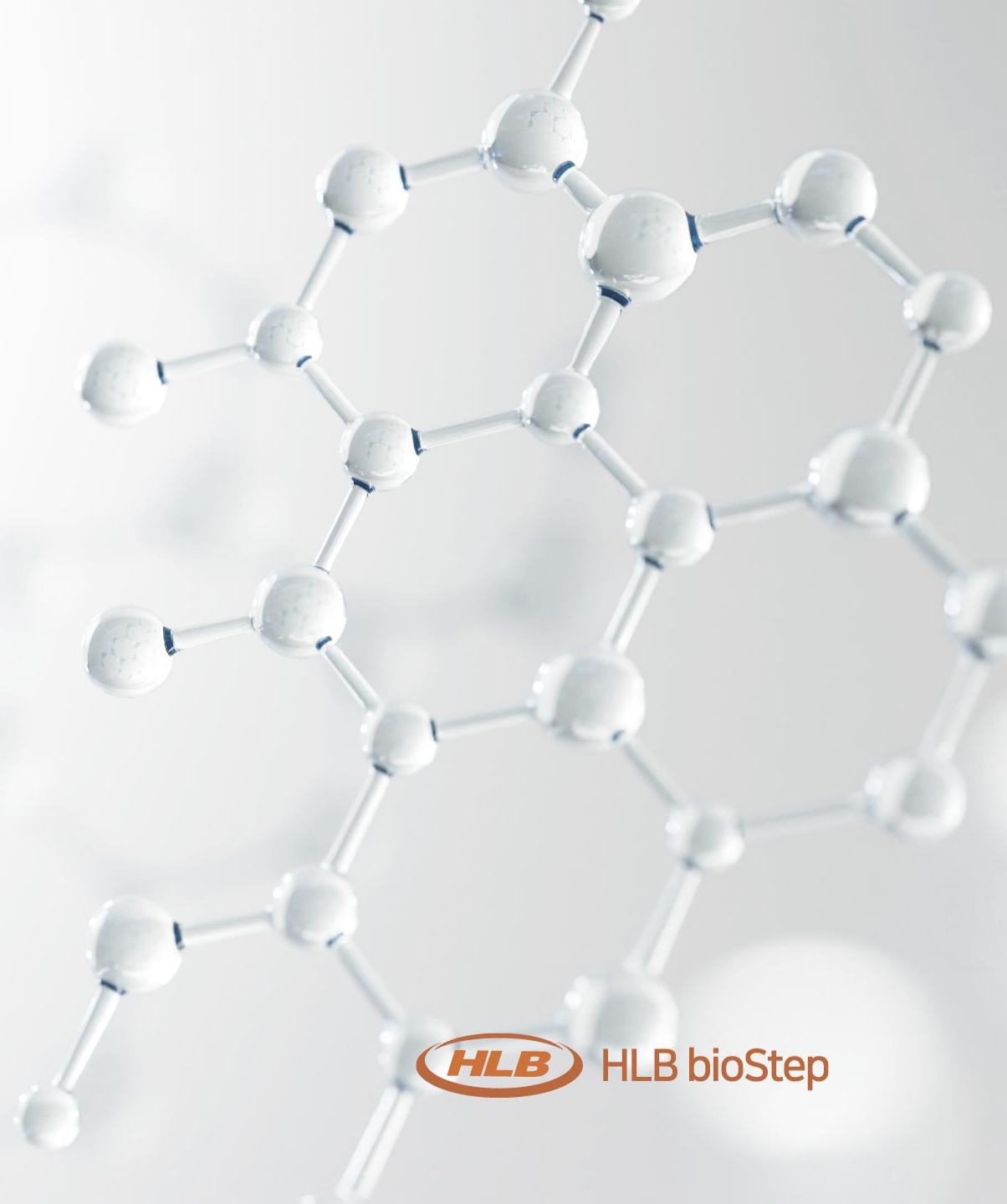
First Step to Success

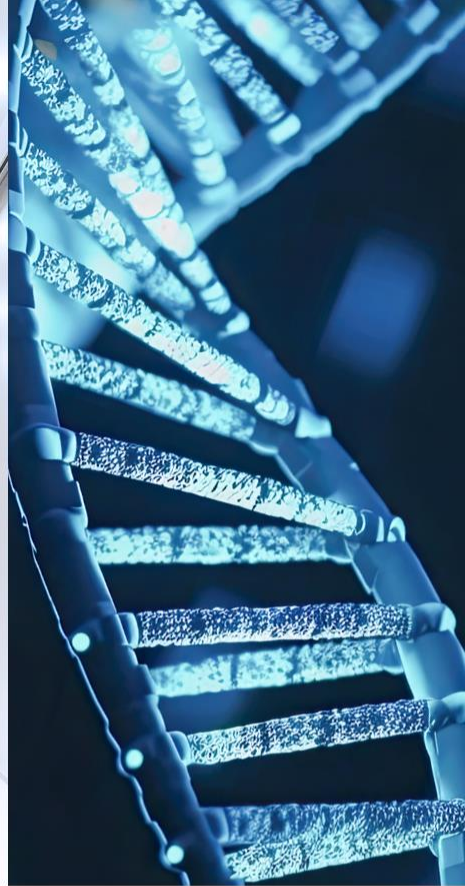
# HLB bioStep

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Korea's No.1 Non-clinical CRO for Efficacy Studies

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# Contents

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# 01. About Us





## 01. About Us

# HLB bioStep

## A leading Korean Non-clinical CRO in Efficacy Studies with a Veterinary Speciality

We offer services that cater to our clients' needs, utilizing our extensive experience in non-clinical testing and cutting-edge medical imaging equipment.

Since our inception in 2012, fueled by relentless research and a spirit of challenge, we have firmly positioned ourselves as the leading non-clinical CRO in efficacy testing, making significant contributions to the advancement of the bio industry in Korea.

<b>Name</b>	HLB bioStep Co., Ltd.
<b>CEO</b>	MOON Jeong Hwan
<b>Founded</b>	May 1, 2012
<b>Capital</b>	KRW 7.8 billion
<b>Business</b>	Non-clinical Service, LAB Consulting
<b>Employees</b>	170+
<b>Location</b>	38, Academy-ro 79beon-gil, Yeonsu-gu, Incheon, Korea

**2012**

Founded



**KRW  
7.8 bil.**

Capital



**170+**

Employees





## 01. About Us

### Division of Non-clinical Service (Headquarters)

**Address** 38, Academy-ro 79beon-gil, Yeonsu-gu, Incheon, Korea

**Space** 11,048.69m<sup>2</sup>

**Facility** Rodent Room, Rabbit Room, Non-Rodent Room, Other Animal Room, Pharmacy, Biopsies & Pathology Room, Clinical Pathology Room, Stem Cell Incubation Room, Operation & Preparation Room, Air Conditioning Room, Feed Storehouse, Office Space, Conference Hall



### Division of Bio-Infrastructure

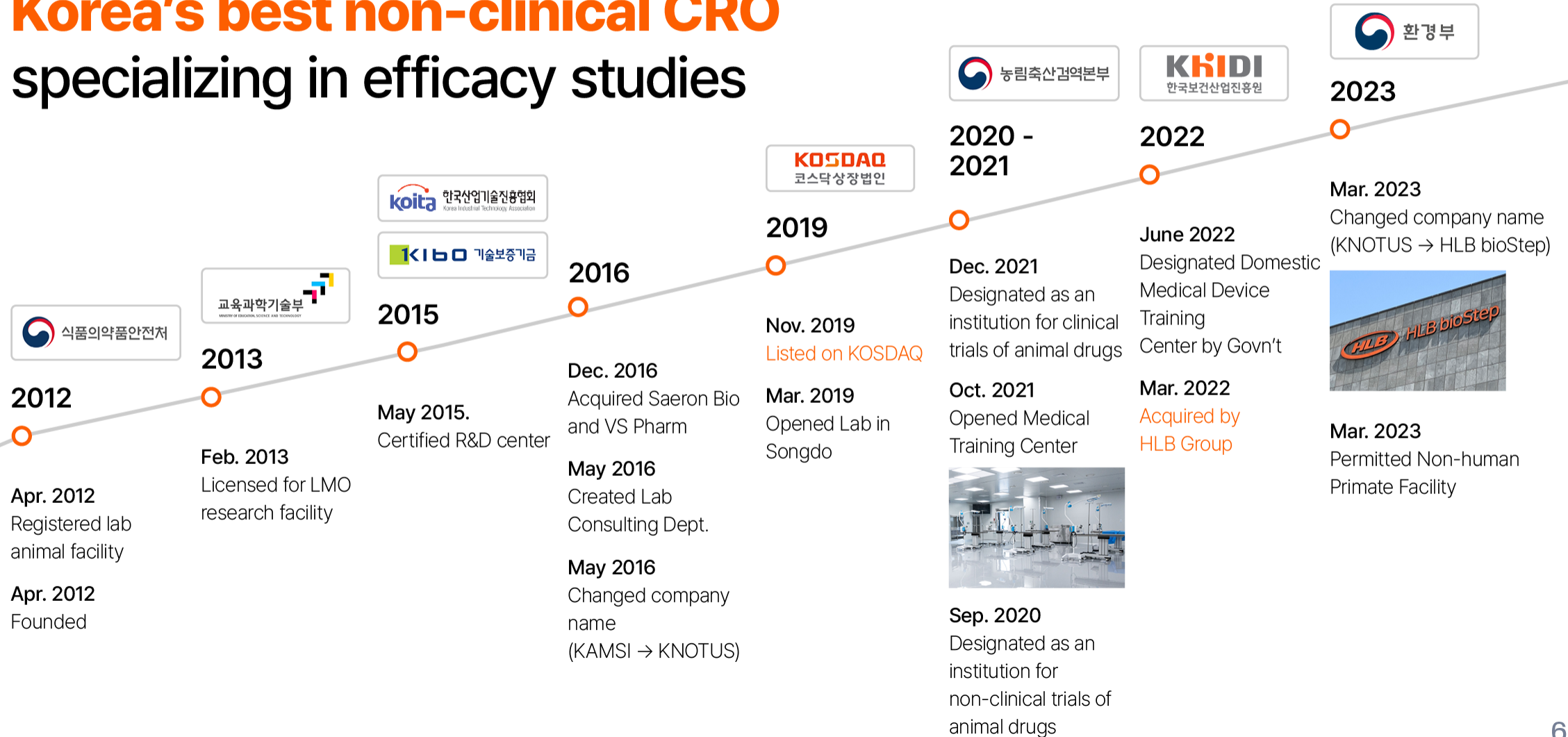
**Address** 189, Donggureung-ro, Guri-si, Gyeonggi-do, Korea

**Space** 4,481m<sup>2</sup>

**Facility** Office Space



# Growing into Korea's best non-clinical CRO specializing in efficacy studies





# First Step to Success

## Korea's No.1 Non-clinical CRO

### HLB bioStep

#### Step 01



#### START

Leading clients to start  
a new business

#### Step 02



#### STANDARD

The standard of  
Non-clinical tests

#### Step 03



#### SECURITY

Thoroughly keeping the security  
of clients

#### Step 04



#### SUCCESS

Contributing to the success  
of clients

## 02. Non-clinical Services

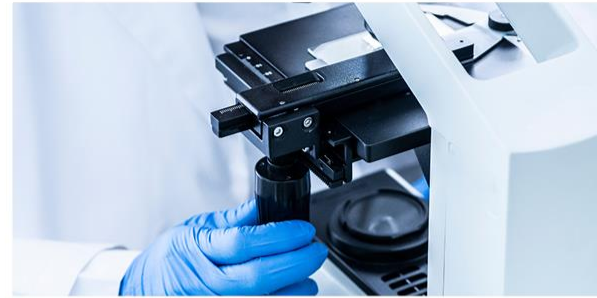
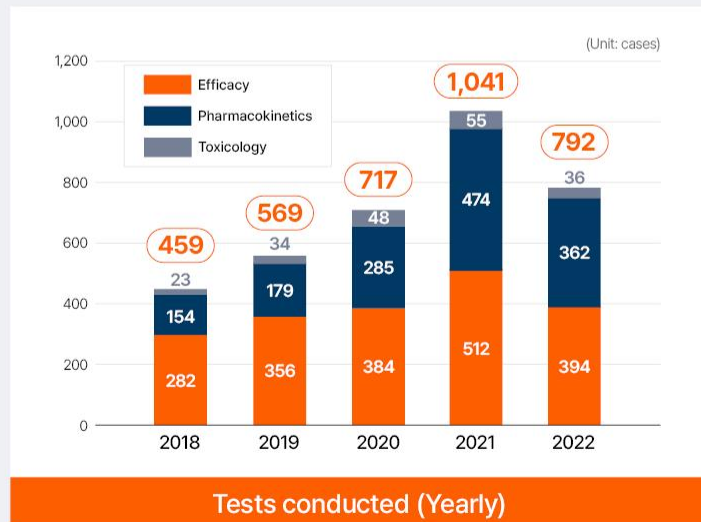
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# Korea's No. 1 Non-clinical CRO in Efficacy testing

Maintaining a solid competitive edge by securing experience, professionals and high-tech equipment



## Vast Experience

Most extensive experience in efficacy evaluation

- ✓ Core competitiveness for Non-clinical CRO



## State-of-the-art Facility

Innovative laboratory and medical imaging equipment

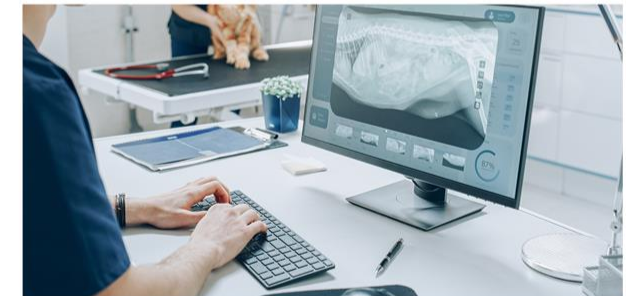
- ✓ Accurate analysis and diagnosis utilizing MRI, CT, X-ray etc.



## Veterinarians

Responsible for implementation of the best test methods

- ✓ Specializing in ophthalmology, surgery, veterinary pathology etc.

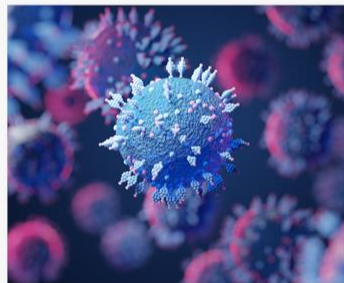


## Large Animal Studies

High-level study with large animals

- ✓ 200+ per year

# Securing accuracy and reliability of test results by using top-quality medical imaging equipment



Ability to produce disease animals



Veterinary care of disease animals



Differentiated services based on imaging equipment



Possessing diverse experimental capabilities, ranging from small to large animals

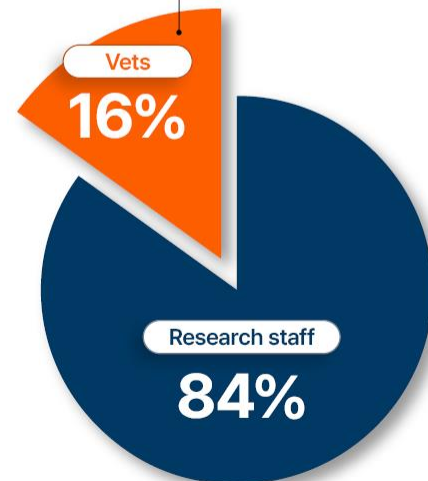




## 02. Non-clinical Services

# Boasting a Significant Number of Professionals in Efficacy Evaluation

- Capable of conducting high-complexity efficacy evaluations that are challenging for other competitors
- 16% of research staff consists of veterinarians



\* Providing education to veterinarians and medical professionals using state-of-the-art medical facilities



# Non-clinical Services

## Efficacy Study

<b>Cancer</b>	<ul style="list-style-type: none"> <li>• Xenograft</li> <li>• Syngeneic</li> <li>• Orthotopic</li> </ul>	<b>Liver Disease</b>	<ul style="list-style-type: none"> <li>• CCl<sub>4</sub>-induced liver fibrosis model</li> <li>• MCD diet-induced NAFLD model</li> <li>• MDR2 knockout mouse liver disease model (Fibrosis, NAFLD)</li> </ul>
<b>Bone Disease</b>	<ul style="list-style-type: none"> <li>• Monosodium Iodoacetate-induced OA (Osteoarthritis)</li> <li>• Collagen-induced OA</li> <li>• ACLT (Anterior cruciate ligament transection) + meniscectomy OA</li> <li>• OVX (Ovariectomy)-induced osteoporosis</li> <li>• Apolipoprotein E knockout (ApoE<sup>-/-</sup> KO) mice</li> </ul>	<b>Cardiovascular Disease</b>	<ul style="list-style-type: none"> <li>• Carrageenan-induced paw edema</li> <li>• Hepatectomy or splenectomy induced hemorrhage model</li> <li>• TAC (Transverse aortic constriction) model</li> </ul>
<b>Neurologic Disorder</b>	<ul style="list-style-type: none"> <li>• MCAO (Middle cerebral artery occlusion) model</li> <li>• Thromboembolic infarction</li> <li>• APP/PS1 TG mouse, 3xTg mouse</li> </ul>	<b>Other Disease &amp; Disorder</b>	<ul style="list-style-type: none"> <li>• Dentistry (Periodontitis)</li> <li>• Gastrointestinal (Constipation, IBD colitis)</li> <li>• Alopecia (Dexamethasone, DHT, Stress, Testosterone inducement)</li> <li>• Kidney (Renal failure, Renal fibrosis)</li> <li>• Skin (Atopic dermatitis, Burn wound, Lacerated wound)</li> </ul>
<b>Endocrine &amp; Metabolic Disease</b>	<ul style="list-style-type: none"> <li>• Ovariectomy (OVX)-induced climacterium</li> <li>• db/db mouse (DM type II), STZ (Streptozotocin) model (DM type I)</li> <li>• HF (High fat diet)/HCD (High cholesterol diet) induced hyperlipidemia</li> </ul>	<b>In vitro</b>	<ul style="list-style-type: none"> <li>• Oncology</li> <li>• Immunology Research</li> <li>• Metabolic Health</li> <li>• Skin care</li> <li>• Neurology</li> <li>• Customized in vitro experiment service</li> </ul>
<b>Ocular Disease</b>	<ul style="list-style-type: none"> <li>• Dry AMD (Sodium iodate induced AMD)</li> <li>• Wet AMD (Laser-induced choroidal neovascularization)</li> <li>• Benzalkonium-induced dry eye</li> </ul>		



# Non-clinical Services

## Pharmacokinetics / Toxicology

<b>Pharmacokinetics Studies</b>	<ul style="list-style-type: none"> <li>• In-vivo ADME studies of clinical candidates</li> <li>• Various in-vivo ADME studies (Dog, Rat, Mouse, Rabbit, Miniature pig, etc.)</li> <li>• Customized study design as per client's needs</li> <li>• Providing analysis service of substances and metabolite in plasma, urine, feces</li> <li>• Providing analysis service of Biological sample analysis including method development and validation</li> </ul>
<b>Non-GLP Toxicology Studies</b>	<ul style="list-style-type: none"> <li>• Single-Dose General Toxicity Studies: Various species (Dog, Miniature pig, Rabbit, Rat, Mouse and etc.)</li> <li>• Repeat-Dose General Toxicity Studies: General Toxicity Studies including DRF, MTD, etc.</li> <li>• Local Tolerance Studies: Skin Irritation, Irritation of ocular mucous Membrane, etc.</li> <li>• Other Toxicity Studies: Antigenicity, Skin Sensitization, Phototoxicity Studies</li> </ul>

## Pathology

<b>Pathology</b>	<ul style="list-style-type: none"> <li>• Tissue collection, Necropsy tissue fixation, Decalcification, Trimming</li> <li>• Paraffin embedding, Sectioning, Cryosectioning, Serial Sectioning, Staining</li> <li>• Interpreted by pathologist, Peer review</li> <li>• Evaluated and interpreted by pathologist; provide a peer review</li> </ul>
<b>Clinical Pathology</b>	<ul style="list-style-type: none"> <li>• Hematology and differential counts (Measure CBC, WBC, PLT and Reticulocyte count, etc.)</li> <li>• Coagulation tests (PT, APTT, Fibrinogen)</li> <li>• Blood chemistry test (General List: TP, AL, B, AST, ALT and other parameters related to efficacy (e.g., HbA1c))</li> <li>• Urinalysis Statistical analysis services</li> <li>• Hormone tests</li> </ul>



# Non-clinical Services

## Biological Analysis

<b>Bioanalytical Mass Spectrometry Services</b>	<ul style="list-style-type: none"><li>• Small molecules</li><li>• Biotherapeutics</li><li>• Peptide</li><li>• Fusion peptide</li><li>• Biomarkers</li></ul>
<b>Bioanalysis Service</b>	<ul style="list-style-type: none"><li>• DMPK ADME Studies</li><li>• Non-GLP TK (Toxicokinetics) Studies</li><li>• Analytical Method Development and Validation Studies</li></ul>
<b>Bioanalytical Molecular analysis Service</b>	<ul style="list-style-type: none"><li>• Protein : Western Blotting, ELISA, ELISPOT</li><li>• Gene : PCR, Real-Time RT-PCR</li></ul>
<b>Bioanalytical Flow cytometry analysis Service</b>	<ul style="list-style-type: none"><li>• Cell phenotyping and immunophenotyping analysis</li><li>• Immune Cell activation and response analysis</li><li>• Cell Cycle Analysis</li><li>• Cell proliferation</li><li>• Cell analysis assay</li><li>• ROS assay</li><li>• Cytometric Bead Array</li></ul>





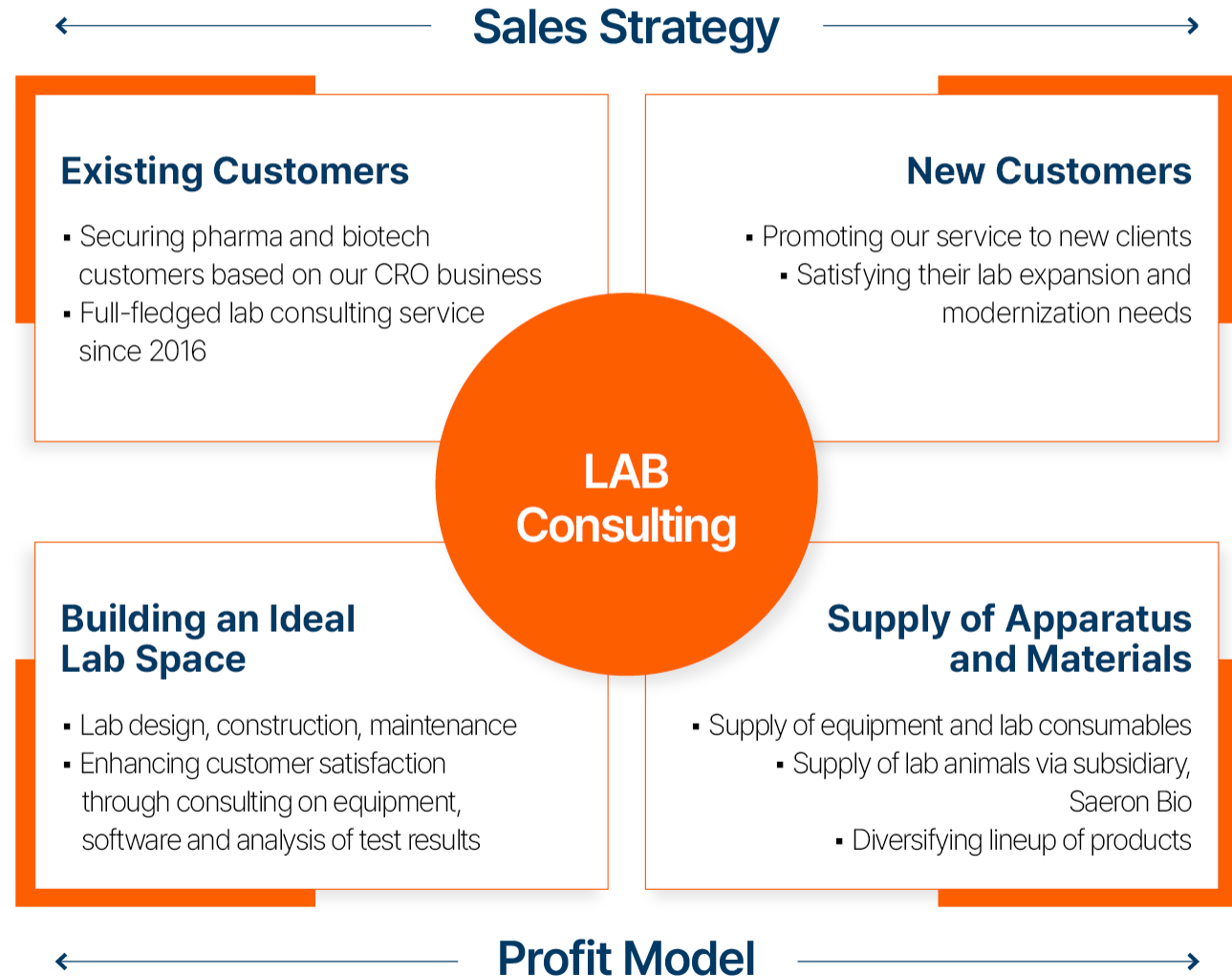
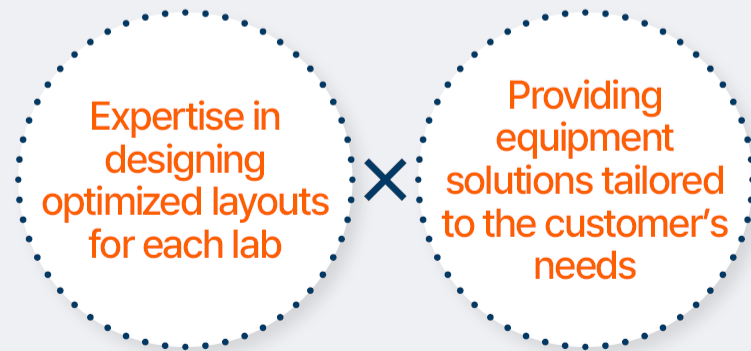
# 03. LAB Consulting

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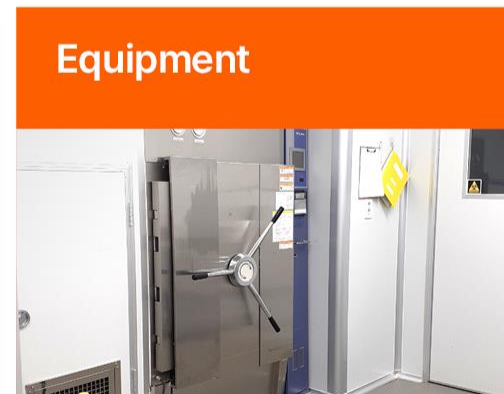
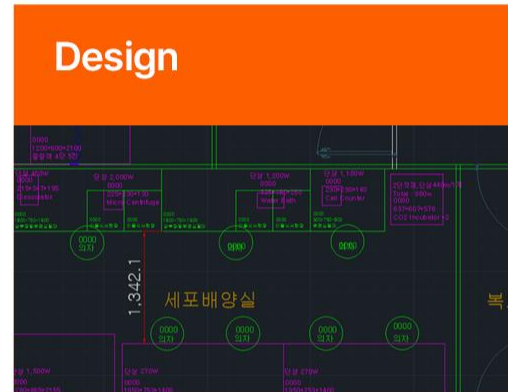
# Service Expansion from Non-clinical to Lab Consulting

Expanding business with accumulated experience and know-how of building lab facilities

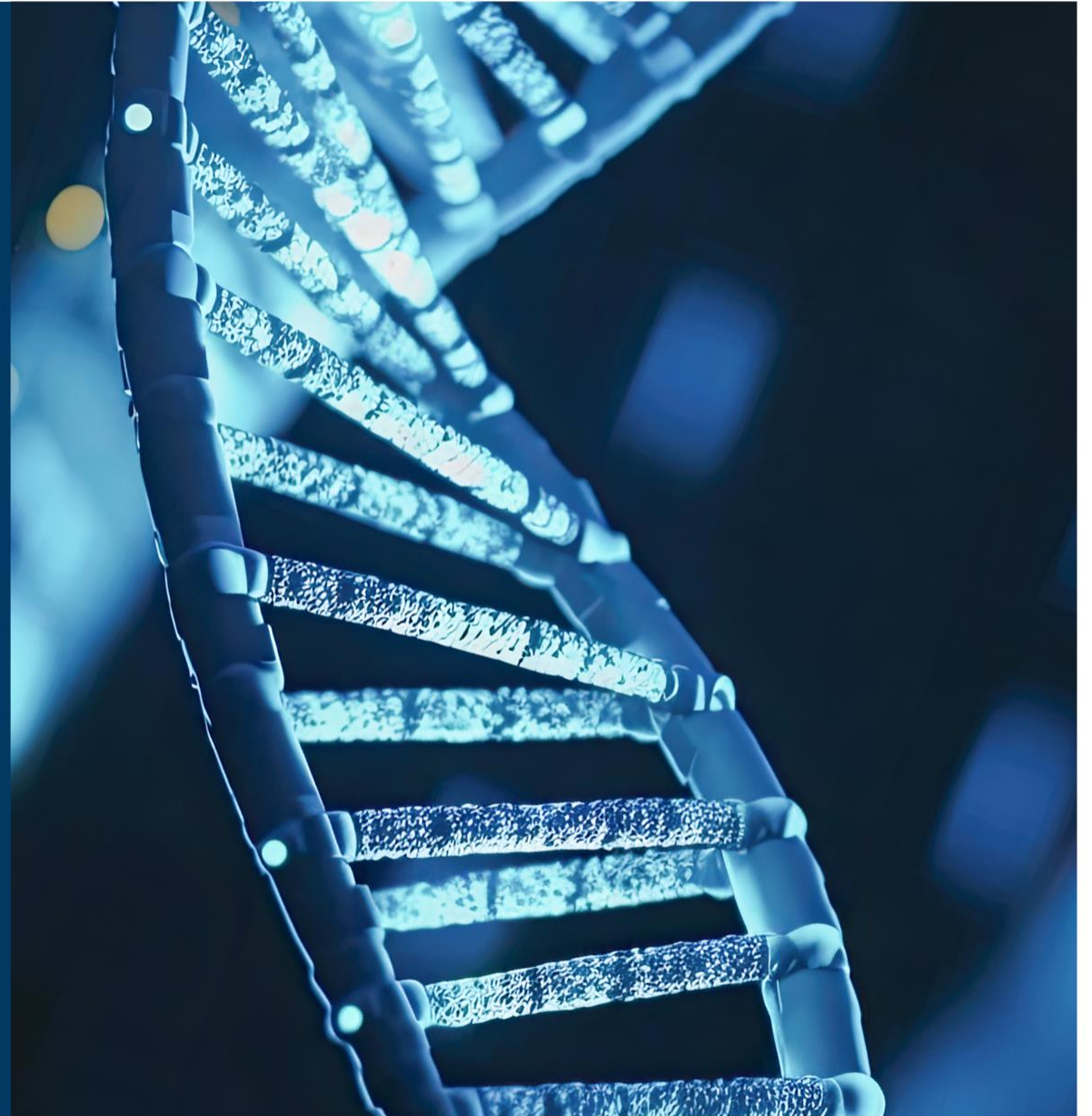




# One Stop Service - Optimized Laboratory Design, Maintenance, and Equipment Supply



## 04. New Growth Engine





# Business Structure that Evolves Alongside the Growth of Our Clients

Investment in bio firms developing medicines, vaccines, diagnostic instrument, veterinary drugs etc.



## Veterinary Drug Development Cooperation

HLB Life Science - Medicine for mammary tumor in dogs

→ **KFDA Approval(2022). Clinical trial in progress**

## Inventage Lab – Long-Acting Injection

- ☑ Collaborative development of dog heartworm medicine (Lasting for 3 months)  
→ **Product Launched in 2022**

## NEXT BIOMEDICAL - Endoscopic Hemostat (Nexpower)

- ☑ Provided non-clinical services  
→ **FDA Approval in 2022**

## 3D MediVision - Educational Surgery 2DHD/3D Videos

- ☑ Cooperation in the production of surgical training videos for vets  
→ **Utilizing our advanced medical equipment, facilities, and expertise**

### Bioanalysis Services

- Newly opened Bioanalysis Center (Nov. 2023)
- Supporting DMPK/ADME studies, Non-GLP TK(Toxicokinetics) studies, Analytical Method Development and Validation studies etc.

- ☑ **Strengthening sales performance, attracting new customers, and enhancing customer trust**

### mRNA Evaluation Model

- Rapid growth of mRNA vaccines and therapeutics market post Covid-19
- Has a method to verify the effectiveness of gene therapy in the body

- ☑ **Preemptive development of efficacy evaluation technology in line with the latest drug development trends**

### Alternative Assessment

- Development of human cell-based organoid evaluation system (Under joint research with HLB Cell Co.,Ltd)
- Expansion to artificial tissues/organs, cell processing, organ-on-a-chip, etc.

- ☑ **Finding ways to produce the best results while minimizing animal testing**

### Non-human Primates

- Non-human Primate research facility approved by Ministry of Environment (Mar. 2023)

- ☑ **Full portfolio of efficacy test covering from small animals to non-human primates**

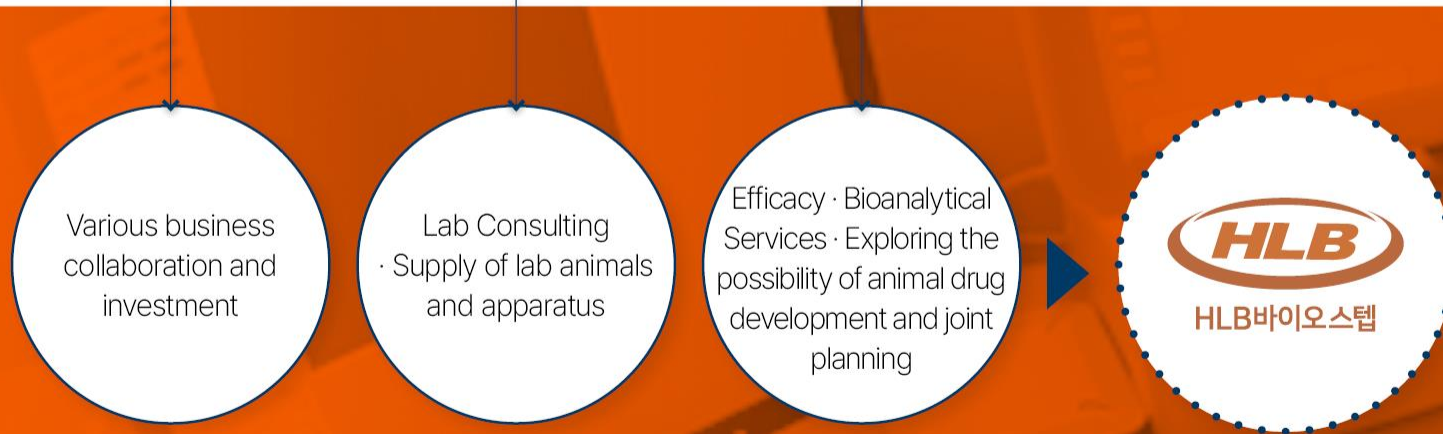
### Expansion of Overseas Customers

- Conducted efficacy studies for Covid-19 for companies in the US and France
- Started a project for Eleva Therapeutics(US) in 2023

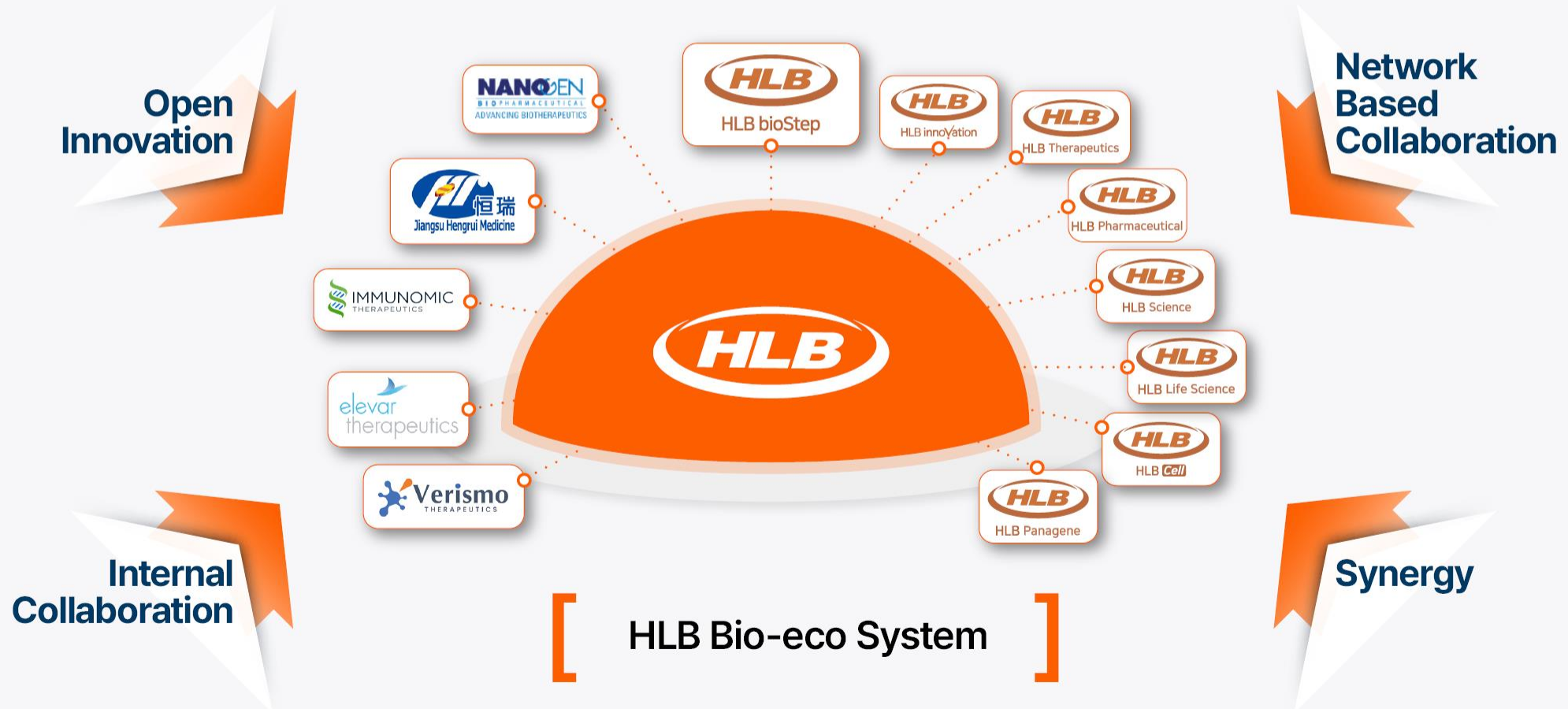
- ☑ **Increasing sales and entering global markets through the expansion of overseas clients**



# Business Expansion Platform



# Expanding Business Synergy through Collaboration with HLB Affiliate Companies



# Our Clients





"First Step to Success"



HLB bioStep

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