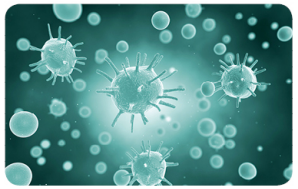
R&D Infrastructure

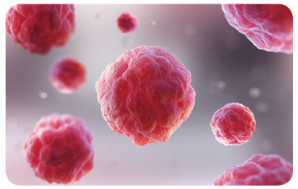
Biosafety Level 2 Laboratory(BSL-2)



Handling Risk Group 2

- Pathogens: low-risk influenza, hepatitis, Zika virus, Leishmania, and hospital-acquired infections

Biosafety Level 3 Laboratory(BSL-3)



Handling Risk Group 3

- Pathogens: Coronaviruses (SARS-CoV, SARS-CoV-2, MERS-CoV), Mycobacterium tuberculosis, high-risk influenza, and SFTS virus.

Animal Laboratory

- It contains Specific Pathogen Free (SPF) Laboratory, Animal Biosafety Level 2 & 3 (ABSL-2 & ABSL-3) laboratories.
- It carries out in vivo efficacy/toxicity analyses of novel compounds, infection mechanism studies, and maintenance of laboratory animal resources such as transgenic mice.

Virus Research Resource Center

- Virus Research Resource Center consisting of BSL-3, ABSL-3, and Biobank is supported by the Ministry of Science and ICT
- This center plays a pivotal role in responding to (re)emerging infectious diseases as a core infrastructure for basic virus research in the metropolitan area. It opens for the use of scientists and researchers in the industry, institutes, and academia.

About us

Institut Pasteur Korea (IPK) is a nonprofit research institute focused on infectious diseases. Dedicated members strive to address global public health issues by developing new therapeutics and preventive strategies and elucidating disease mechanisms.

Mission

Research

IPK combines front-line biology, IT, and chemistry with cell-based drug discovery platforms to discover novel targets and candidates for developing effective therapeutics and preventive measures to combat infectious diseases.

Education

There are educational programs that aim to educate the next generation of scientists and researchers. Some examples of such programs are the UST-Institut Pasteur Korea Campus Master's and Ph.D. courses

Public Health

IPK is supporting national and global efforts to prepare for and respond to infectious diseases by expediting translational research that can turn excellent results from basic research into outcomes that enhance public health

International Partnership

Being the Asia-Pacific research hub of the Pasteur Network, with 33 institutes spread across five continents, IPK plays a crucial role in drug discovery research and acts as a liaison between Korea and the global biopharmaceutical industry.

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Institut Pasteur Korea

Research & Technical Services

Core Technology Platforms

Discover new leads for identifying biomarkers, probes, and drugs in order to advance research and development.

Perform drug discovery studies using both image-based and cell-based approaches, as well as exploring chemical libraries and RNAi libraries.

HTS/HCS
High-throughput and High-content screening

- Multimodality instrumentation and automated microscopes are integrated into our robotic platforms for fast reliable data acquisition.
- Our technologies include fluorescence, bioluminescence, absorbance, and high-content imaging to enable understanding of simple to complex biological interactions.
- It operates within BSL-2, and BSL-3, optimized for most infectious pathogens and biological studies.

Libraries for Screening

Chemical Libraries: ~500,000

Pilot Screening: Proof of Concept
- Kinase inhibitors
- Bioactives/NIH Clinical Collection
- FDA-approved drugs

Full Scale Primary Screening : Unique Pharmacological entitles
- Diverse set of small molecules
- Natural products
- IPK proprietary MC compounds

RNAi Libraries: ~20,000 Genes

- Focused Library: Kinase / Phosphatase
- Full Human Genome-wide siRNA Library
- LentiExpress Human Kinases

Research & Technical Services

Discovery Biology

It aims to build innovative disease models that enable precise exploration of intracellular events occurring after infection.

Zoonotic Virus Lab
- COVID-19 drug screen
- COVID-19 neutralization assay
- SFTS drug screen

Viral Immunology Lab
- Flow cytometry analysis
- Cytokine/chemokine bead-array
- Vaccine immunogenicity assessment
- Vaccine efficacy test

Antibacterial Resistance Lab
- Pseudomonas aeruginosa assay in optimized Artificial Sputum Media (ASM)
- Streptococcus pneumonia assay for HTS system
- Caco-2 Infection model of Staphylococcus aureus
- Co-culture pneumocytes with Pseudomonas aeruginosa

Advanced Biomedical Research Lab
- Hepatocellular carcinoma (HCC) stem cell assay
- Dose response curve assay in multicellular tumor spheroid (MCTS)
- Anti-fibrosis 3D assay
- Angiogenesis assay
- ROS detection assay

Applied Molecular Virology Lab
- Infection assay to study viral life cycle (HepG2-NTCPsec+ cell line: HBV and HDV / HUH-7 or -7.5 cell line: HCV by immunofluorescence-based detection)
- Replication assay by using q(RT)PCR (HBV, HCV, HDV) or using replicon system (HCV)
- Virucidal assay (physico-chemical pre-treatment and remaining infectivity titration: HBV, HCV, and HDV)

Tuberculosis Lab
- Anti-tubercular compound screening assay
  - Intra and extracellular
- In vivo TB drug efficacy assay
  - Balb/c TB infection model (Lung/spleen CFU determination and Histology sample prep)
- Cytokine/Chemokine profiling assay
- Lung immune cell population assay

Host-Parasite Research Lab
- Leishmania, T. cruzi and T. brucei in vitro assay
- Leishmania, T. cruzi and T. brucei in vivo assay
- Plasmodium falciparum RBC stage in vitro assay
- Protein expression (E. coli & mammalian) and purification

Translational Research

Once promising hits are identified using PhenomicScreen™, IPK conduct lead optimization and animal testing to further evaluate and develop innovative drug candidates.

Screening Discovery Platform
- Cell-based assay development and optimization for HCS
- High-throughput screening for chronic/infectious disease using adapted biosafety facility
- HTS chemical screening
- HTS RNAi screening

Medicinal Chemistry
- Compound synthesis
- Chembioinformatics & Molecular Modeling
- 400MHz FT-NMR analysis
- High Performance Liquid Chromatograph (HPLC) analysis
- LC/MS analysis

Animal Research Lab
- Drug candidate In-vivo efficacy evaluation
- Establishment of infectious disease animal model

Technology Development Platform
- Cell-based assay development and optimization for PPI
- Tau protein phosphorylation assay
- Gamma secretase activity assay
- Beta secretase activity assay
- GPCR receptor internalization assay
- Mouse in vivo brain inflammation quantification