



IPB-SNU Center for  
Agriculture and  
Bioscience



# 2<sup>nd</sup> KOICA-ICAB

## ON-SITE CAPACITY BUILDING WORKSHOP

Date/time : 14 December (Thu) 2023, 08:00~16:00 | Venue: IPB International Convention Center

Organized by



**GBST** INSTITUTES OF  
GREEN BIO SCIENCE &  
TECHNOLOGY

Supported by

**KOICA**  
Korea International  
Cooperation Agency





IPB-SNU Center for  
Agriculture and  
Bioscience



# 2<sup>nd</sup> KOICA-ICAB

## ON-SITE CAPACITY BUILDING WORKSHOP

**Organized by**



**GBST**

INSTITUTES OF  
GREEN BIO SCIENCE &  
TECHNOLOGY

**Supported by**

**KOICA**  
Korea International  
Cooperation Agency



# TABLE OF CONTENTS

<b>1. Overview of the Event</b> .....	<b>1</b>
<b>2. Opening Session</b> .....	<b>5</b>
[ OPENING REMARK ] Prof. Byung Chul PARK .....	7
[ CONGRATULATORY REMARK ] Mr. Jeong Wook LEE .....	11
[ CONGRATULATORY REMARK ] Prof. Iskandar Z. Siregar .....	15
<b>3. Plenary Session</b> .....	<b>19</b>
Prof. Sanjay Swarup .....	21
Prof. Ik Young Choi .....	37
Dr. Silva Abraham .....	45
Prof. Ho Sang KANG .....	67
<b>4. Panel Discussion</b> .....	<b>77</b>
Panel Discussion 1 .....	80
Panel Discussion 2 .....	82
<b>4. Panel Discussion</b> .....	<b>85</b>
Prof. Agus Buono .....	86
Dr. Leti Sundawati .....	91
Dr. Yudi Chadirin .....	103
Dr. Anisa Rahma .....	117
Dr. Wulan Tri Wahyuni .....	133
Dr. Mawar Subangkit .....	145



## Subject

2nd KOICA-ICAB On-Site Capacity Building Workshop

## Date and Time

14 December (Thu) 2023, 08:00~16:00

## Venue

IPB University International Convention Center, Indonesia

## Organized by

Institutes of Green Bio Science and Technology,  
Seoul National University (SNU)

## Supported by

Korea International Cooperation Agency (KOICA)



Group photo of the 2nd KOICA-ICAB On-Site Capacity Building Workshop participants

## Main Programs of the Workshop

Time	Agenda
08.00 – 09.00	<b>Registration</b>
09.00 – 09.05	<b>Opening Remark</b> <b>Prof. Byung Chul PARK</b> <i>Project Leader of KOICA-ICAB, Seoul National University (SNU)</i>
09.05 – 09.10	<b>Congratulatory Remark</b> <b>Mr. Jeong Wook LEE</b> <i>Deputy Director of KOICA Indonesia</i>
09.10-09.20	<b>Congratulatory Remark</b> <b>Prof. Iskandar Z. Siregar</b> <i>Vice-Rector, IPB University</i>
09.20-09.30	<b>Photo Session</b>
09.30– 11.00	<b>Plenary Session (20' Each)</b> Moderator: <b>Dr. Rinekso Soekmadi</b> <i>KOICA-ICAB Co-Project Manager, IPB University</i>  <b>Prof. Sanjay Swarup</b> <i>Director of NUS Environmental Research Institution (NERI) National University of Singapore</i> “International Cooperation on Environmental Research”  <b>Prof. Ik Young Choi</b> <i>Kangwon National University</i> “Laboratory Set-up and Sustainable Management in NICEM/GBST”  <b>Dr. Silva Abraham</b> <i>Coordinator/Expert for Life Science Based Infrastructure, BRIN</i> “Introduction to ELSA program and Bioscience Facilities”  <b>Prof. Ho Sang KANG</b> <i>KOICA-ICAB Project Manager, SNU</i> “2023 Annual Report of KOICA-ICAB Project and Plan for 2024”
11.00 – 12.00	<b>Panel Discussion (Chair: Prof. Iskandar Z. Siregar)</b> - <b>Dr. Irdika Mansur</b> <i>Head of Advanced Research Laboratory, IPB University</i> - <b>Dr. Andriansjah Rukmana</b> <i>Head of Sub-Directorate for Research Planning and Development Integrated Laboratory and Research Center of UI</i> - <b>Ms. Tri Rahayu</b> <i>Integrated Laboratory and Research Center/LPPT UGM</i>
12.00 – 12.10	<b>Lucky Draw 1</b>

12.10 – 13.00	<b>Lunch</b>
13.00 – 15.00	<p><b>Technical Session (20' Each)</b>  Moderator: <b>Prof. Ho Sang KANG</b>  <b>Prof. Agus Buono</b>  <i>Vice-Dean of Graduate School of IPB University</i>  “Capacity Building for IPB University and UNTL Lecturers”</p> <p><b>Dr. Leti Sundawati</b>  <i>Faculty of Forestry and Environment, IPB University</i>  “Result of Baseline Study on KOICA-ICAB Project”</p> <p><b>Dr. Yudi Chadirin</b>  <i>Deputy of Advanced Research Laboratory, IPB University</i>  “Lessons Learnt of 2023 Short-Term Training Program”</p> <p><b>Dr. Anisa Rahma</b>  <i>School of Veterinary Medicine and Biomedical Sciences, IPB</i>  “Lessons Learnt of 2023 Mid-Term Training Program”</p> <p><b>Dr. Wulan Tri Wahyuni</b>  <i>Faculty of Mathematic and Natural Sciences, IPB University</i>  “Lessons Learnt of 2023 Mid-Term Training Program”</p> <p><b>Dr. Mawar Subangkit</b>  <i>School of Veterinary Medicine and Biomedical Sciences, IPB</i>  “Lessons Learnt of 2023 Mid-Term Training Program”</p>
15.00-15.10	<b>Lucky draw 2</b>
15:00 – 15:30	<b>Coffee Break</b>
15.30 – 16.30	<p><b>Panel Discussion (Chair: Prof. Anas Miftah Fauzi)</b>  - <b>Dr. Domingos Gomez</b> (<i>Faculty of Agriculture of UNTL</i>)  - <b>Dr. Silva Abraham</b> (<i>National Research and Innovation Agency</i>)  - <b>Dr. Eva Anggraini</b> (<i>Director of Global Connectivity, IPB University</i>)</p>
16.30	<b>Closing</b>
17.00	<b>Dinner</b> (at Kluwih Restaurant )



# OPENING SESSION

Opening Remark

***Prof. Byung Chul PARK***

Congratulatory Remarks

***Mr. Jeong Wook LEE***

***Prof. Iskandar Z. Siregar***



*Opening Remark*

**Prof. Byung Chul PARK**

Project Leader of KOICA-ICAB,  
Seoul National University

## Opening Remark

**Prof. Byung Chul PARK**  
*Project Leader*

*Institutes of Green Bio  
Science and  
Technology &  
Graduate School of  
International  
Agricultural  
Technology, Seoul  
National University*

Honorable Members of Guests,  
Distinguished Delegates,  
Ladies and Gentleman,

Good morning, Selamat Pagi! I am Prof. Byung Chul PARK, Project Leader of "Capacity Building for the Center for Agriculture and Bioscience of IPB University in Indonesia.

It is a great pleasure for me indeed to extend to all of you a cordial welcome on behalf of Seoul National University and to appreciate your effort and cooperation in holding the 2nd KOICA-ICAB On-Site Capacity Building Workshop, here in Bogor, Indonesia.

This workshop is held as a part of the project titled "Capacity Building for the Center for Agriculture and Bioscience of IPB University in Indonesia," which is supported by the Korea International Cooperation Agency (KOICA) and the Government of Indonesia. This project aims to promote R&D capacity and research performance by remodeling the Advanced Research Laboratory and providing training programs to scientists and researchers in Indonesia.



Here, we have Three Scholars who just finished mid-term training on leave. Let's give them a big welcome hand. I would like to take this opportunity to extend my sincere gratitude to all associated persons for their efforts to actualize this meaningful project.

We have invited renowned speakers here to offer you an opportunity to obtain information and knowledge. So, I am pleased to invite many distinguished speakers to share their knowledge and experience and explore better ways of achieving sustainable development in agriculture and bioscience.

I am confident that you would get very meaningful knowledge through the active and close exchange of academic information with those speakers.

In addition, this workshop would continue throughout the project. The following one is scheduled for the future. If you have any comments and ideas for future workshops, please feel free to contact us and suggest us. I hope to make a more practical and valuable workshop for both countries with your help and contribution.

Once again, I would like to offer my warmest welcome and express my appreciation to all of you, and I hope your time in this workshop will be pleasant.

Thank you very much.

Teri ma kasih.



***Congratulatory Remark***

**Mr. Jeong Wook LEE**

Deputy Director,  
Korea International Cooperation Agency  
(KOICA) Indonesia



## Congratulatory Remark

**Mr. Jeong Wook LEE**  
*Deputy Director*

*Korea International  
Cooperation Agency  
(KOICA) Indonesia*

Prof. Faiz Syaib, Director of Research Technology and Community Services,  
Ministry of Education, Culture, Research, and Technology,  
Prof. Iskandar Z. Siregar, Vice Rector of IPB University,  
Dr. Yan Rianto, Deputy of Research and Innovation Infrastructure, BRIN,  
Prof. Byung-Chul Park, Project Leader of KOICA-ICAB, Seoul National University,  
Prof. Ho-sang Kang, Project Manager of KOICA-ICAB, Seoul National University,  
and other Project PMC Colleagues ,  
and the Representatives from the other Indonesian colleagues.

Distinguished guests, ladies, and gentlemen,  
Selamat Pagi. Good morning everyone.

First of all, I would like to express my sincere appreciation to IPB University, Seoul National University, and our colleagues at PMC in the "Project for Capacity Building for the Center for Agriculture and Bioscience of IPB University in Indonesia". You have dedicated your utmost efforts to the successful implementation of this project over the course of nearly one year. Additionally, I extend my gratitude to the Ministry of Education, Culture, Research, and Technology, as well as the National Research and Innovation Agency, for the consistent support and cooperative spirit you have generously provided throughout this period.

Congratulations to IPB University on the remarkable milestone achieved through intensive collaboration



with Seoul National University (SNU) in the fields of agriculture and bioscience. The establishment of the KOICA-ICAB Project demonstrates a commitment to advancing knowledge and expertise in these critical areas.

This collaborative effort has undoubtedly contributed to the enhancement of capacity in agriculture and bioscience, fostering a robust exchange of ideas, methodologies, and innovations. The joint pursuit of knowledge in these fields is not only a testament to the strength of the partnership but also a significant stride toward addressing global challenges related to food security, environmental sustainability, and scientific advancements.

The 2nd KOICA-ICAB On-Site Capacity Building Workshop is a commendable initiative that further solidifies the commitment to continuous learning and development. Workshops like these serve as invaluable platforms for researchers, scientists, and professionals to share insights, collaborate on cutting-edge research, and build a collective knowledge base that transcends geographical boundaries.

I believe it is crucial for each of us to take on the significant responsibility of ensuring the success of this project. The KOICA team assures you that we will persistently dedicate our best efforts to the project.

I sincerely seek the support and attention of the Ministry's leadership and IPB University, trusting in your advanced support and interest to achieve the anticipated outcomes for this project.

Lastly, I hope we can share various and useful knowledge and experience through today's workshop. I expect the upcoming years will bring even greater achievements and innovations as the collaboration continues to flourish, contributing to the advancement of agriculture and bioscience on a wide scale.



Once again, I would like to convey my thanks to all the leaders and staff for the preparation and conducting the 2nd KOICA-ICAB On-Site Capacity Building Workshop today.

Terima Kasih.

*Congratulatory Remark*

**Prof. Iskandar Z. Siregar**

Vice-Rector,  
IPB University

## Congratulatory Remark

**Prof. Iskandar Z. Siregar**  
*Vice-Rector*

*IPB University*

Prof. Byung Chul PARK, the Project Leader of KOICA-ICAB, Mr. Jeong Wook LEE, Deputy Country Director of KOICA Indonesia, Prof. Ho Sang KANG, the Project Manager of KOICA-ICAB, deans and vice deans, professors and lecturers,

I am delighted to extend my heartfelt congratulations on the 2nd KOICA-ICAB On-Site Capacity Building Workshop held at IICC, Bogor. Today's event is a testament to collaborative efforts of all the individuals involved, and I appreciate each of you for your commitment to advancing academic excellence and fostering international collaboration.

The collaboration between IPB University, Seoul National University (SNU), and the Ministry of Education, Culture, Research, and Technology (MoECRT) of Indonesia through KOICA-ICAB is an exemplary model of how institutions can work together to enhance educational opportunities and promote knowledge exchange. I am proud to acknowledge the significant efforts we have taken collectively to create a platform for academic growth and cross-cultural understanding.



I am particularly pleased to highlight that IPB University has actively participated in this collaboration among others by sending 20 faculty staff for short-term training in SNU, South Korea, and supporting 3 faculty staff for mid-term training in SNU.

Furthermore, we have two faculty staff members who will embark on their Ph.D. journeys at Seoul National University, thanks to the invaluable support of KOICA-ICAB.

It is also important to note that the collaboration extends beyond national boundaries, as lecturers from the University of Timor Leste (UNTL) are currently pursuing graduate studies at IPB University, pursuing both master's and Ph.D. degrees. This demonstrates the inclusive and diverse nature of the academic community we are building through our collaborative efforts.

This achievement reflects our shared commitment to fostering global perspectives and cultivating a community of scholars dedicated to making meaningful contributions to society. As we celebrate the success of the 2nd KOICA-ICAB On-Site Capacity Building Workshop, let us continue to nurture these collaborative efforts and strive for even greater heights in the pursuit of knowledge and excellence.

Once again, congratulations to all involved, and I look forward to witnessing the continued success and impact of our collaborative initiatives.



# PLENARY SESSION

Moderator: *Dr. Rinekso Soekmadi*

*Prof. Sanjay Swarup*

*Prof. Ik Young Choi*

*Dr. Silva Abraham*

*Prof. Ho Sang KANG*



Moderator (Dr. Rinekso Soekmadi) of Plenary Session



Speakers of the Plenary Session  
(Prof. Ho Sang KANG, Dr. Silva Abraham, Prof. Ik Young Choi, Prof. Sanjay Swarup)

# INTERNATIONAL COOPERATION ON ENVIRONMENTAL RESEARCH



***Prof. Sanjay Swarup***

Director of NUS Environmental Research Institution  
(NERI), National University of Singapore

2nd KOICA-ICAB On-site Capacity Building workshop  
 14 December 2023  
 IPB, Bogor, Indonesia

## International Cooperation in Environmental Research

**Sanjay Swarup**, PhD (UF, USA), PhD (IARI, India)

Associate Professor, Biological Sciences  
 Director, NUS Environmental Research Institute  
 Director Graduate Program & Deputy Research Director, Engineering Cluster  
 Singapore Centre for Environmental Life Sciences Engineering



© Copyright National University of Singapore. All Rights Reserved.

# National University of Singapore



NUS President  
 Prof. Tan Eng Chye



NUS Environmental Research Institute

# NERI

## NUS ENVIRONMENTAL RESEARCH INSTITUTE

For A Sustainable Future  
COORDINATE • INTEGRATE • FACILITATE



<https://nus.edu.sg/neri/>

National University of Singapore  
#02-01, T-Lab Building, 5A Engineering Drive 1  
Singapore 117411

© Copyright National University of Singapore. All Rights Reserved.

Established in 2009 as a university-level interdisciplinary research institute

Leverage on the capabilities and expertise of NUS to develop integrated sustainable solutions for the environment.

### Our Mission

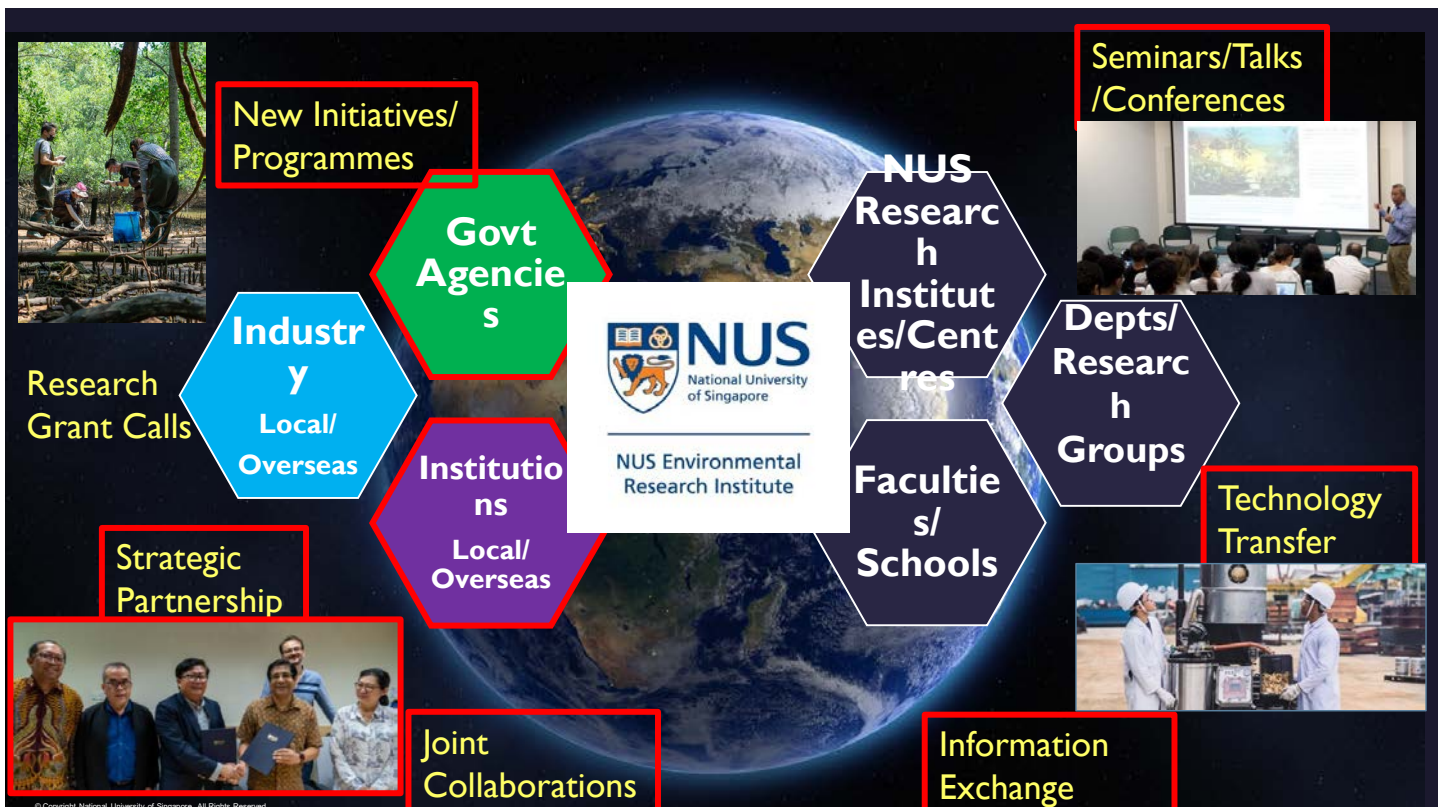
To be a leading global institute centred in Asia for research & development, innovation and education in environmental sustainable solutions



© Copyright National University of Singapore. All Rights Reserved.

## WHY COLLABORATE? NERI PERSPECTIVE

Fostering Innovation through Diverse Perspectives





## Collaborations & Partnerships - Singapore

**Universities & Research Institutions**

- Nanyang Technological University Singapore
- Cambridge CARES: Cambridge Centre for Advanced Research and Education in Singapore Ltd.
- Temasek Lifesciences Laboratory

**Government Agencies**

- PUB: Singapore's National Water Agency
- Land Transport Authority: We Keep Your World Moving
- NCCS: National Climate Change Secretariat, Prime Minister's Office Singapore
- Ministry of National Development
- EDB Singapore
- Housing & Development Board
- Building and Construction Authority
- Singapore Food Agency
- Outward Bound Singapore: Inspired Individuals, Transformed Communities.

**Industries**

- NUS Environmental Research Institute
- Agilent Technologies
- Pfizer
- Xylem: Let's Solve Water
- ThermoFisher Scientific
- TRIA
- Keppel
- Sembcorp
- Sats
- Hydroleap
- SHIMADZU: Excellence in Science
- Sentosa
- MEIDEN SINGAPORE

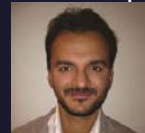
Source: Singapore Map Vectors by Vecteezy: <https://www.vecteezy.com/free-vector/singapore-map>

© Copyright National University of Singapore. All Rights Reserved.

# Collaborations & Partnerships - Worldwide



## Our Principal Investigators



Asst Prof Massimo Lupascu  
Soil Biogeochemistry



Asst Prof Zhanghui  
Membrane Science & Technology



\* Asst Prof Tedrick Thomas Salim Lew  
Plant nanotechnology & Biosensing



Mr Koay Teong Beong  
AUV for environmental monitoring



\* Asst Prof Andy Tay  
Nanomaterials & genetic engineering



Asst Prof Iris Yu  
Biomass conversion to valuable resources



A/Prof Jia Lile  
Behavioral science



A/Prof Huang Zhiwei  
Biomedical optical spectroscopy



Asst Prof Kuldeep Meel  
Artificial Intelligence



Prof Li Jun  
Biomaterials for sustainable applications



Dr Jerome Kok  
Marine biology, ecology and Botany



Asst Prof Geng Guoqing  
Sustainable Construction Materials



A/Prof Sanjay Swarup  
Ecosystem functioning and sustainable agriculture



Prof Hu Jiaoyang  
Water treatment and emerging contaminants removal



Prof Zhou Weibiao  
Food Engineering



A/Prof Raymond Ong  
Sustainable pavement materials & engineering



A/Prof Karina Gin  
Water quality monitoring & modeling



A/Prof Lam Siew Hong  
Biomimetic membrane



Prof Manjunatha Kini  
Protein chemistry



Prof Prakash Kumar  
Physiological regulation of vegetation



A/Prof Olivier Patrick Lefebvre  
Electrochemical Wastewater Treatment Process



Asst Prof Bae Sung Woo  
Environmental Microbiology



A/Prof Tong Yen Wah  
Waste management & anaerobic digestion



Prof Wong Nyuk Hien  
Climate Change and the impact on Built Environment



A/Prof Yu Liya  
Urban air quality and aerosol sciences



A/Prof He Jianzhong  
Bioremediation process



A/Prof Ouyang Jianyang  
Energy materials & devices



Dr Lin Qingsong  
Proteomics and Mass spectrometry



Prof Sam Li  
Environmental analysis and sensing



Prof Seeram Ramakrishna  
Material Science/nanomaterials



Prof David Taylor  
Human dimensions of environmental changes



Prof Wang Chi-Hwa  
Sol-liquid separation



Prof Lee Hian Kee  
Separation Chemistry



Prof Bay Boon Huat  
Nanotoxicology



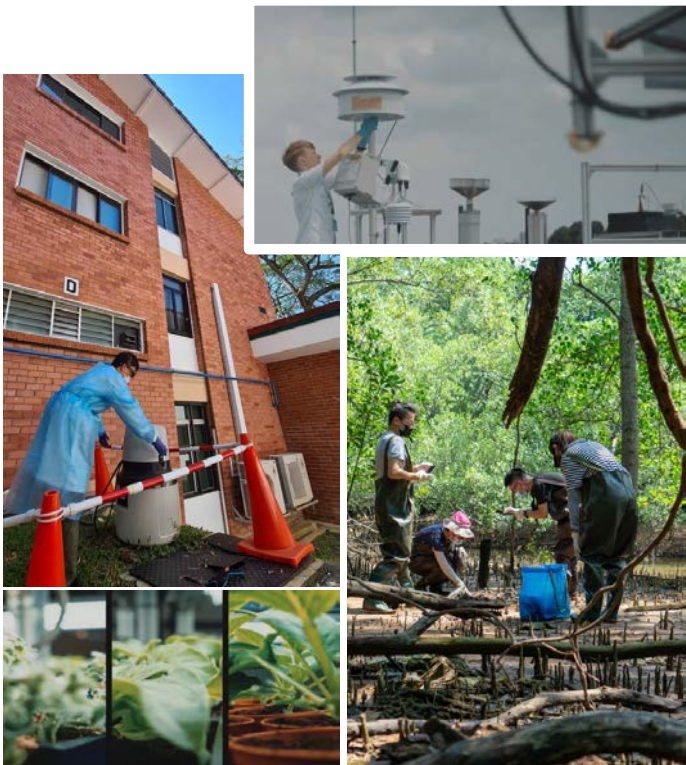
Prof Ong Choon Nam  
Climate change on sustainable agriculture



Prof Ong Say Leong  
Water quality enhancement & modeling

© Copyright National University of Singapore. All Rights Reserved.

\* Presidential Young Professorship



© Copyright National University of Singapore. All Rights Reserved.

## Research Programmes

Multidisciplinary programmes hosted at NERI:

✓ **Energy and Environmental Sustainability Solutions for Megacities - E2S2**  
**PM2.5 in Singapore: Characteristics & Potential Health Impacts**

**Future of Greening - Waste Valorisation and Microbiome Solutions for Green Environment**

✓ **INtegrated Tropical Peatlands Research Programme (INTPREP)**

**Wastewater Surveillance Programme in Environmental Monitoring**

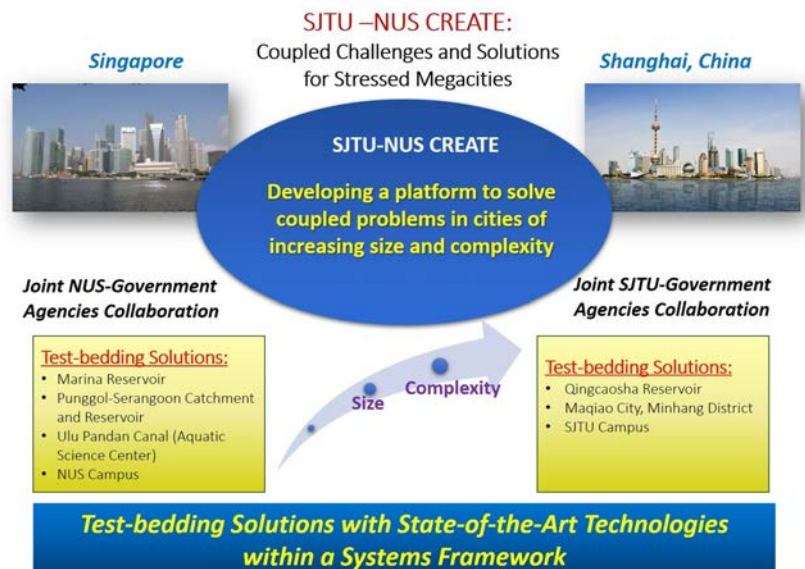
*Environmental Surveillance & Treatment; Resource Recovery & Circular Economy*



## Energy & Environmental Sustainability Solutions for Megacities



E2S2-CREATE is a joint collaborative programme between Shanghai Jiao Tong University (SJTU) and National University of Singapore (NUS) under the Campus for Research Excellence and Technological Enterprise (CREATE) framework



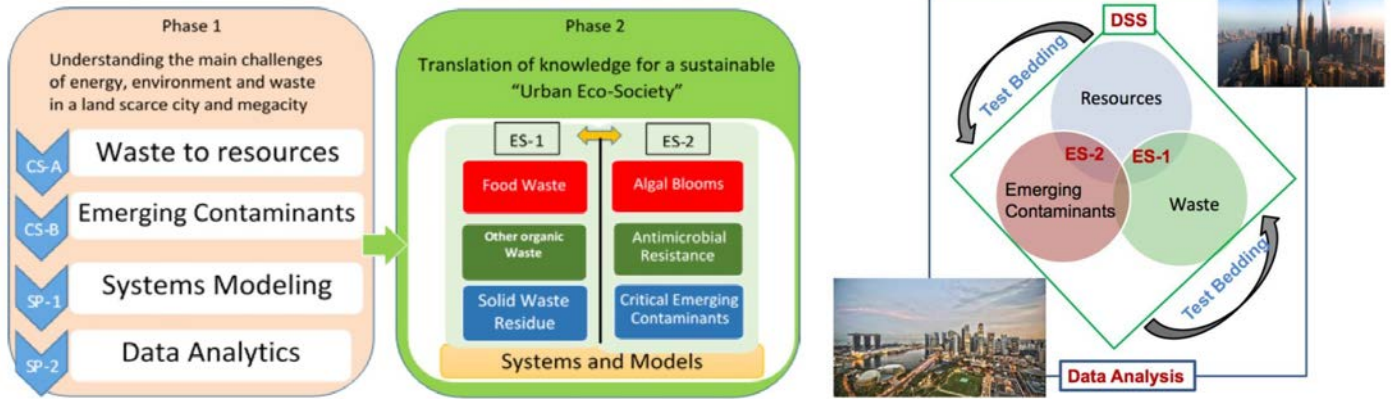
© Copyright National University of Singapore. All Rights Reserved.



**Phase 1 (Aug 2012 – Mar 2018: completed)**  
**Phase 2 ( Aug 2018 – Apr 2024: ongoing)**

**Phase 2** intends to find Eco-Solutions (abbreviate as ES) to **Sustainable Urban EcoCity** from these aspects:

- construction of zero-emission waste loop in megacities;
- detection and management of algal blooms and anti-microbial resistances.



© Copyright National University of Singapore. All Rights Reserved.



## INTPREP: A Multidisciplinary Ecosystem Health Restoration Program: Science, People, Sustainability

© Copyright National University of Singapore. All Rights Reserved.



IPB University  
Bogor Indonesia



NUS

Research





# INTPREP: Integrated Tropical Peatlands Research Program





**Prof. Sanjay Swarup**  
Principal Investigator, Singapore



**Professor Iskandar Siregar**  
Principal Investigator, Indonesia



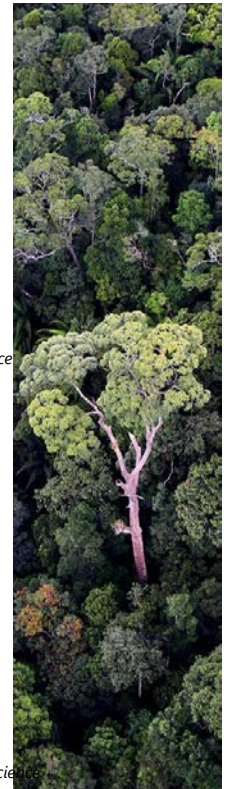

**Dr. Albert Ng**  
Program Manager, NUS  
*Environmental science & Engineering*



**Mr. Muhammad Majidu**  
Program Manager, IPB  
*Forest ecology & biodiversity science*



# IPB Researchers





**Dr. Rahadian Pratama**  
*Integrative systems biology & data science*



**Dr. Mohamad Rafi**  
*Integrative systems biology & data science*



**Professor Sri Wilarso Budi R**  
*Forest ecology & biodiversity science*



**Dr. Triadiati**  
*Forest ecology & biodiversity science*



**Dr. Deden Derajat Matra**  
*Forest ecology & biodiversity science*



**Professor Suria Tarigan**  
*Terrestrial & fluvial connectivity sciences*



**Dr. Wisnu Ananta Kusuma**  
*Integrative systems biology & data science*



**Dr. Mushthofa**  
*Integrative systems biology & data science*



**Dr. Erianto Indra Putra**  
*Geospatial science*




**Dr. Yudi Setiawan**  
*Geospatial science*



**Dr. Adisti Permatasari Putri Hartoyo**  
*Forest ecology & biodiversity science*



**Dr. Muh Taufik**  
*Terrestrial & fluvial connectivity sciences*



**Dr. Rudi Heryanto**  
*Integrative systems biology & data science*



## Research Assistants



**Mr. Muhandianto Cahya**  
*Terrestrial & fluvial connectivity sciences*



**Ms. Sinta Damayanti**  
*Integrative systems biology & data science*



**Ms. Niken Irfa Nastiti**  
*Integrative systems biology & data science*



**Ms. Tiara Alfina**  
*Terrestrial & fluvial connectivity sciences*



**Mr. Atsarissajad**  
*Forest ecology & biodiversity science*



**Ms. Inggit Wijayanti**  
*Forest ecology & biodiversity science*



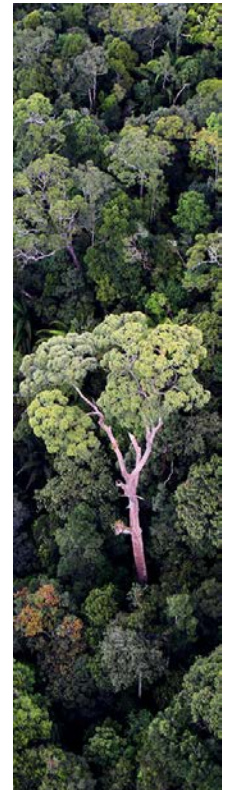
**Mr. Muhammad Rifki Rizaldi**  
*Forest ecology & biodiversity science*



**Mr. Prio Nugroho**  
*Administration Assistant*



**Mr. Muhammad Majiudu**  
*Administration Assistant*



## INTPREP NUS Team



**A/Prof Sanjay Swarup**  
*Integrative Systems Biology and Data Science*



**Dr. Al Hooijer**  
*Geospatial Science*



**Prof David Taylor**  
*Terrestrial and Fluvial Science*



**Dr. Massimo Lupascu**  
*Terrestrial and Fluvial Science*



**Dr. Kuldeep Meel**  
*Systems Biology and Data Science*

## Scientific advisory Board



**Prof Leo Tan**  
*NUS*



**Prof Jatna Supriatna**  
*Univ Indonesia*



**Prof Susan Page**  
*University of Leicester*

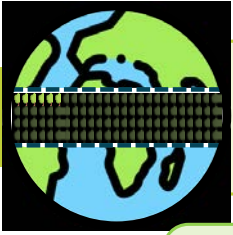


**Mr. Law Heng Dean**  
*Temasek (Observer, by invitation)*

5 Postdoctoral Research Fellows, 3 PhD students, 4 Research Assistants,



## PEATLANDS: A GLOBAL CHALLENGE

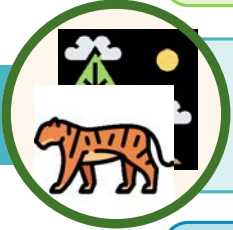


Tropical peatlands are **amongst the most disturbed ecosystems on Earth**, with only ~6% remaining as pristine in Southeast Asia

*Wijedasa et al. 2018, Global Change Biology*

**Land-use change** is the **biggest threat to tropical peatlands**. Peatland conservation and restoration thus offer huge potentials for **climate change mitigation**

*Warren et al. 2017, Mitigation and Adaptation Strategies for Global Change*



Peatland management provides numerous benefits including **carbon storage, reduction of haze pollution, flood control, cultural services, and biodiversity preservation**

*Joosten et al. 2012, Food and Agriculture Organization*

Countries can include peatland restoration under **international climate policies** (e.g., Paris Agreement) as **avoided/removal emissions** and potentially as **nature-based negative emissions**

*Goldstein et al. 2020, Nature Climate Change*



*Icons made by Freepik and Eucalyp from Flaticon*

## INTPREP - Goal

To understand Fundamental Scientific Processes behind tropical peat systems, in relation to:

**Peat degradation:  
carbon, subsidence**

**Peat revegetation:  
forests, plantations**

using an Integrative Sciences approach → how key factors that affect tropical peat systems e.g. tree ecophysiology, fluvial dynamics, microbiomes, peat chemical ecology and such interact with each other

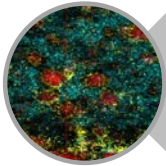


# Why is the approach working?

## Key Differentiating Factors



Multidisciplinary-based Integrative Sciences Approach



Basic Sciences-focused Research



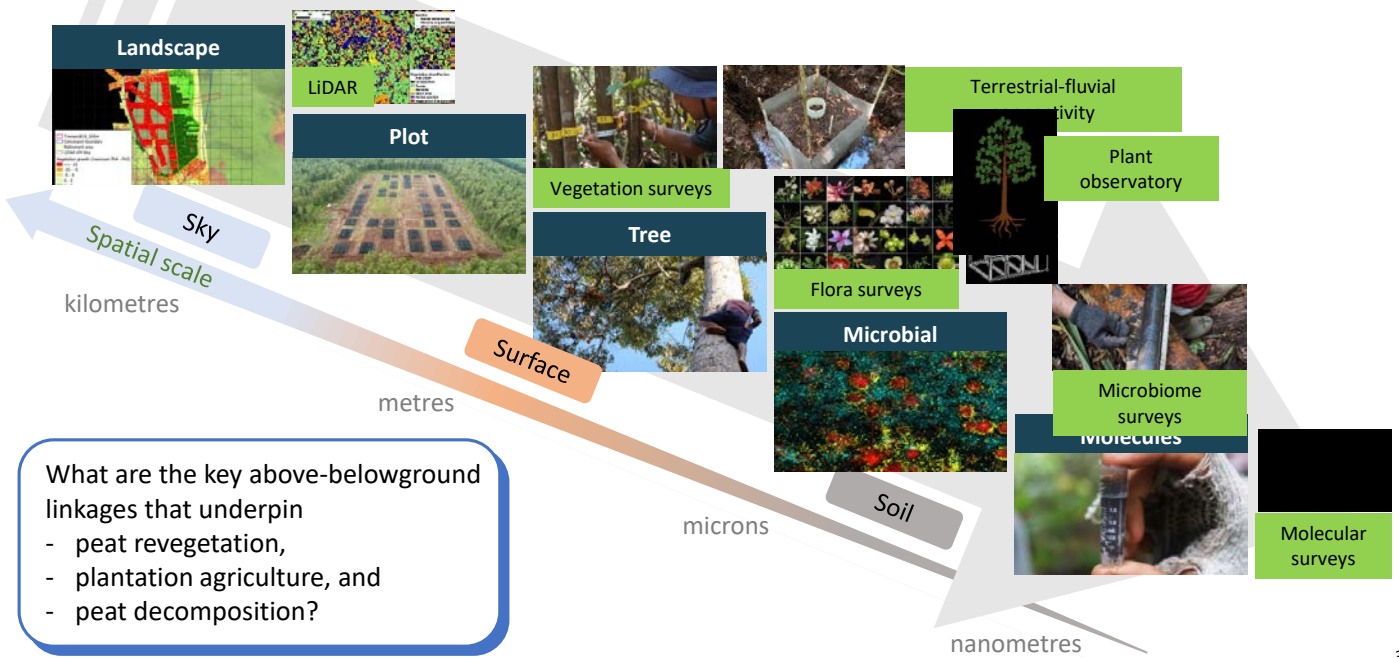
Academia-Industry Partnerships



© Copyright National University of Singapore. All Rights Reserved.



# Sky-to-Soil Integrative, Multi-Scalar Framework



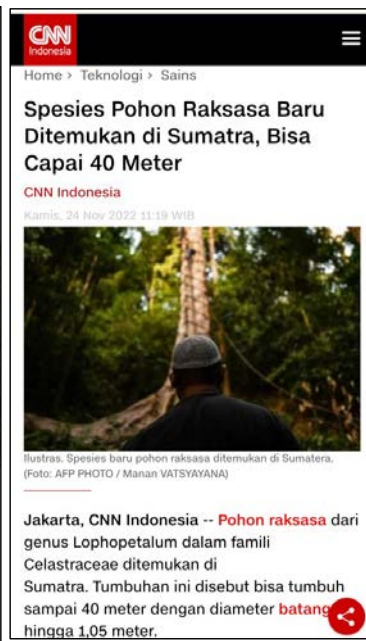
## Media Release on *Lophopetalum tanahgambut* - new peat tree species discovered during INTPREP field studies



**Lophopetalum tanahgambut, Spesies Baru Pohon Raksasa dari Sumatra**  
By *Ricky Jerihansen*, Rabu, 23 November 2022 | 16:00 WIB

Lophopetalum tanahgambut merupakan pohon dengan kanopi atas yang besar yang tumbuh setinggi 40 m.

Nationalgeographic.co.id—Para ahli dari NUS Environmental Research Institute (NERI) di Singapura telah mengidentifikasi **spesies baru** **pohon raksasa** dari Sumatra. Spesies pohon yang



**Spesies Pohon Raksasa Baru Ditemukan di Sumatra, Bisa Capai 40 Meter**  
CNN Indonesia  
Kamis, 24 Nov 2022 11:19 WIB

Jakarta, CNN Indonesia -- **Pohon raksasa** dari genus *Lophopetalum* dalam famili Celastraceae ditemukan di Sumatra. Tumbuhan ini disebut bisa tumbuh sampai 40 meter dengan diameter **batang** hingga 1,05 meter.



**New Giant Tree Species Discovered in Indonesia**  
Nov 21, 2022 by Sergio Prostack

*Lophopetalum tanahgambut* is a large top canopy tree growing to 40 m tall, with a trunk diameter at breast height (dbh) of up to 1.05 m.



**Scientists swim across muddy river monthly to confirm existence of new peat tree species**

The new 40m-tall peat tree adds to the understudied but potentially growing list of around 350 species of trees in the scarce peat swamp forests of South-east Asia. PHOTO: AGUSTI RANDI

Shabana Begum

PUBLISHED 28 NOV 2022 5:00 AM SGT

## Community Nursery



### GOALS

Ready-to-plant seedlings of native species procured through community nursery for CEPRE experiment

- Stage 1: Late 2020; 1200 seedlings
- Stage 2: Early 2021; 10800 seedlings

### TEAM COLLABORATION

- APP (Asia Pulp & Paper)
- IDH (The Sustainable Trade Initiative)
- G-CINDE (Jambi NGO)
- South Sumatra Forest Service
- KMPA (KELOMPOK MASYARAKAT PEDULI API)
- MPR (MASYARAKAT PEDULI RESTORASI)

### TRAINING AND MONITORING

- Nursery training was held on September 13, 2020 in MUARA MERANG village and was attended by 30 villagers
- Nursery monitoring carried out by the community and supervised by G-CINDE, APP, and INTPREP

## Singapore - Thailand – Indonesia collaborations

### Aim:

- Explore feasibility of growing ectomycorrhizal EM edible mushrooms to enhance tree establishment + provide economic benefits to communities

### IPB

Prof Budi Wilarso  
Randi Agusti \*  
Hizbullah Al Muzahiq \*

### BRIN

Prof Maman Turjaman  
Dr. Helbert \*  
Sarah Faulina

Yayasan Generasi Biologi of Indonesia  
Khalid Hafazallah \*

Nakhon Phanom University  
Prof. Cherdchai Pohsri

Srinakharinwirot University, Bangkok  
Prof. Nuttika Suwannasai

National University Singapore  
Prof. Sanjay Swarup  
Dr. Valeria Verrone \*



## Exploration trip – May 2023 Sabangau NP – Central Kalimantan



3 Indonesian Univ Rectors, NUS President's Office, BRIN Dy Chairman, Indonesian Ambassador to Singapore, International experts, Industry partners, NGOs



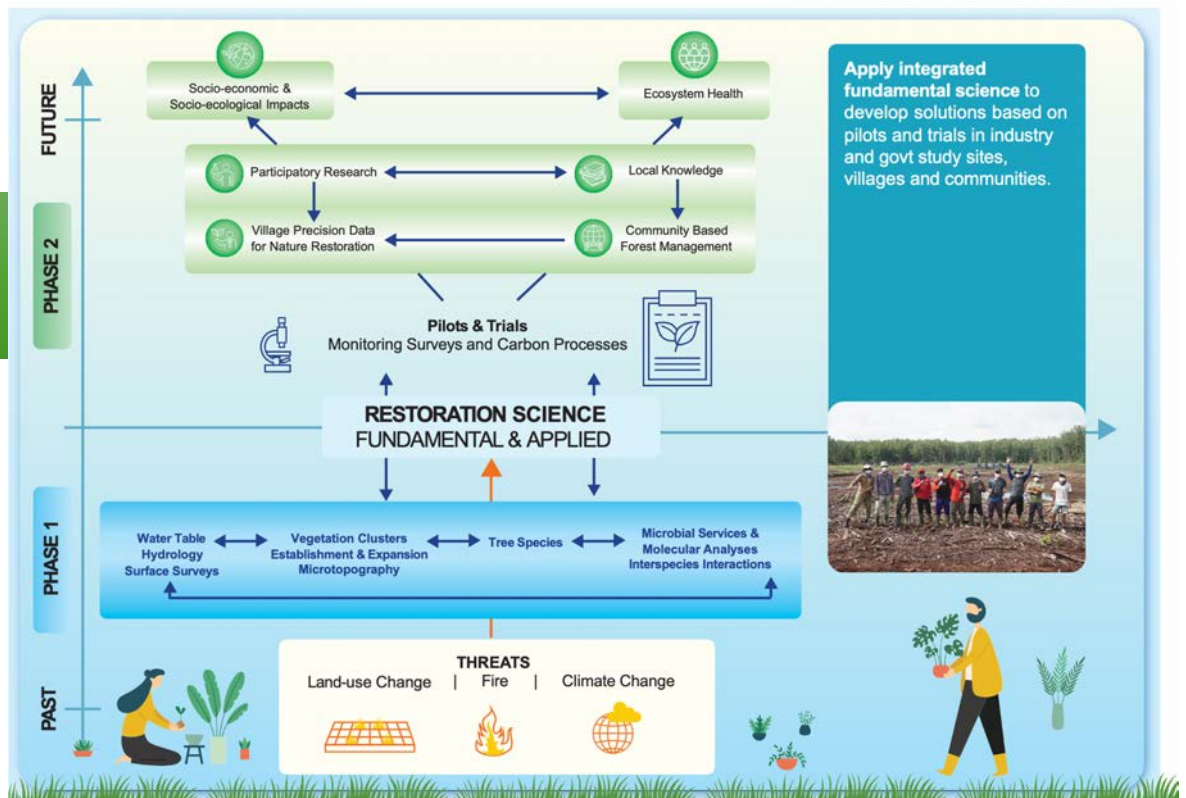
## Science-Policy Interface

Working closely with Govt Ministries & Agencies on Science- Policy Dynamics



Vice Minister & Sr. Directors, Ministry of Env & Forestry, BRGM, BRIN, UI, IPB

INTPREP:  
Future Plans





# THANK YOU

[Sanjay@nus.edu.sg](mailto:Sanjay@nus.edu.sg)

# EFFICIENT OPERATION OF THE RESEARCH FACILITIES



***Prof. Ik Young Choi***

Kangwon National University

# Efficient operation of the Research Facilities

IPB University (Bogor Agricultural University)



IK-YOUNG CHOI

 KANGWON NATIONAL UNIVERSITY

The advanced science depends on the ability to come up with good ideas and implement them.



Although the research content in each field is different, common technologies are often used.

**Plant**

**Animal**

Microorganism

**Food**

Environment

**Machinery**

Basic  
biology

**IT**

Common technologies often use shared scientific research equipment.

**MS  
spectrometer**



**Microscope**



**DNA sequencer**



**Computer  
science**



## There are several problems with using high-performance scientific equipment.

### Laboratory

Requires special installation environment

### Budget

Expensive  
Purchase  
Maintenance  
Materials

### Expert

Equipment operations specialist

### System

An efficient operating system is needed

## A strategy is needed to effectively utilize high-performance scientific equipment.

MS spectrometer



Microscope



DNA sequencer



Bio basic equipment



Computer science



## Strategies for stable and efficient operation of the research facilities center

**1**

**Organization  
Stable**

**2**

**Facilities &  
equipment**

**3**

**Operation  
systems**

### **1. Organization Stable**

**For the stable operation of an organization, regulations must be supported.**

1. Steering Committee Member: Annual plan, evaluation
2. Administrative personnel: official documents, budget, administrative work
3. Equipment expert: At least one expert assigned to each laboratory

## 2. Facilities & equipment

Facilities and equipment are important for producing highly reliable research data.

### 1. Facilities: Highly variable laboratory structure

- Temperature-controlled instrument room,
- Sampling room,
- sample preparation room,
- etc.



## 2. Facilities & equipment



### 2. Equipment

- Maintenance: At least 3 years from the time of equipment purchase
- Training: Enables dedicated personnel to fully utilize the performance of the equipment
- Consumables: Secure enough when purchasing equipment

### 3. Operation systems

It is necessary to place equipment operation experts for each laboratory and website operation that can increase utilization.

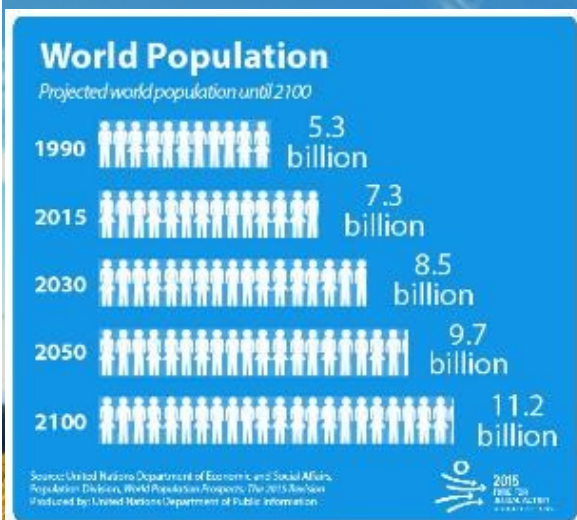
#### Role of equipment expert

1. Equipment operation
2. Training to user
3. Promotion
4. Service

#### Online Website

1. Equipment information
2. Service information
3. Reserve equipment use
4. Billing and payment

FAO predicts that global food production should increase by 70% by 2050



UN projects world population to reach 8.5 billion by 2030, driven by growth in developing countries | UN News

## World Food Program (WFP)

### Populations in acute food crisis (IPC/CH 3 or higher)

- 135 million in 2019
- 265 million in 2020
- About 840 million people worldwide are hungry by 2030



*Agricultural research must continue to human food and protect the environment.*

**Thanks !!**



# BADAN RISET DAN INOVASI NASIONAL (BRIN)



***Dr. Silva Abraham***

Coordinator/Expert for Life Science Based Infrastructure,  
BRIN



# Introduction to ELSA (E-science Services) and Bioscience Facilities

Deputy For Infrastructure Research And Innovation

The National Research and Innovation Agency

**Silva Abraham**  
December, 14<sup>th</sup> 2023

PROFESIONAL  
OPTIMIS  
PRODUKTIF



## BRIN Integration

The National Research and Innovation Agency  
*Badan Riset dan Inovasi Nasional (BRIN)*

2021 → Integration of 1 ministry + 4 agencies  
2022 → +/- 28 research agencies under the ministries

Based on Presidential Decree number 78 of 2021 BRIN officially became **the main and largest national research and innovation body in Indonesia** and the new organizational structure of BRIN was formed on September 1, 2021

- Ministry of Science & Technology/BRIN
- LIPI (Indonesian Institute of Sciences)
- LAPAN (Aeronautics & Space Agency)
- BATAN (National Atomic Energy Agency)
- BPPT (Technology Assessment And Application Agency)
- > 28 research agencies under the ministries

**BRIN**  
BADAN RISET DAN INOVASI NASIONAL

**batan**

**BPPT**

**LAPAN**

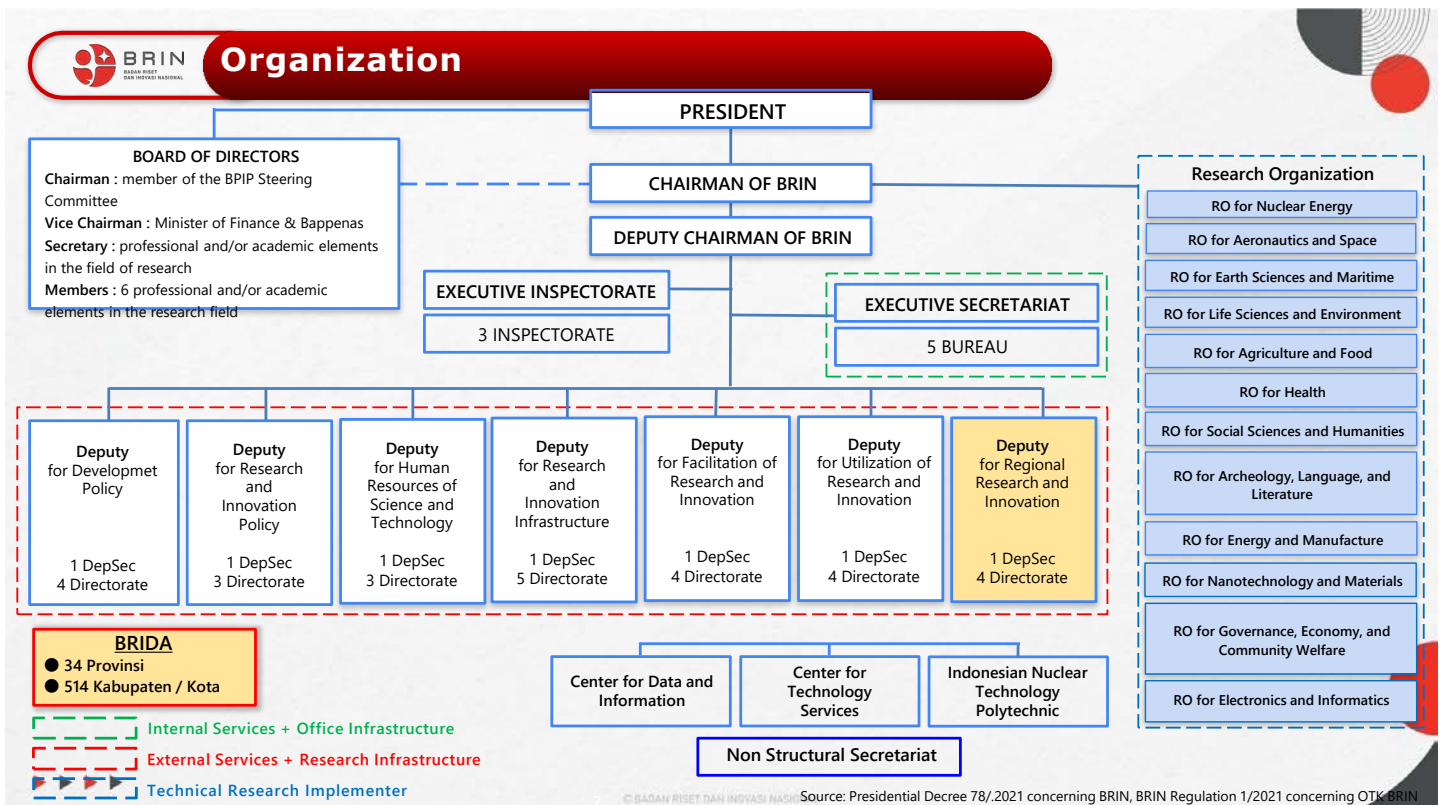
**LIPI**

**BRIN**  
BADAN RISET DAN INOVASI NASIONAL

**SALINAN**

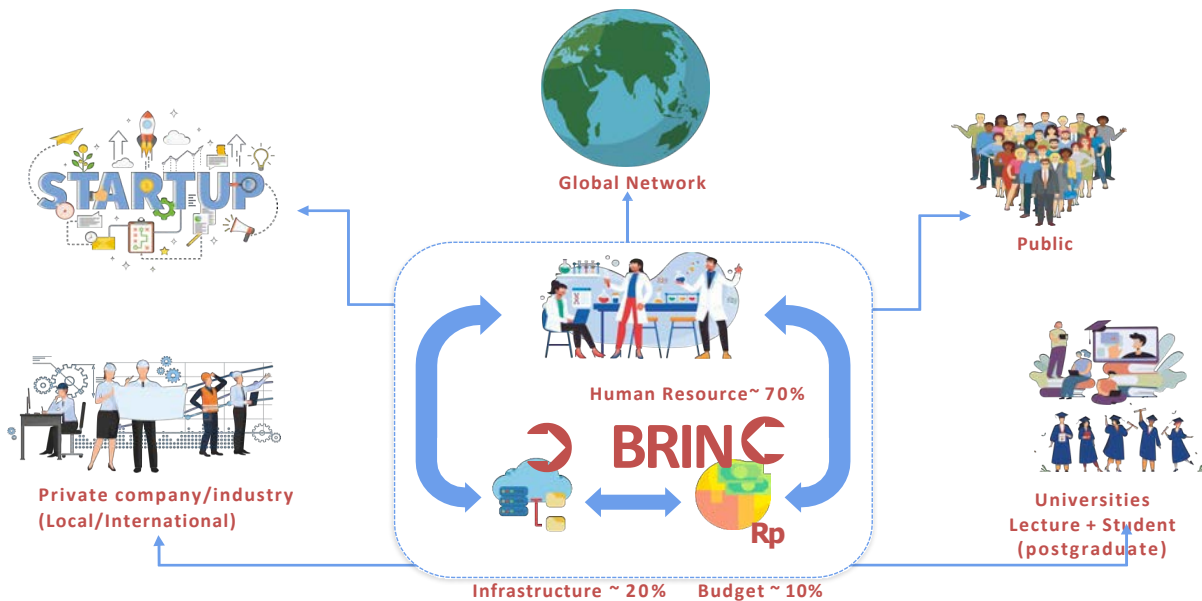
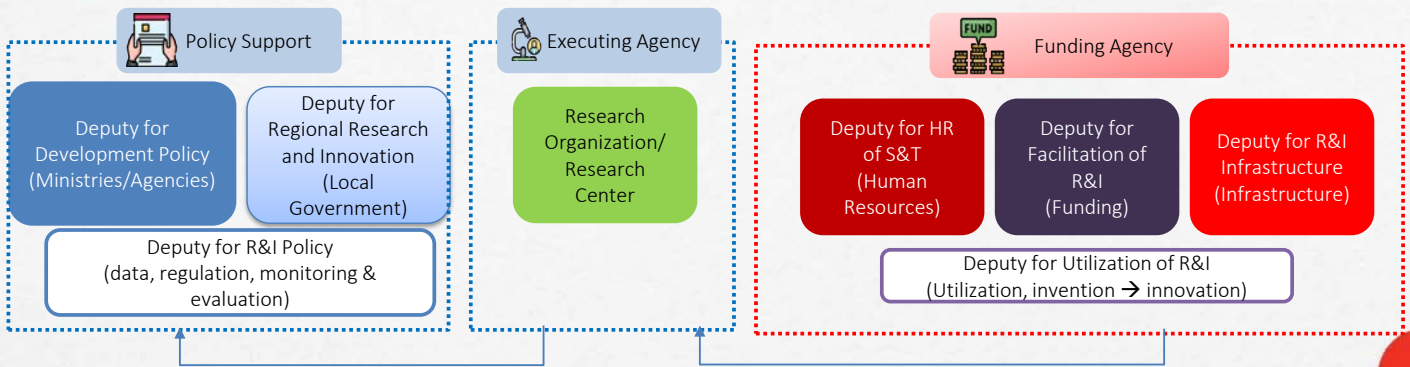
PRESIDEN REPUBLIK INDONESIA

PERATURAN PRESIDEN REPUBLIK INDONESIA  
NOMOR 78 TAHUN 2021  
TENTANG  
BADAN RISET DAN INOVASI NASIONAL  
DENGAN RAHMAT TUHAN YANG MAHA ESA  
PRESIDEN REPUBLIK INDONESIA,



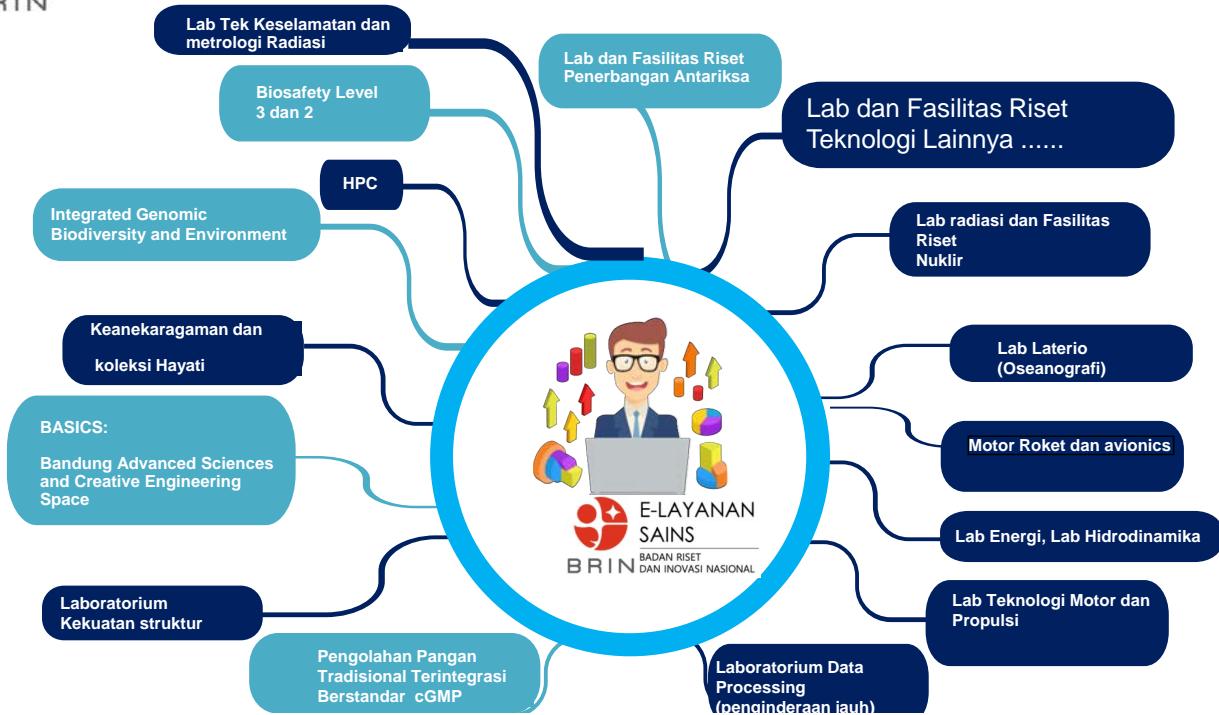


1. Supporting evidence/science-based development policies: Ministries/Agencies and Local Government
2. Strengthening the national research and innovation ecosystem as a funding agency
3. As the executing agency for research and innovation activities

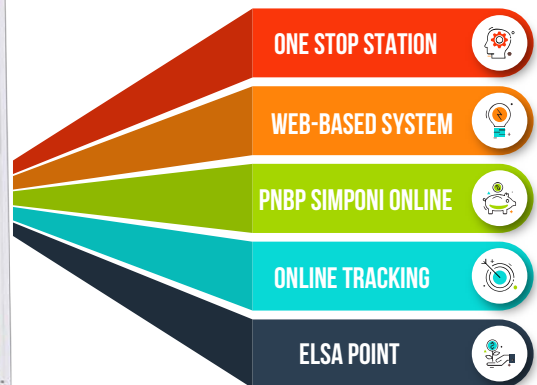
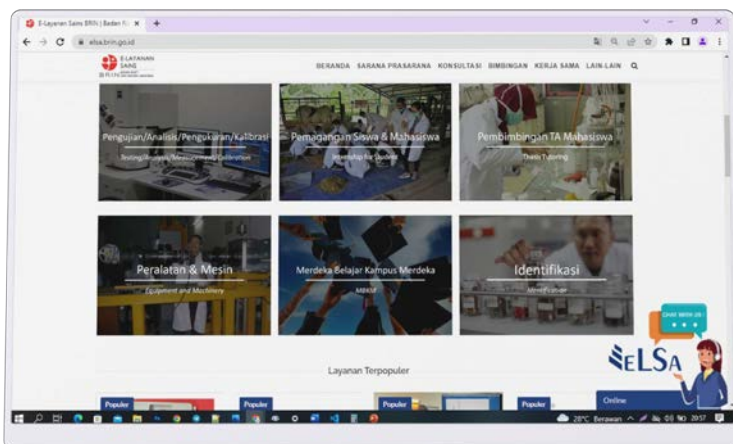




## PLATFORM TERBUKA INFRASTRUKTUR RISET



## ELSA: INTEGRASI LAYANAN SAINS - LAB DAN FASILITAS RISET BRIN



<https://elsa.brin.go.id/>

<https://www.youtube.com/watch?v=YFxxCtW6uX8>



## ALUR PROSES LAYANAN



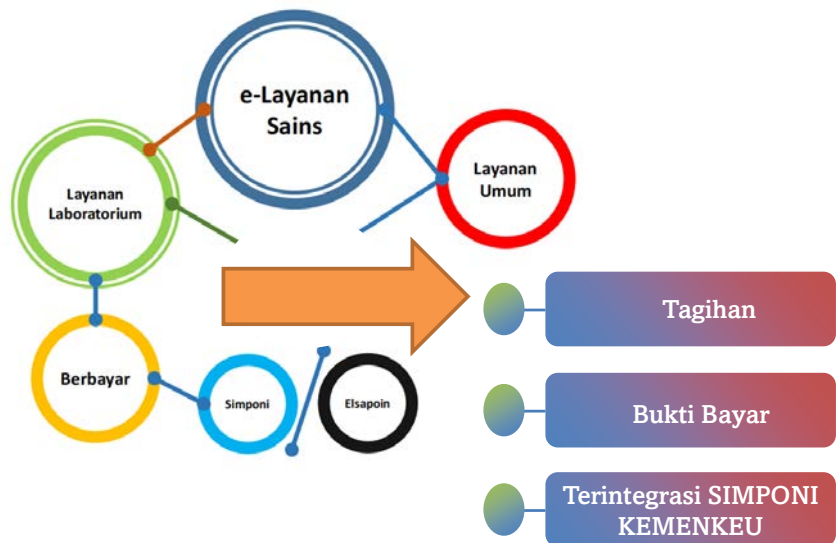
## MEKANISME PEMBAYARAN

PERATURAN MENTERI KEUANGAN REPUBLIK INDONESIA  
NOMOR 210/PMK.02/2021  
TENTANG  
JENIS DAN TARIF ATAS JENIS PENERIMAAN NEGARA BUKAN PAJAK  
KEBUTUHAN MENDESAK YANG BERLAKU PADA BADAN RISET DAN INOVASI  
NASIONAL

DENGAN RAHMAT TUHAN YANG MAHA ESA

MENTERI KEUANGAN REPUBLIK INDONESIA,

- Menimbang :
- bahwa untuk melaksanakan ketentuan Pasal 70 dan Pasal 72 Peraturan Presiden Nomor 78 Tahun 2021 tentang Badan Riset dan Inovasi Nasional, perlu menetapkan jenis dan tarif atas jenis penerimaan negara bukan pajak yang berlaku pada Badan Riset dan Inovasi Nasional dan merupakan pengalihan tugas, fungsi dan kewenangan dari Lembaga Ilmu Pengetahuan Indonesia, Badan Pengkajian dan Penerapan Teknologi, Badan Tenaga Nuklir Nasional, Lembaga Penerbangan dan Antariksa Nasional, dan Kementerian Riset dan Teknologi/Badan Riset dan Inovasi Nasional;
  - bahwa berdasarkan ketentuan Pasal 8 ayat (1) dan ayat (2) huruf b Peraturan Pemerintah Nomor 69 Tahun 2020 tentang Tata Cara Penetapan Tarif atas Jenis Penerimaan Negara Bukan Pajak, dalam hal tertentu jenis penerimaan negara bukan pajak yang merupakan

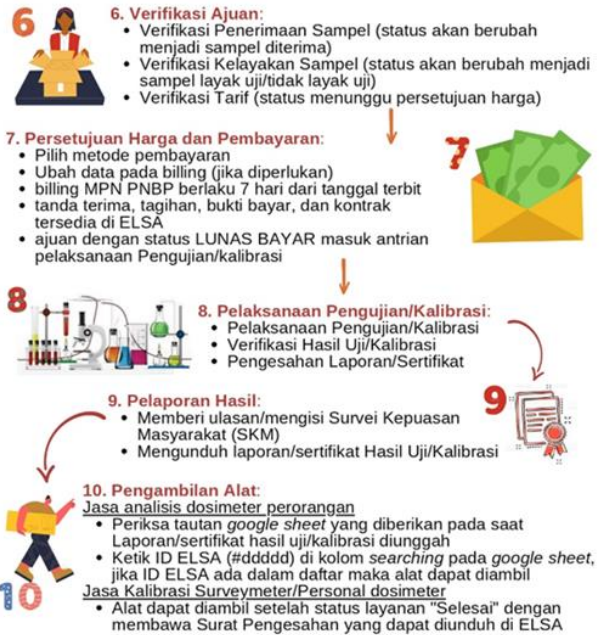
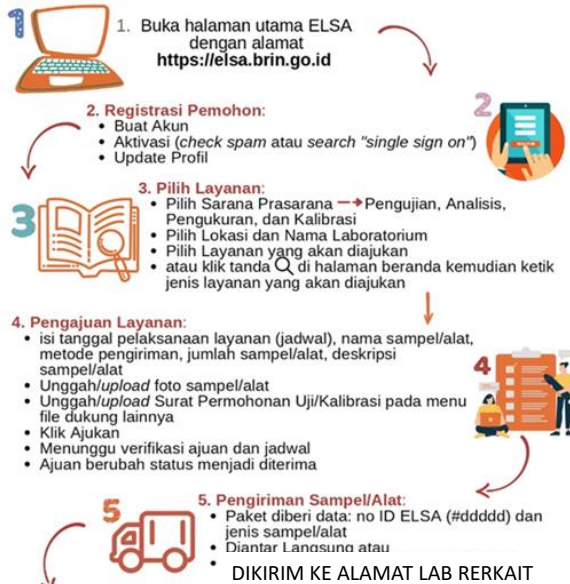


## LAYANAN LABORATORIUM: UMUM/ EXTERNAL BRIN

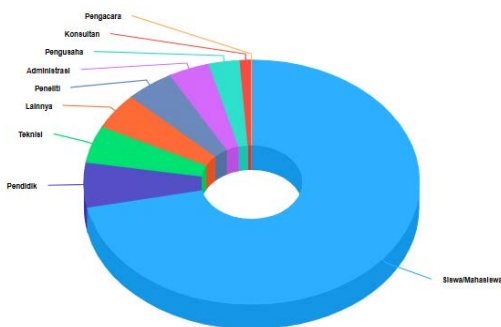


### PENGAJUAN LAYANAN MELALUI APLIKASI ELSA (E-LAYANAN SAINS)

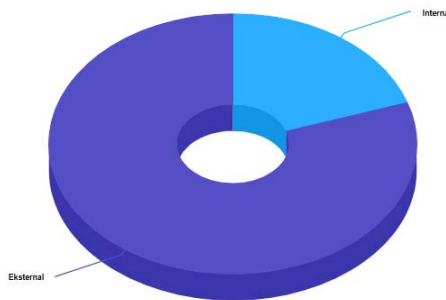
#INOVASI INDONESIA



## PENGGUNA E - Layanan Sains



## Pengguna Layanan Bertransaksi



Category	Jumlah Pengguna
Siswa/Mahasiswa	25897
Pendidik	2143
Teknis	1767
Lainnya	1724
Peneliti	1674
Administrasi	1426
Pengusaha	1084
Konsultan	394
Pengacara	3

Pengguna Layanan Bertransaksi  
 Category Jumlah Pengguna  
 Internal 2737  
 Eksternal 11039


Nilai IKM : 80.19  
 Jumlah Responden : 22835 Responden



## INFORMASI TENTANG ELSAA

- 1. Kunjungi laman <https://elsa.brin.go.id> untuk mendapatkan informasi lengkap mengenai layanan yang ada di BRIN.
- 2. Apa itu ELSA BRIN (E-Layanan Sains) : <https://www.youtube.com/watch?v=3qPGIEb5Gaw>
- 3. Panduan E-Layanan Sains untuk Sarana Prasarana Pengujian, Analisis, Pengukuran & Kalibrasi : <https://www.youtube.com/watch?v=YFvkCtW6uX8&t=30s>

## PENGADUAN



Pengguna - Pengajuan Pengaduan #1

**PENGADUAN PENGGUNA**

Daftar Pengaduan

**Buat Pengaduan**

#	Nama Layanan	Satuan Kerja	Tanggal Pengaduan	Status	Aksi
50	test mbom ledun 03-11-2021	Pusat Riset Konservasi Tumbuhan, Kebun Raya dan Kehutanan	28-06-2022 16:41:12	Sudah Dikonfirmasi	Detail
49	Layanan Insitu Coba coba 08-02-2022	Pusat Riset Teknologi Kineslamatan, Metrologi dan Mutu Nuklir	28-06-2022 16:36:28	Sudah Dikonfirmasi	Detail

**Pengaduan Baru:**

1. Pilih menu Pengaduan dari menu Pusat Bantuan
2. Klik tombol "Buat Pengaduan"

# BRIN Research Laboratory and Facilities as an Open Research Platform +/-141 Laboratories

ADVANCE  
CHARACTERIZATI  
ON LABORATORY

RADIATION  
LABORATORY AND  
NUCLEAR  
FACILITIES

BSL3  
LABORATORY –  
LIFE SCIENCE

SPECIFIC  
TESTING  
LABORATORY



**Biosafety Laboratory Facilities:**

Total area : 100 m2

**BSL-3 Lab**

- Suite 1 : Risk Group 3 (RG3) for bacterial and virus
- Suite 2 : Biological agent RG3 for infected cell culture

**Clean Room**

- Clean Room 1 for drugs development
- Clean Room 2 for food

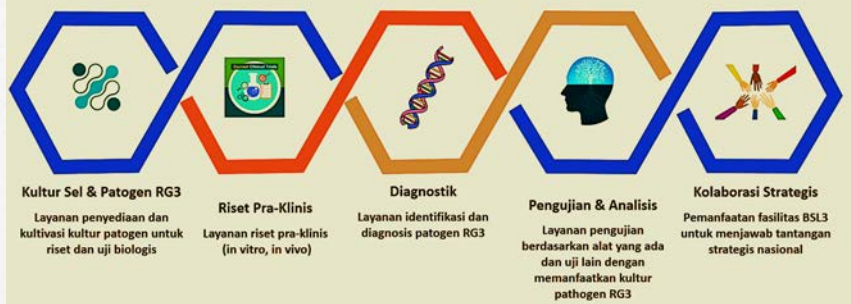


**Clean room 1**



**Clean room 2**

**Services**



**Clean Room 1**



**Drugs Development**

**Clean Room 2**



**Food**

**Equipment**

Autoclave pH Meter, vortex, hot plate, analytical balance, technical balance, waterbath, water purifier, PCR hood, centrifuge incubator, shaker, sonicator probe

PCR, Real Time PCR, Gel Imager, UV Transilluminator, PCR Hood, Electrophoresis

AKTA Avant, Multimode Reader, MAGPIX, Gel Dryer

BSC class II, Flowcytometer, Inverted microscope, Automatic cell counter, Fluorescent cell imager, Incubator CO2, Fermentor

Refrigerator, Freezer -20, Freezer-80

**Equipment**

Autoclave pH Meter, vortex, hot plate, analytical balance, technical balance, mixer mill, waterbath, centrifuge, incubator, shaker

Shaker Incubator, Fermentor, Centrifuge

Freeze dryer, spray dryer

PCR, DNA electrophoresis, Electroporator, Protein Electrophoresis, Gel Imager (LiCOR), Transblot turbo, SNAPid

Refrigerator, Freezer -20, Freezer-80

**BSL-2 Container**

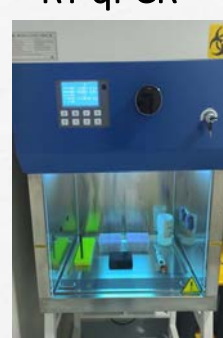
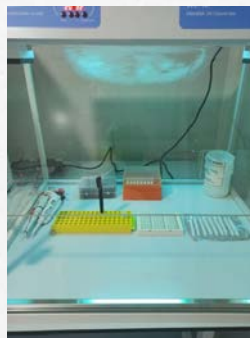


**Equipments**

Automatic extractor, BSC, freezer -30 °C, centrifuge, RT-PCR



RT qPCR



© BADAN RISET DAN INOVASI NASIONAL



**ABSL 2 & ABSL 3 NHP**



**ABSL-2 NHP (Non Human Primate)**

Facilities: changing room, preparation room, quarantine room, isolation room, operation room, animal recovery room, animal keeping room, necropsy room

**ABSL-3 NHP (Non Human Primate)**

Facilities: changing room, shower room, preparation room, animal keeping and treatment room, necropsy room, , Double Door Autoclave, cage washing/cleaning room

**Other Facilities:** 98 cages for NHP study, Effluent Decontamination System (EDS) for waste and water treatment, Incinerator

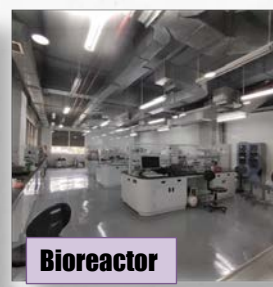
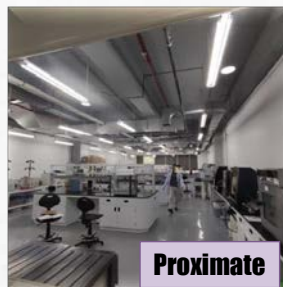
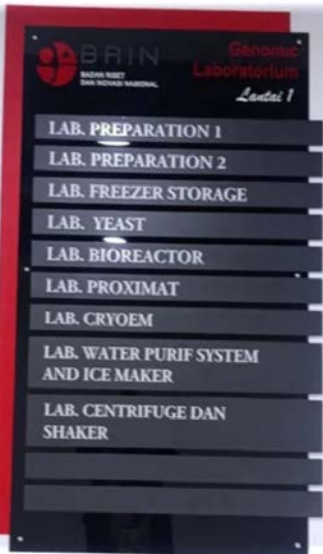
**Certified by Singapore MoH in 2023**



- ✓ **1<sup>st</sup> Floor** : water purification, sterilization (autoclave), separation (centrifuge), microbiology (yeast), bioreactor, proximate analysis & CryoEM
- ✓ **2<sup>nd</sup> Floor** : Molecular and Protein
- ✓ **3<sup>rd</sup> Floor** : Cell Culture (mamalian and plant)
- ✓ **4<sup>rd</sup> Floor** : Sequencing and special Laboratory



© BADAN RISET DAN INOVASI NASIONAL



© BADAN RISET DAN INOVASI NASIONAL



**AKTA**



**GCMS**



- LAB. DNA EXTRACTION 2  
 LAB. DNA EXTRACTION 3  
 LAB. PCR  
 LAB. RT-PCR/DDPCR  
 LAB. AKTA AND PROTEIN  
 LAB. SPECTROPHOTOMETER  
 LAB. HPLC  
 LAB. AAS/MPAES  
 LAB. GCMS/LCMS  
 LAB. IRMS  
 LAB. ELECTROPHORETIC FOR DNA  
 LAB. MOLECULAR PREPARATION  
 LAB. RECOMBINANT PROTEIN PREPARATION (MICROBE)



**R. PCR**



**SPEKTROFOTOMETER**



**IRMS**



**Rt PCR**



**Droplet PCR**



**Plant tissue culture**



- LAB. CELL CULTURE 1  
 LAB. CELL CULTURE 2  
 LAB. STEM CELL  
 LAB. PLANT CULTURE (GMO)  
 LAB. QTOF/HRMS  
 LAB. SYSMEX  
 LAB. FTIR  
 LAB. CYTOGENETIC  
 LAB. PLANT CULTURE (NON GMO)  
 LAB. MICROSCOPE FLUORESCENCE  
 LAB. MICROSCOPE INVERTED  
 LAB. MICROSCOPE COMMUNAL



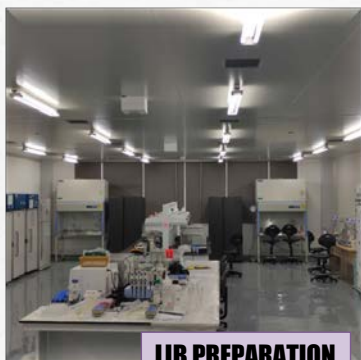
**QTOF**



**SYSMEX**



**Cell culture**



LIB PREPARATION



SEQUENCER



QTOF

IMSCOPE

- GCMS QTOF
- HPLC MPAES
- AAS LCMS-MS
- LCMS extractor
- IRMS

CHEMICAL CHARACTERIZATION

AAS



HPLC



GCMS



IRMS



FTIR





**Extractor**      **Quantification**

**Liquid handling**



**PCR**



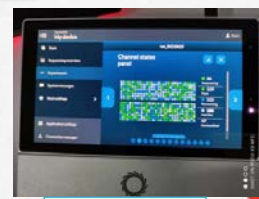
**Gel Doc**



**RT-PCR ABI**



**Droplet PCR**



**Sequencing**



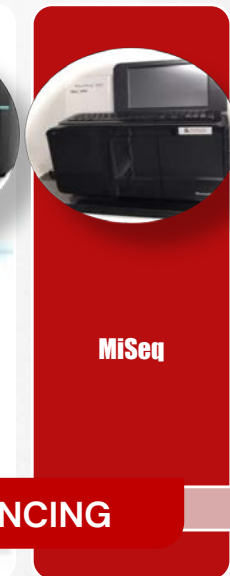
**PromethION 24**



**NovaSeq6000**



**NextSeq550**



**MiSeq**



**Sanger ABI  
3500XL  
3500HD**

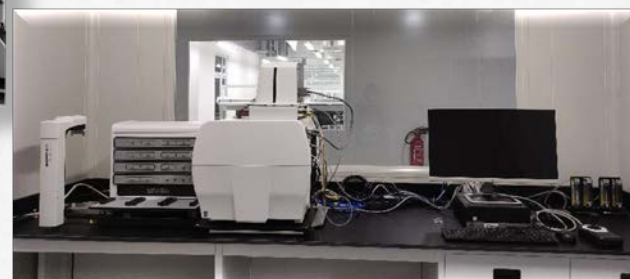
**MOLECULAR CHARACTERISATION : SEQUENCING**

**DATABASE**

**HIGH PERFORMANCE COMPUTER**



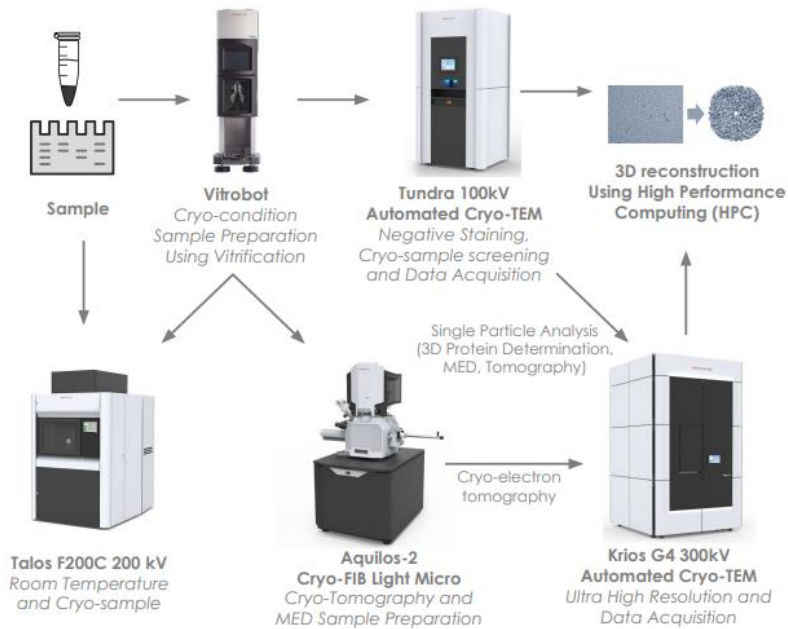
© BADAN RISET DAN INOVASI NASIONAL



© BADAN RISET DAN INOVASI NASIONAL



**Facilities**  
Complete Cryo-EM workflows for Structural and Cell Biology



- Line 1: Mammalian Cell Based
- Line 2: Microbial (Yeast) Cell Based
- Vaccine Production (Phase 1 and Phase 2)
- Biological Based Products (antigen, antibody)

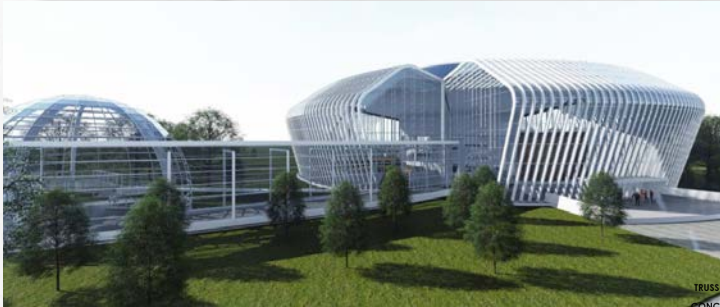
**GMP Facility**



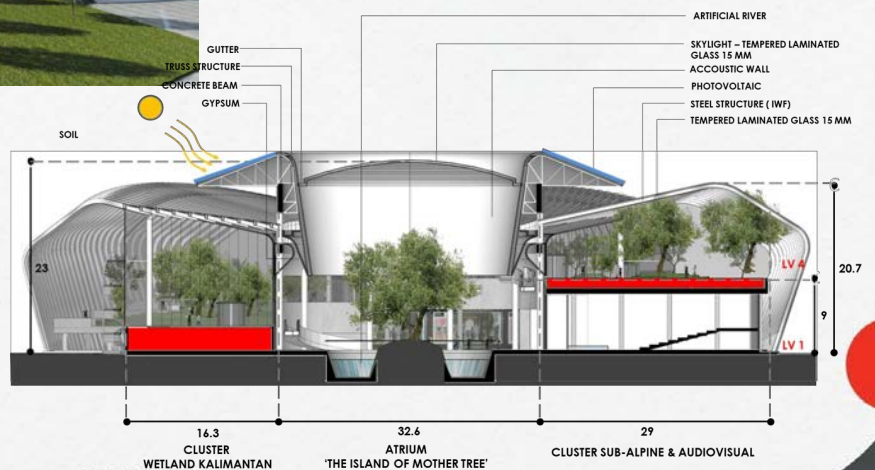


**Biological Collection : Herbarium, Zoological specimens, Xylarium, Seed Bank, Microbial (Indonesian Culture Collection; InaCC)**

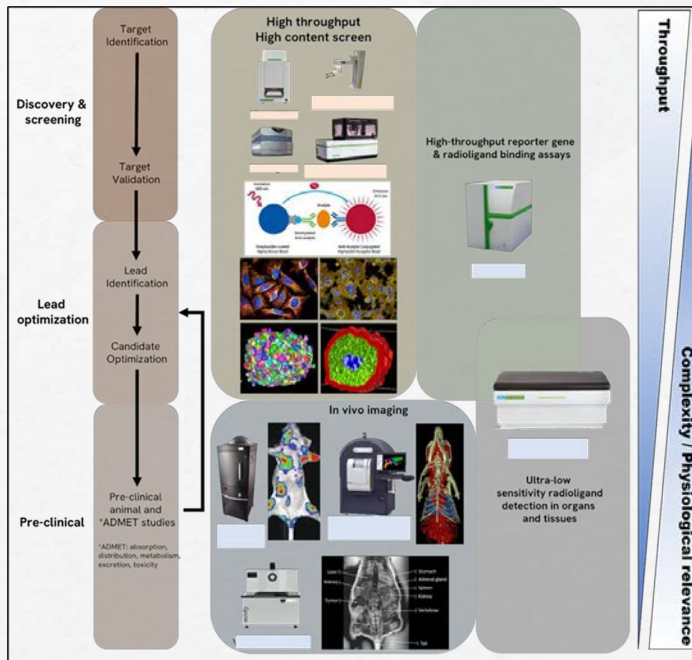
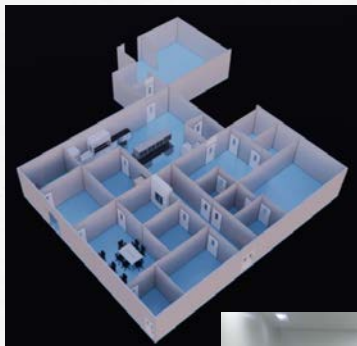
**Archeological collection**



- Display Green House
- Research Green House



- In Vitro and In Vivo Imaging (IVIS)
- Ancient DNA Laboratory
- Infectious Laboratory



© BADAN RISET DAN INOVASI NASIONAL

Combustion Engines and Propulsion



RESEARCH INFRASTRUCTURE (ENGINEERING):  
SCIENCE TECHNOLOGY PARK: SERPONG

Strength of Structure Technology

STATIC & DYNAMICS

Failure Analysis



Fuel Technology



Irradiation



Aerodynamics



- Direct Ra
- DIGITAL DE
- Comput
- HR-CR-35-N
- Xray Ma
- NOVA au
- GE Film
- Darkroom
- Ultrason
- Magneti

Indonesian Low Speed Tunnel (ILST)  
Terowongan pengujian pesawat. Kecepatan maksimum pada seksi uji dalam keadaan kosong adalah 110 m/s. Suplai udara bertekanan 60 bar yang dipakai untuk pengujian power-on. Fasilitas ground board untuk simulasi take-off dan landing.



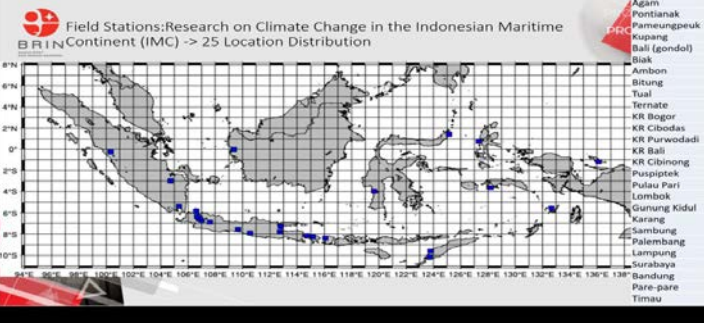
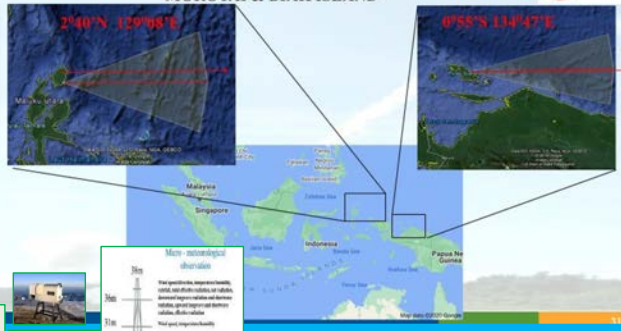
### NATIONAL FACILITIES

- Microsatellite development & operation
- Remote sensing satellite application



## RESEARCH INFRASTRUCTURE: SATELLITE, SPACE & CLIMATE-CHANGE

### POTENTIAL LOCATION FOR INTERNATIONAL SPAEPORT : MOROTAI & BIAK ISLAND



**BRIN**  
BADAN RISET DAN INOVASI NASIONAL

**Thank You**  
**TERIMA KASIH**



# KOICA-ICAB 2023 ANNUAL REPORT AND PLAN FOR 2024



***Prof. Ho Sang KANG***

KOICA-ICAB Project Manager,  
Seoul National University

# KOICA-ICAB Plan for 2024

15 December 2023

Project Manager: Prof. Ho Sang KANG



## 2023 Annual Report



# Achievements of 1<sup>st</sup> year (2023)

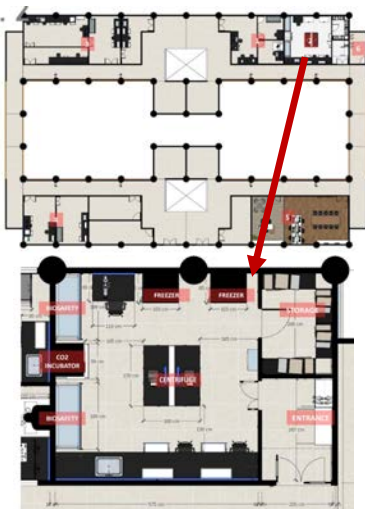
- **Remodeling** of ARLab and Multi-purpose room



Advanced Research Laboratory (ARLab), IPB University  
(established **Dec 2018**)

# Achievements of 1<sup>st</sup> year (2023)

- **Remodeling** of ARLab and Multi-purpose room



Legend:  
1. Nano Image Lab  
2. Cell Culture Lab  
3. Organic Metabolomic Lab  
4. Inorganic Analysis Lab  
5. Office  
6. Gas House



In discussion between  
**KOICA Indonesia  
Office and IPB  
University**  
(August 2023~)

## Achievements of 1<sup>st</sup> year (2023)

- **Equipment** for Center for Agriculture and Bioscience
- **Cell culture, Nano-Image, Organic & Inorganic** Laboratories  
: PCR, FTIR+NIR Spectrometer, GC-MS/MS, ICP-MS/MS, ion Chromatography system, CO2 Incubator, FE-SEM, 2 Vehicles



## Achievements of 1<sup>st</sup> year (2023)

- **Equipment** for Center for Agriculture and Bioscience



**Lab safety and facilities** should be set up before equipment provision (**Remodeling**)

# Agenda for Discussion

- Inter-University Center for Excellence for **Food Security**
- AR Lab Remodelling & Multipurpose Room (MoA or bidding by KOICA)  
*Free tax procedure: IPB can ask for a waived tax to MoECRT*
- Mid-term training
- Ph.D candidates (4 persons)
- Short-Term Training (May 2024)
- Equipment procurement (Korean equipment)
- Vehicle procurement (tax, insurance, driver, maintenance, term of conditions)

# Discussion

## Project on I FOOD SECURITY

- Food Security with about
- Contents of
- **Need discussion**
- & increase

### Budget Planning

No	Cost Component		Year 2024	Year 2025	Year 2026
1	Equipment	<b>11.8M\$</b>	182,614,770,000	190,842,000,000	192,550,000,000
2	Civil works (renovation)	<b>0.6M\$</b>	9,894,230,000	5,113,000,000	2,800,000,000
3	Nondegree Training and Certification for Researchers or Technician	<b>0.17M\$</b>	2,700,000,000	1,100,000,000	640,000,000
4	Workshop or Seminar	<b>0.19M\$</b>	2,988,000,000	1,775,000,000	2,775,000,000
5	Collaboration or External Linkages		2,025,000,000	1,170,000,000	1,235,000,000
<b>Total Proposed Budget of IUCFE (IDR.)</b>			<b>200,000,000,000</b>	<b>200,000,000,000</b>	<b>200,000,000,000</b>
6	Research Funding or Counterpart Funding Relevant to Priority Area/ IUCFE				
<b>Percentage Research Funding to Total Budget of IUCFE</b>			<b>10 %</b>	<b>15 %</b>	<b>30 %</b>

## Plan for the 2<sup>nd</sup> Year 2024

### • Remodeling & Equipment

- Remodeling of **ARLab** and **Multi-purpose Room (ICAB Center)**
- MoA between IPB and KOICA (IPB should pay tax)
- MoECRT should do the tax exemption

#### MoECRT:

"to ensure the **exemption of value added tax (VAT)** on the renovation costs and the **exemption of import duties on equipment** according to the Indonesia laws and regulations"



Record of Discussion

## Plan for the 2<sup>nd</sup> Year 2024

### • Remodeling & Equipment

- Remodeling of **ARLab** and **Multi-purpose Room (ICAB Center)**
- MoECRT should do the tax exemption

#### KOICA:

"to remodel the ARLab and Multi-purpose Room until end of 2024 by KOICA bidding"  
"design for **2<sup>nd</sup> Floor for KOICA** and **1, 3 floors for integrated laboratories**"



Record of Discussion

## Plan for the 2<sup>nd</sup> Year 2024

- **Ph.D. candidates' selection**

- 4 Ph.D. candidates will be selected in January 2024
- 2 Ph.D. candidates will start the first semester in March 2024

**KOICA-ICAB:**

- Faculty members will have more priority
- Excellent Young Researchers who make a contract to be faculty member can apply
- Select 12 candidates (X3) and can be supported by KOICA or other scholarship (e.g. LPDP, SNU President Scholarship)

## Plan for the 2<sup>nd</sup> Year 2024

- **2 times Mid-term Training Program**

- 2<sup>nd</sup> Mid-term training : 15 Feb - 15 Jun 2024 (4 persons 4 Months)
- 3<sup>rd</sup> Mid-term training : 1 Aug - 30 Nov 2024 (4 persons 4 Months)

**KOICA-ICAB:**

- 2 women and 2 men
- Common and Specific Program
- GBST + NICEM + Companies + Research Institutes
- Analysis with Samples and Publication
- Senior Engineers for Maintenance

## Plan for the 2<sup>nd</sup> Year 2024

- **2 times Mid-term Training Program**

- 2<sup>nd</sup> Mid-term training : 15 Feb - 15 Jun 2024 (4 persons 4 Months)
- What's the objectives of training?



## Plan for the 2<sup>nd</sup> Year 2024

- **2<sup>nd</sup> Short-term Training**

- Tentatively, 21 - 31 May 2024
- Trainees: IPB(VR2, ICO, ARLab, Integrated Lab., LAI), MoECRT, BRIN)
- **3<sup>rd</sup> Green Bio Science Forum** (Industry-Academy Cooperation)  
(Topics? Companies?)

## Plan for the 2<sup>nd</sup> Year 2024

- **3<sup>rd</sup> On-Site Capacity Building Workshop**
  - **Equipment** Workshop in collaboration with **BRIN** and **MoECRT**
  - Networking and Cooperation with **IKOLAN, PTN-BH**

## Plan for the 2<sup>nd</sup> Year 2024

- **UNTL MS & Ph.D. Program**
  - **Research Grand** (100M IDR for Ph.D. and 80M IDR for MS)
  - Joint Project (e.g. AFoCO)
  - Visit to UNTL

- **iLead (LKPE) – 30Rectors’ Study Tour to Korea**
- **Asia University Forum**
- **NIPA (National IP Industry Promotion Agency) Cooperation (Big Data, AI)**

# PANEL DISCUSSION

Moderator: *Prof. Iskandar Z. Siregar, Prof. Anas Miftah Fauzi*

*Dr. Irdika Mansur*

*Dr. Andriansjah Rukmana*

*Ms. Tri Rahayu*

*Dr. Domingos Gomez*

*Dr. Silva Abraham*

*Dr. Eva Anggraini*

# PANEL DISCUSSION

# 04



Chair (Prof. Iskandar Z. Siregar) of the Panel Discussion and the Panelists



## 2ND KOICA-ICAB ON-SITE CAPACITY BUILDING WORKSHOP

14 December (Thu) 2023, 08:00~16:00  
*IPB University International Convention Center,  
Botany Square Building, Bogor, Indonesia*

### ***Panel Discussion 1***

**Chair:** Prof. Iskandar Siregar (Vice-Rector for Global Connectivity, Collaboration and Alumni IPB University)

1. *Dr. Irdika Mansur (Head of Advanced Research Laboratory IPB University)*
2. *Dr. Andriansjah Rukmana (Head of Sub-Directorate for Research Planning and Development Integrated Laboratory and Research Center of UI)*
3. *Ms. Tri Rahayu (Integrated Laboratory and Research Center/LPPT UGM )*

### ***Panel Discussion 2***

**Chair:** Prof. Anas Miftah Fauzi (International Research Institution of Advanced Technology)

1. *Dr. Domingos Gomez (Faculty of Agriculture of National University of Timor Lorosa'e (UNTL))*
2. *Dr. Silva Abraham (National Research and Innovation Agency)*
3. *Dr. Eva Anggraini (Director of Global Connectivity, IPB University)*

## Panel Discussion 1

**Prof. Iskandar Siregar (Vice-Rector, IPB University)** started off by giving thanks to former presenters; Prof. Sanjay (NUS)'s introduction to international cooperation in the environmental field, Prof. Ik-young Choi's presentation of his experience in establishing and continuous operation of a joint equipment center in Pyeongchang campus and National Instrumentation Center for Environmental Management (NICEM) at Seoul National University (SNU), Dr. Silva's introduction to research facilities and equipment platform (ELSA) at BRIN, Prof. Ho Sang Kang's presentation of 2023 achievements and 2024 plans of ICAB project, supported by KOICA. Prof. Iskandar Siregar explained that through the Inter-University Center for Excellence project in Indonesia, the Ministry of Education, Culture, Research and Technology is also trying to strengthen university capabilities by supporting food security, energy availability, health automation, disaster risk reduction, conservation and green economy, and research centers in the fields of IPB, UI, UGM, ITB, and Airlangga University. Ministry of Education, Culture, Research and Technology (MoECRT) has granted funds to Revitalization of 21 Autonomous University (PTN-BH) in Indonesia through the Inter-University Center for Excellence (IUCE). IPB along with the top 5 universities in Indonesia (UI, UGM, ITB and Universitas Airlangga) will develop the IUCE related to the climate change. He emphasized that it will be very important for IPB University to cooperate with other universities in the future as it is in charge of the Inter University Center of Excellence for Food Security project. Then, Prof. Iskandar Siregar suggested to first listen to the opinion of Dr. Irdika Mansur, director of ARLab at IPB University.

**Dr. Irdika Mansur (Director of ARLab, IPB University)** explained that IPB has been granted 190 billion IDR for 2024, in which more than 80% of it should be allocated for equipment procurement, we already signed the contract with the MoECRT for the 1st year to be implemented in 2024. However, he added that human resources such as technicians and operators and are still lacking. He mentioned that during the KOICA-ICAB short-term training, IPB-UI-UGM-SNU decided to establish a network between joint organizations, and that this kind of network will allow the increased utilization of equipment at a reduced user fee.

Dr. Irdika Mansur finished by revealing his hope for the network to be established soon and that Seoul National University NICEM's experiences and experts to be able to help Indonesian professors and researchers to strengthen their capabilities through the KOICA-ICAB project.

**Dr. Andriansjah Rukmana (Head of Sub-Directorate for Research Planning and Development Integrated Laboratory and Research Center, University Indonesia)** presented that University Indonesia (UI) plans to create a laboratory within the building currently in construction process that is supported by Woongjin and ADB support. Dr. Andriansjah Rukmana expressed her concern that UI will also be supported by the Inter University Center of Excellence project to be provided with equipment but lacks professional manpower. She further mentioned that UI also hopes to attend capacity building and training projects such as KOICA-ICAB project's.

**Ms. Tri Rahayu (Researcher, UGM Integrated Laboratory and Research Center)** introduced the situation in UGM Integrated Laboratory and Research Center that UGM has recently installed a number of new equipment along with the construction of LPPT buildings. She added that UGM is also interested in professional manpower that will operate and manage advanced analysis equipment smoothly, and therefore hopes to promote cooperation with BRIN and other universities in the future. She explained that UGM also constructed new college buildings, made high-tech equipment purchases, and held training projects supported by Japan International Cooperation Agency (JICA) project, and said that she hopes to cooperate with KOICA-ICAB project in the future as well.

**Prof. Iskandar Siregar (Vice-Rector, IPB University)** summarized the session by emphasizing that sustainable financing is necessary for the continuous operation of university joint equipment personnel. He added that it is necessary to establish IKOLAN soon and further promote cooperation with 21 corporate universities, PTN-BH universities. Also, he pointed out that it is necessary to make efforts to generate stable profits through industry-academia cooperation, etc.

## Panel Discussion 2

**Prof. Anas Miftah Fauzi (International Research Institution of Advanced Technology)** opened the session by introducing the 3 panels of the session. She explained that KOICA-ICAB is a project whose main contents are not only renovating ARLab buildings and providing equipment at IPB University, but also cultivating human resources and strengthening their capabilities through training programs and capacity building workshops. She further mentioned the contents of KOICA-ICAB project and its Ph.D. programs at SNU, UNTL's Ph.D. program at IPB University, etc. In particular, she pointed out that the Mid-Term training program of inviting trainees or four months in SNU was excellent. She reasoned that the Mid-term training program not only provides training to utilize equipment, but also allowed the trainees to develop joint research and industry-academic cooperation projects through participation in conferences and visits to related research institutions. She said that SNU, IPB University, and East Timor National University is currently working on triangular cooperation as a part of the KOICA-ICAB project, and suggested to hear about it from Dr. Domingos Gomez.

**Dr. Domingos Gomez (Faculty of Agriculture of National University of Timor Lorosa'e (UNTL))** presented the Challenges Faced by the Forestry Program Study at UNTL. He explained that the Forestry Department at UNTL recognizes the importance of preserving and utilizing the country's rich forest resources in a sustainable manner. He mentioned that, in line with the vision set by the Minister of High Education, Science, and Culture in Timor-Leste, the Forestry Department clustered to one of the priority areas of study program in UNTL. He added that a maximum intake of 80 to 100 students for the first enrollment will allow the Forestry Department at UNTL to maintain a conducive learning environment that promotes interactive discussions, hands-on fieldwork, and research opportunities. Dr. Domingos Gomez pointed out several key components of a comprehensive forestry education plan in UNTL: Curriculum development and enhancement / Capacity building and training programs / Institutional strengthening and collaboration (e.g. Promoting collaboration between academia, government, and industry) / Outreach and community engagement.

He emphasized that a comprehensive and well-designed forestry education plan is crucial for restoring ecosystems and conserving biodiversity in Timor-Leste. He said that by addressing the challenges and limitations in the current system, tailoring education programs to the specific needs of the country, and fostering collaboration among stakeholders, forestry education can play a vital role in achieving sustainable development and ensuring the long-term health and resilience of forest ecosystems.

**Dr. Silva Abraham (National Research and Innovation Agency)** explained how KOICA-ICAB project does not simply aim for joint research itself but rather it is a cooperative project that provides a foundation, such as infrastructure, facilities, and equipment, to create an environment where proper research can be conducted. Therefore, as a result of KOICA-ICAB project, she said that it is expected that the quality of research will rapidly increase in joint equipment centers in universities, BRIN, and other research institutions. In particular, she expressed her hope for BRIN to be able to attend the Ph.D. program at SNU, Short-term and Mid-term training program, and industry-academia cooperation projects in the future.

**Dr. Eva Anggraini (Director of Global Connectivity, IPB University)** expressed her joy to see diverse achievements of the KOICA-ICAB project only in its first year. She pointed out that MoECRT is also highly supportive of international cooperation, and IPB University is also promoting cooperation with foreign universities including SNU. Especially, IPB University will hold an Asia University Forum with SNU in 2024, she added. She revealed her hope for cooperation with various foreign universities such as NUS to be further enhanced through KOICA-ICAB project.

**Prof. Anas Miftah Fauzi (International Research Institution of Advanced Technology)** mentioned that IPB University reorganized its 24 existing research centers into 5 International Research Institutions of advanced technology, food, nutrition and health, environment and climate change, maritime, marine and fisheries, social, economic and area development. He highlighted that supporting research facilities and equipment is important to enable international level research. He asked for continued support from KOICA and SNU so that cooperation with various research institutes within BRIN and international cooperation with countries such as Korea and East Timor can take place more actively in the future.



# TECHNICAL SESSION

Moderator: *Prof. Ho Sang KANG*

*Prof. Agus Buono*

*Dr. Leti Sundawati*

*Dr. Yudi Chadirin*

*Dr. Anisa Rahma*

*Dr. Wulan Tri Wahyuni*

*Dr. Mawar Subangkit*

# CAPACITY BUILDING FOR IPB UNIVERSITY AND UNTL LECTURERS



***Prof. Agus Buono***

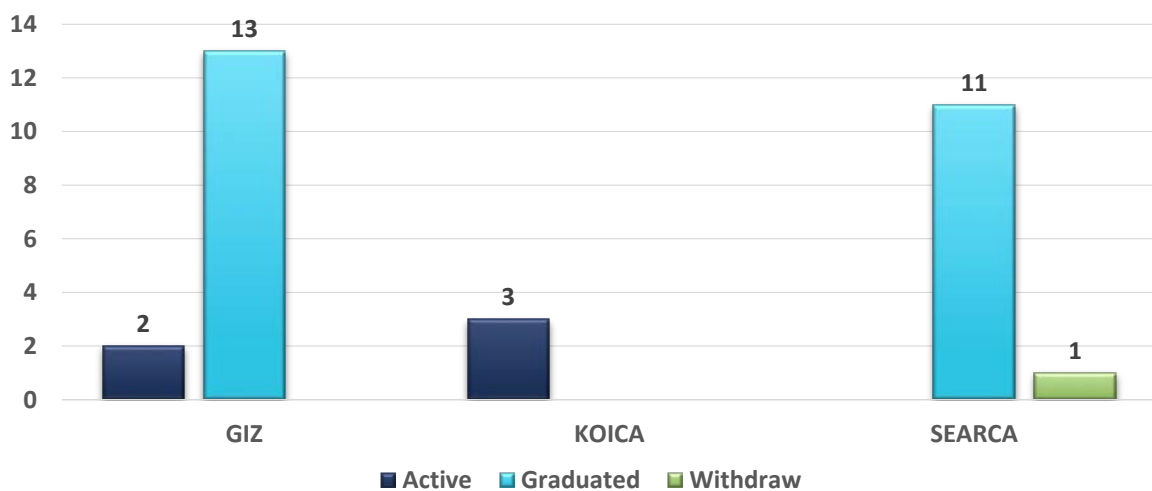
Vice-Dean,  
Graduate School of IPB University

# CAPACITY BUILDING FOR THE CENTER FOR AGRICULTURE AND BIOSCIENCE OF IPB UNIVERSITY IN INDONESIA

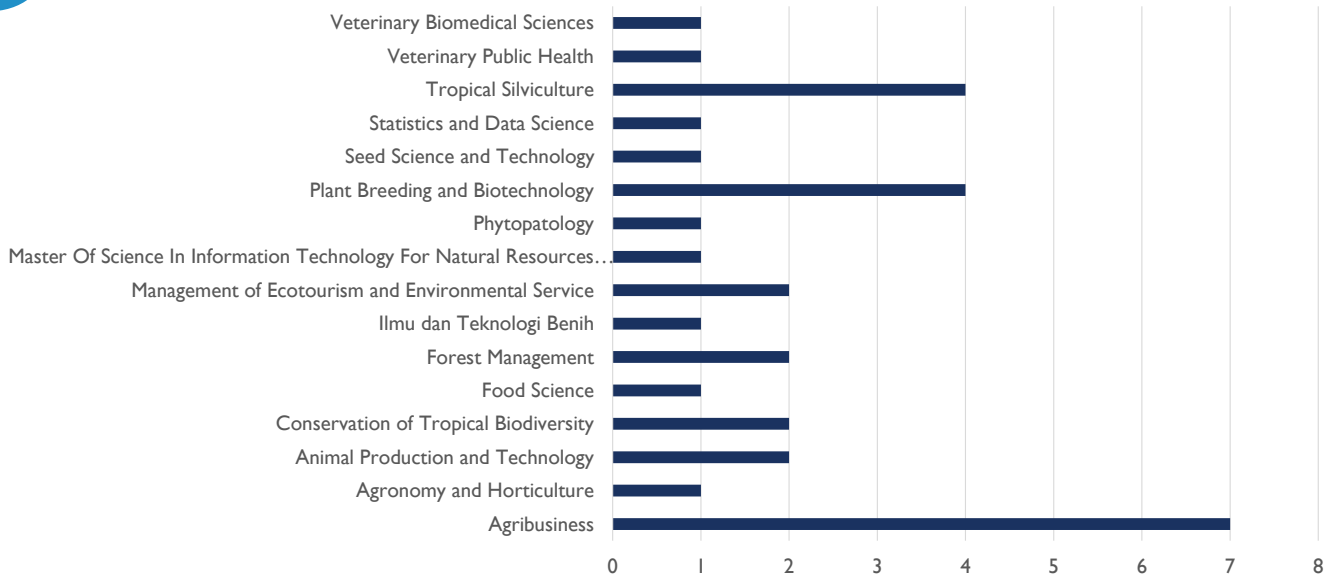
(KOICA-IPB-MOECRT)

IPB University *Timor Leste Students in IPB University*

Timor Leste Students in IPB University and its status since 2012 - 2023



# Timor Leste Students Study Programs



# Timor Leste Students in IPB University



## Timor Leste Students in IPB University, sponsored by KOICA a.y. 2023/2024

<b>Name</b>	<b>Adelaide Jose Pereira Cristovao</b>	<b>João Ferreira Rendes Bean Loly</b>	<b>Sebastiana Gentia Gondulva Dahu</b>
Student ID No	B3501231801	G1601231801	H3601231801
Year of enrollment	2023	2023	2023
Program	S2	S3	S3
Study Program	Veterinary Biomedical Sciences	Statistics and Data Science	Agribusiness
Status	Active	Active	Active

## IPB Faculty Members to SNU



### Project Scope of the KOICA-ICAB Project:

“Capacity Building Program” for IPB faculty members to pursue Ph.D. course in Seoul National University (SNU).

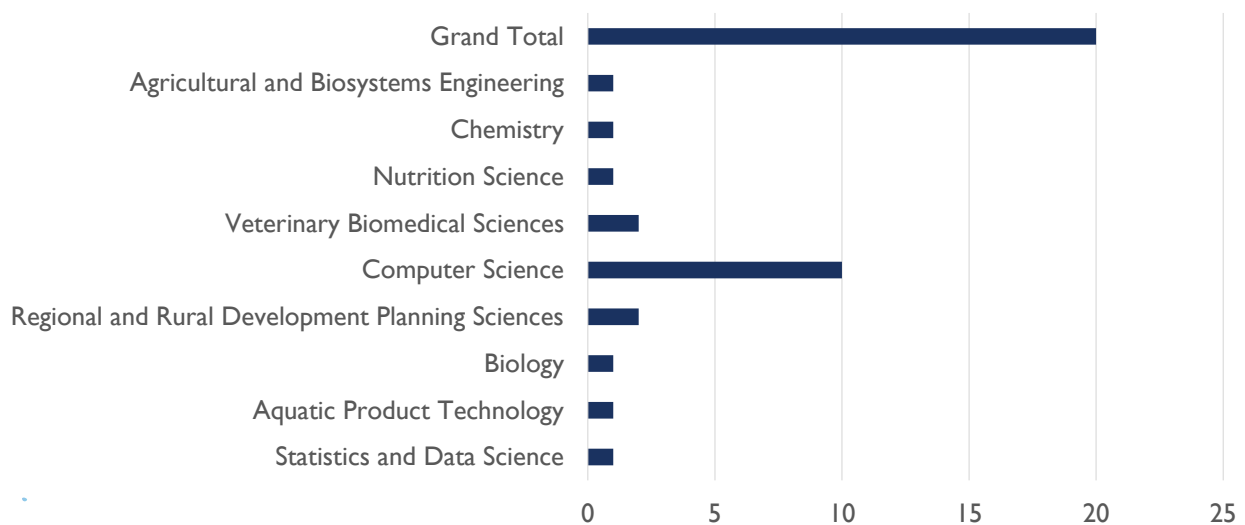
Plan of departure: March 2024

No.	Name	Faculty	Supervisor
1.	Mr. Ismail Shaleh	Mathematic and Natural Sciences	Prof. Tae Sub PARK (GSIAT, Pyeongchang)
5.	Ms. Andika Septiana S.	Agriculture	Prof. Jang Kyun SEO (GSIAT, Pyeongchang)

## IPB Faculty Members to SNU (bath 2)



### Recapitulation of New Applicants based on Study Programs (In total: 20 Applicants)



## Detail of the Applicants

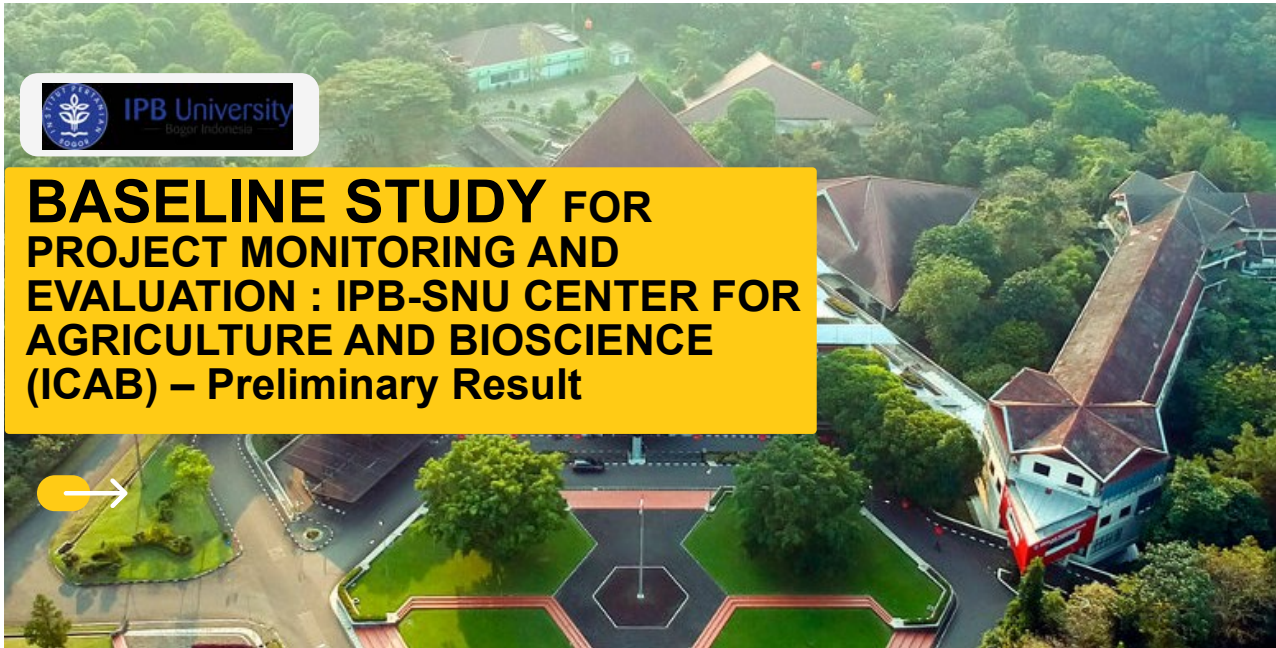
No	Nama	NIP/NRP	Program Studi	Status
1	Rahma Anisa, S.Stat., M.Si	198802142015042002	Statistics and Data Science	
2	Fahri Sinulingga, S.Pi., M.Si	C3501211012	Aquatic Product Technology	
3	Jepri Agung Priyanto, S.Si., M.Si	199307012019031012	Biology	
4	Malik Abdul Azis Siregar	H051190011	Regional and Rural Development Planning Sciences	
5	Ahmad Syaifullah	H0501202002	Regional and Rural Development Planning Sciences	
6	Carli Apriansyah Hutagalung, M.Kom	G651190531	Computer Science	
7	Moh. Zulkifli Katilu, S.Kom	G6501211041	Computer Science	Plan of Graduation: Desember 2023
8	Ahmad Sopian, M.Kom	G651190561	Computer Science	
9	Refianto Damai Darmawan, S.kom., M.Kom	G6501211058	Computer Science	
10	Hilmi Farhan Ramadhani, S.Komp., M.Kom	G6501202036	Computer Science	
11	Muhammad Naufal Abdillah, S.Kom., M.Kom	G6501222056	Computer Science	Plan of Graduation: TA 2023/2024
12	Hafiz Abdul Fatah Kurniawan, S.kom., M.Kom	G6501202029	Computer Science	
13	Muhammad Afrizal Amrustian, S.Kom., M.Kom	G651170411	Computer Science	
14	Sahid Agustian Hudjimartsu, S.T,M.Kom	G651150361	Computer Science	
15	Hery Wibowo, S.Kom., M.Kom	G6501201012	Computer Science	
16	Bintang Nurul Iman	B3501211018	Veterinary Biomedical Sciences	
17	R. Avida Shanaz Nabillah	B3501212061	Veterinary Biomedical Sciences	
18	Khaerul Fadly	I151190191	Nutrition Science	
19	Faizal Maulana	G4501231027	Chemistry	Not Yet Graduated
20	Junita Br Tarigan	F1501202014	Agricultural and Biosystems Engineering	

# RESULT OF BASELINE STUDY ON KOICA-ICAB PROJECT



***Dr. Leti Sundawati***

Faculty of Forestry and Environment,  
IPB University



## INTRODUCTION

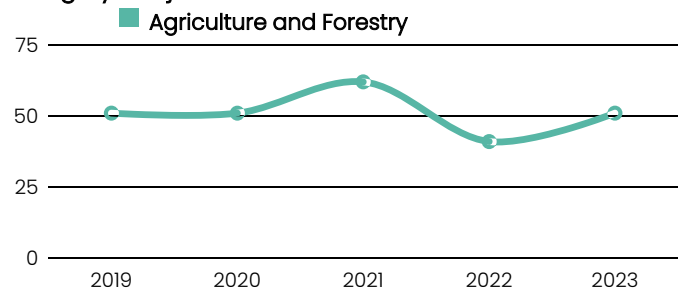
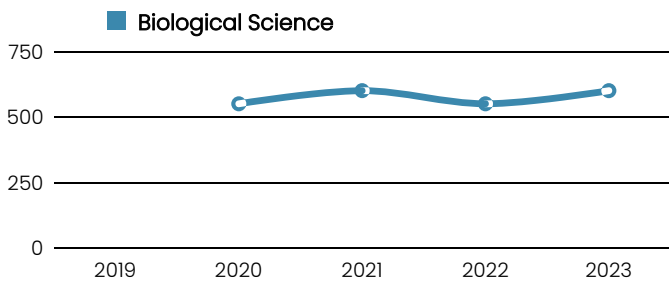


- **A baseline study** → to measure the success of a project → Monitoring and Evaluation Framework.
- The KOICA project → capacity building of the **IPB-SNU Center for Agriculture and Bioscience (ICAB)** → supporting IPB University on achieving a World Class University
- Focus of baseline study → **state-of-the-art laboratories at IPB University** (special focus on **AR Lab and Integrated Lab**), including the laboratory facilities, human resources, laboratory productivity (services, publications, income generating), and laboratory management

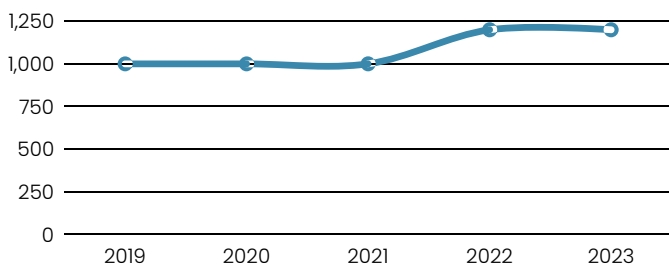
# IPB University in Ranking



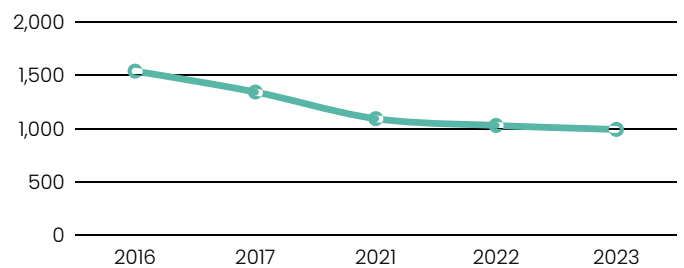
QS World University Ranking by Subject



THE World University Ranking



Webometrics University Ranking



## STATE-OF-THE ART LABORATORIES IN IPB UNIVERSITY

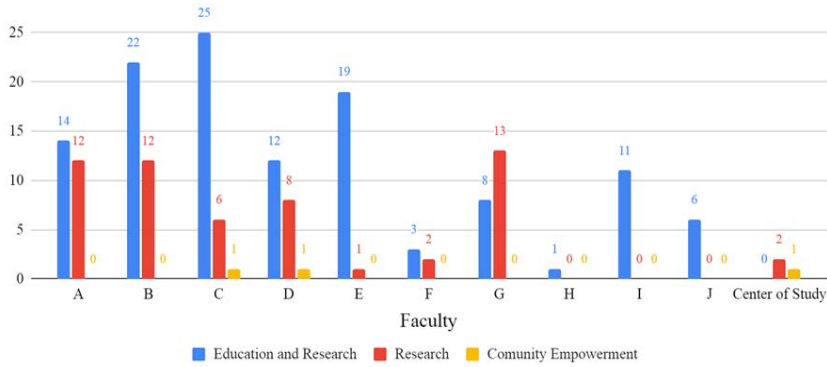


Number of laboratory according to laboratory classification in Indonesia (*Regulation of Minister of State Apparatus Empowerment and Bureaucratic Reform No.3/2010*)

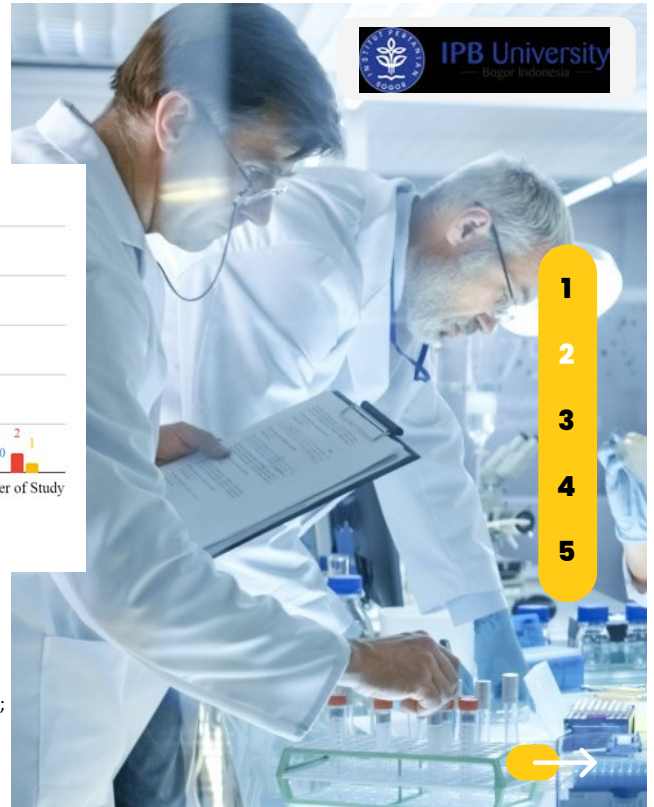
Type	Description	n
I	Basic science laboratories located in schools providing easy and moderate operating equipment's	0
II	Basic science laboratories found in preparatory level tertiary institutions or technical implementation unit providing easy and moderate operating equipment's	21
III	Laboratory in the scientific field located in a department or technical implementation unit providing easy, moderate and difficult operating equipment's	116
IV	Integrated laboratories located in faculty or university study centers or technical implementation unit providing easy, moderate and difficult operating equipment's	9



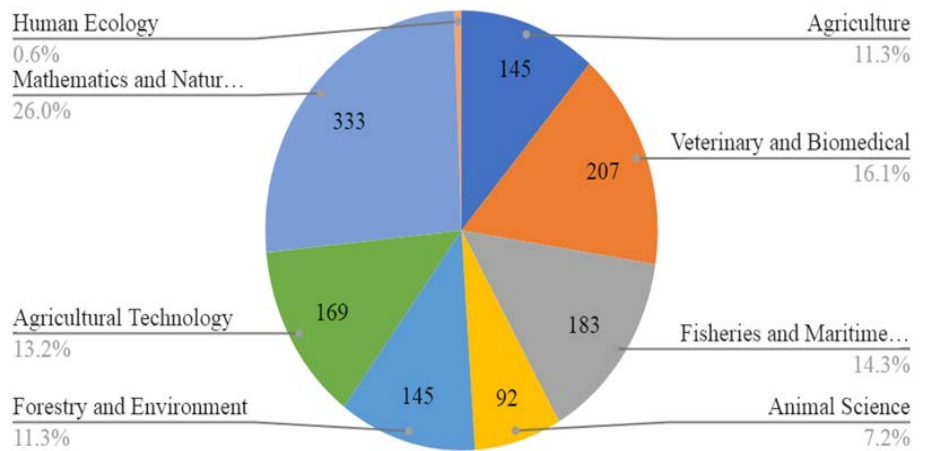
## Distribution Laboratory according to the laboratory function and faculty at IPB University



NOTE:  
 A = Agriculture; B=Veterinary and Biomedicine; C=Marine and Fishery; D=Animal Husbandry;  
 E=Forestry and Environment; F=Agriculture Technology; G=Mathematic and Natural Sciences;  
 H= Economic and Management; I=Human Ecology; J=Vocational School



## DISTRIBUTION OF LABORATORY EQUIPMENT ACCORDING TO FACULTY



## Number of Laboratory Main Equipment

No	Type of Equipment	Number
1	Spectroscopy	48
2	Chromatography	13
3	Microscope	83
4	Analytical balance	71



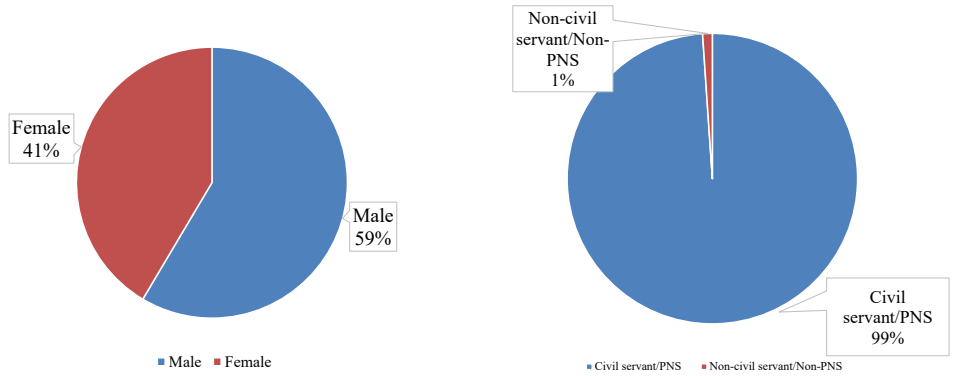
### Accredited Laboratory (ISO 17025)

- Soil Science and Land Resources Laboratory**, Faculty of Agriculture → Plant soil, organic fertilizer, plants
- IPB University Integrated Laboratory** (Testing, Calibration and Certification Services Laboratory) → Air Emissions, Work Environment Air, Ambient Air, Odors, Wastewater, River Water, Hygiene and Sanitation Water, Drinking Water, Sea Water, Soil, Food, etc.
- Education and Services Laboratory**, School of Veterinary Medicine and Biomedicine
- Food Science and Technology Laboratory**, Faculty of Agricultural Technology → Corned beef, virgin coconut oil (VCO), MP-ASI, cooking oil, powdered milk, etc.
- Agricultural Industry Technology Laboratory**, Faculty of Agricultural Technology → Surface water, wastewater, drinking water, clean water, sediment, raw crystal sugar, corn flour, diabetic diet milk powder, cassava chips, palm sugar, and cereal milk.
- IPB Culture Collection** → Chemical antiseptics and disinfectants
- Aquatic Productivity and Environment Lab**, Faculty of Fisheries and Marine Affairs → Surface water, Sea water, Wastewater, Drinking water, etc.

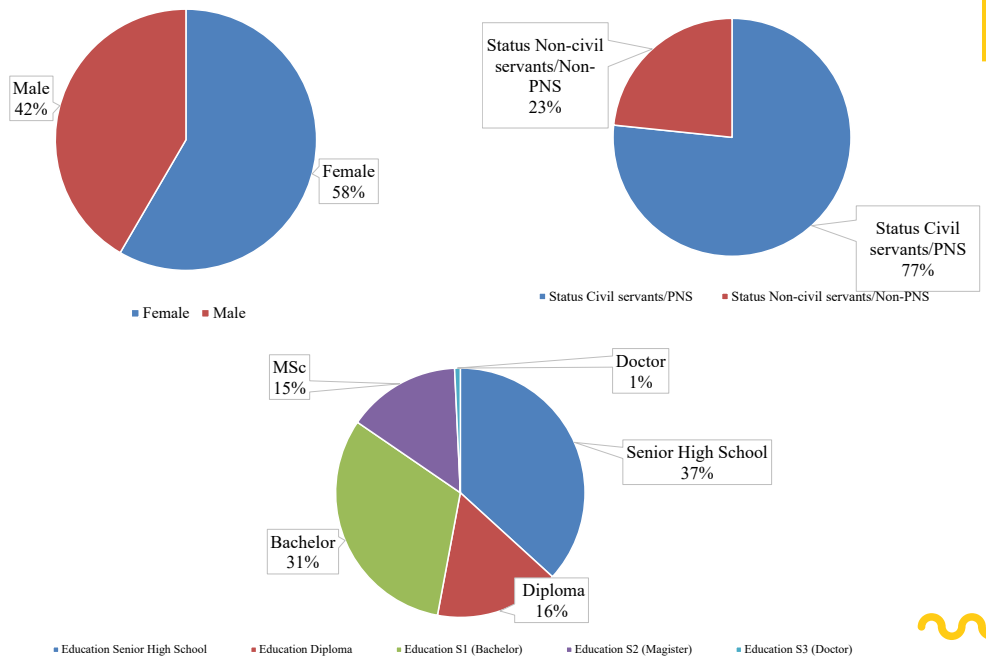


## HUMAN RESOURCES

Number of lecturer/researcher related to biosciences at IPB University = 651 persons

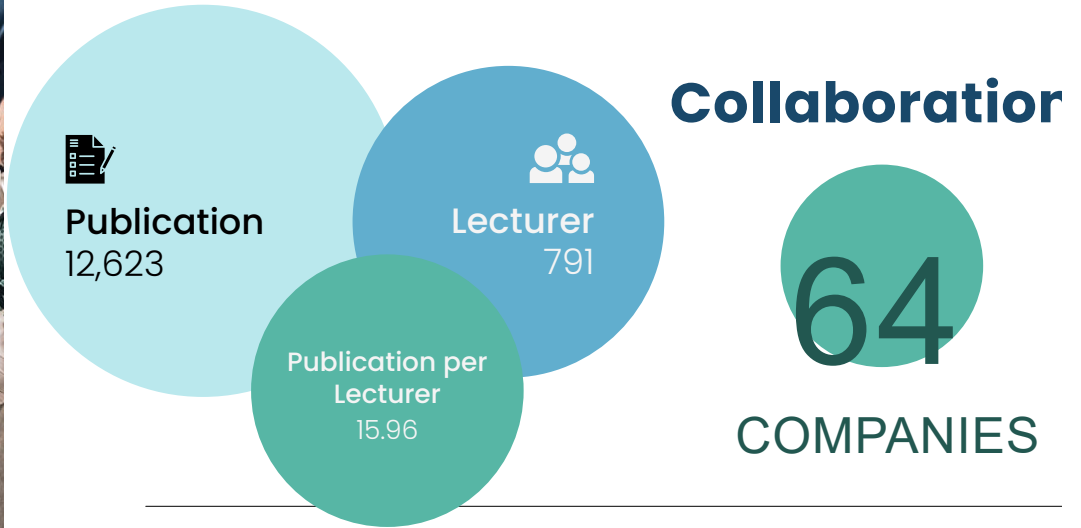


Number of Laboratory Technicians = 137





## Publication on Biosciences



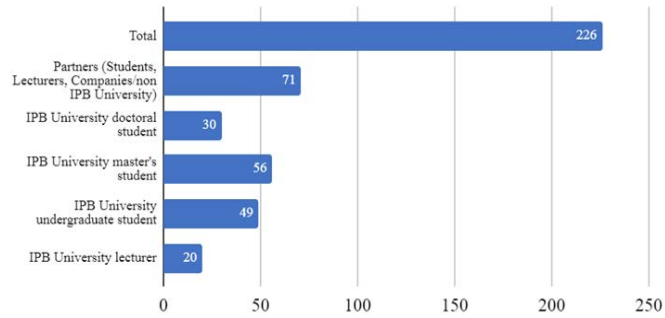
## Advanced Research Laboratory (AR Lab)



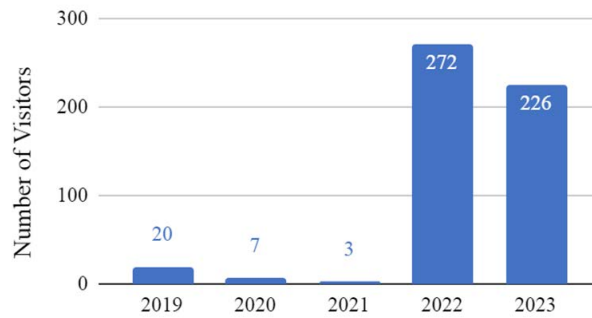
- **Responsibility**  
To plan, implement, and facilitate the utilization advance research facilities to support education, research, and community outreach activities with techno-socio-entrepreneur characters
- **Roles:**
  - a) To facilitate the implementation of frontiers/cutting edge researches on priority areas to produce internationally recognize publications and innovations;
  - b) To formulate a roadmap of the development of frontier research laboratory facilities and to make standard of advance research laboratory to meet the international research facility standard; and
  - c) To develop networks with similar laboratories in national and international level to join a global satellite laboratory scheme.



## AR-Lab Productivity



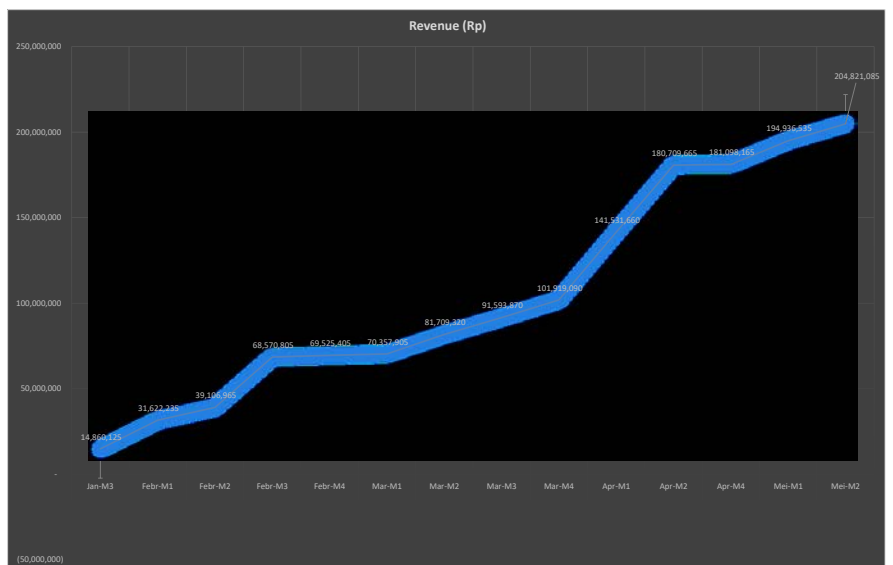
Number of services



Number of visitors



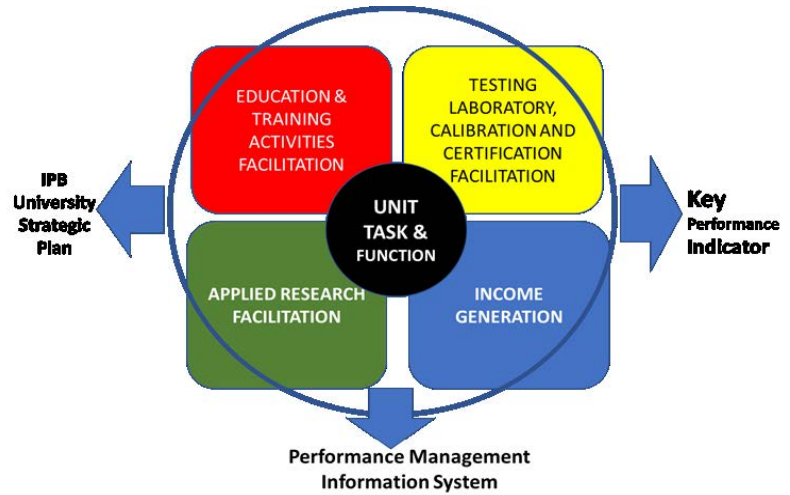
## Income Generating of AR-Lab





# IPB-Integrated Laboratory

Integrated Laboratory is a Testing and Certification Service Laboratory

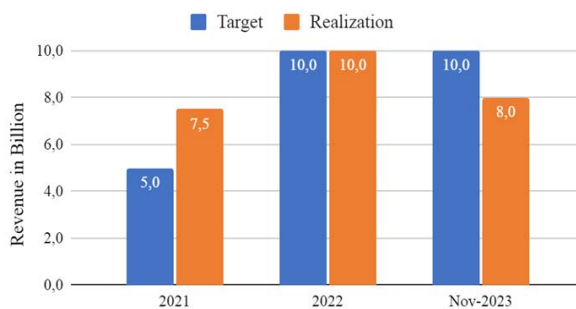


## Productivity of Integrated Lab

Number of Services

No	Year	Number of Samples	Number of Visitors			
			Total	Research	Individual	Industry/MSMEs
1	2021	7496	1465	100	508	857
2	2022	8048	1671	267	418	986
3	Nov-23	7106	1555	347	384	824

Income Generating (Revenue)



No	Type of Training	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	ISO 17025:2017 Understanding												
2	ISO 17025:2017 Documentation												
3	Validation and Verification of Analysis Methods												
4	Laboratory Testing Quality Assurance												
5	Evaluation of Laboratory Equipment Performance												
6	Estimated Uncertainty Analysis												
7	Water Sampling												
8	Air and Emissions Sampling*												
9	Operation and Development of Methods Using UV-Vis Spectro**												

Note  
 \*) Specific for sampling officer  
 \*\*) Specific for environment analyst

In-house Training 2023



## Integrated Lab Accreditations

No	ISO	Type	Start of Accreditation
1	ISO-17025:2017	Testing Lab	2002
2	ISO 17025:2017	Calibration Lab	2014
3	ISO 17043	Proficiency Test Organizer	2023
4	ISO 22000	Food Safety	2003
5	HACCP	Food Safety	2003
6	ISO 17065	Product Certification Institute	2003
7	ISO 17065	Halal Inspection Institution	2022
8	Minister of Environment and Forestry Regulation No. 23/2020	Occupational Health & Environmental Safety (OHSE)	2015

### Development Plan

#### 1. Adding equipment

Especially for detection and testing limits to accommodate testing following existing regulations in Indonesia (BPOM, Ministry of Health, Ministry of Environment and Forestry, etc)

#### 2. Improvement of employee status

The majority of employees is in contract status → permanent status.

## STUDY TEAM

### Team Leader :

**Dr. Leti Sundawati** (Department of Forest Management, Faculty of Forestry and Environment)

### Team Member :

- **Prof. Dr. Irmanida Batubara** (Department of Chemistry, Faculty of Math and Natural Sciences)
- **Dr. Adisti Permatasari Putri Hartoyo** (Department of Silviculture, Faculty of Forestry and Environment)

### Assistants :

- **Faizal Maulana** (Master Student at Department of Chemistry)
- **Ainin Abidah Rahman** (Fresh graduate of Forest Management Department)



**THANK  
YOU!**





# LESSONS LEARNT OF 2023 SHORT-TERM TRAINING PROGRAM



***Dr. Yudi Chadirin***

Deputy of Advanced Research Laboratory,  
IPB University



**IPB University**  
— Bogor Indonesia —

Inspiring Innovation with Integrity  
in Agriculture, Ocean and Biosciences for a Sustainable World



**IPB University**  
— Bogor Indonesia —

Department of  
Civil and Environmental Engineering



## Lessons Learnt of 2023 Short-Term Training Program

Yudi Chadirin  
Deputy Advanced Research Laboratory

Bogor, 14 December 2023



# Introduction

- Participant : 20 Persons form IPB, UGM, UI
  - Senior Officers (6) and General Trainee (14)
- Institution : IPB, UGM (LPPT), UI (R&D Dit)
- Period : 21 – 31 May 2023
- Length : 10 Days
- Location : SNU Seoul and Pyeongchang Campus



# Introduction

## Capacity Building for the Center for Agriculture and Bioscience of IPB University in Indonesia

1<sup>st</sup> Short-term Training Program for Senior Policy Officers and Professors Related to the Center for Agriculture & Bioscience in IPB University, Indonesia

(21 May 2023 – 31 May 2023)



IPB-SNU Center for Agriculture & Bioscience (ICAB)



### 1. List of Participants

No	Name	Position	e-mail	Dep't
1	Prof. Arif Sabila	Rector	sekretariat.rektor@apps.ipb.ac.id	26 May
2	Prof. Deni Noviana	Vice-Rector for Academic and Student Affairs	wr1@apps.ipb.ac.id / deni@apps.ipb.ac.id	26 May
3	Prof. Ernan Rustiadi	Vice-Rector for Research, Innovation and Agromaritime Community Development	wr4@apps.ipb.ac.id / ernanrustiadi@apps.ipb.ac.id	24 May
4	Prof. Iskandar Z. Siregar	Vice-Rector for Global Connectivity, Collaboration and Alumni	wr3@apps.ipb.ac.id / siregar@apps.ipb.ac.id	26 May
5	Mr. Emmanuel Agust Hartono	Director of LPDP	kepalalppk99@gmail.com	26 May
6	Mr. Ari Nurdiansyah**	Secretary of LPDP	soehorie@gmail.com	26 May
7	Prof. Fredinan Yulanda	Dean of Fisheries and Marine Science	fredinan@apps.ipb.ac.id	31 May
8	Prof. Siti Amanah	Vice Dean for Human Ecology	siti_amanah@apps.ipb.ac.id	31 May
9	Prof. I Komang Gede Wiryawan	Professor at Faculty of Animal Science	kgwiryawan@apps.ipb.ac.id	~31 May
10	Prof. Dodik Bidho Nurrochmat	Professor at Faculty of Forestry and Environment	dnurrochmat@apps.ipb.ac.id	31 May
11	Prof. Dwi Andreas	Professor at Faculty of Agriculture	dwiandreasntesa@gmail.com	31 May
12	Dr. Nancy Dewi Yuliana	Professor at Faculty of Agriculture Technology	nancy_dewi@apps.ipb.ac.id	31 May
13	Prof. Indika Mansur	Head of Advanced Research Laboratory	indikam@gmail.com	31 May
14	Prof. Yudi Chadijin	Vice Head of Advanced Research Laboratory	yudi@apps.ipb.ac.id	31 May
15	Ir. Lien Herlina	Director of Education Transformation and Learning Technology	lien@apps.ipb.ac.id	31 May
16	Prof. Rineko Soekmadi	Co-PM of KOICA-ICAB	r.soekmadi@apps.ipb.ac.id	31 May
17	Prof. Ahmad Junedi	Base-line study researcher	junaedigh@gmail.com	31 May
18	Prof. Fitriya Nur Anissa Dewi	Assistant Director of International Collaboration and Networking Brand	fitriyanur@apps.ipb.ac.id	31 May
19	Prof. Munawar Khalil	Director of Research and Technology, UI	mkhallil@sci.ui.ac.id	31 May
20	Prof. Yusril Yusuf	Head of LPPT, UGM	yusril@ugm.ac.id	31 May

# Schedule & Program

Date	Program	16:30-17:00	17:00-18:00	18:00-19:00	19:30-20:00	20:00-21:00	21:00-22:00
5. 22 (Mon)	<b>Arrival at Soekarno International Airport (07:30)</b> <b>Morning: Check in, Rest at Hoam Faculty House, SNU</b> <b>Lunch: Durianselam (11:30)</b>	Congratulatory Remark: President of SNU Congratulatory Remark: Rector of IPB University MoU Signing Ceremony (Academy & Research Cooperation, Student Exchange Agreement) (President of SNU and Rector of IPB University) Group Photo and Coffee Break	Presentation S1: Hail Science in Indonesia Prof. Nancy Desri Yuliana, Faculty of Agriculture Technology (Panel Discussion) - Prof. Chod Hani YUN (Animal Science) - Prof. Seong Chan YEON (Veterinary Medicine) - Prof. Yu Han LEE (Forest Science) - Prof. Tae Jin YANG (Plant Science) - Prof. Chul Sang HEH (Food Science)	<b>5. 26 (Thu)</b> <b>Visit to GBST, SNU Pyeongchang Campus</b> 07:00-10:00 Move to SNU Pyeongchang Campus Introduction to GBST and SNU Pyeongchang Campus (Prof. Tae Sub PARK, Director of Planning, GBST) 10:30-12:00 SNU Bean Milk Factory, Industry-Academy Institute, Cowshed Facility, Clean Laboratory Animal Center, etc. 12:00-14:00 Lunch (Restaurant at Pyeongchang Campus) 14:00-18:00 Introduction to GBST Research Facility Center and Laboratories (Dr. Seung Yoon YI) 18:00-19:00 Dinner (Gung Gung Won Restaurant) Accommodation (Pyeongchang alpina Resort)	11:00-12:00 (Lecture) Science-based Forest Restoration and Future Science on Forestry (Prof. Hyan Park, Adjunct Professor of CALS, SNU, former President of National Institute of Forest Science) 12:00-14:00 Lunch (Curry, Japanese Ramen, Vietnam Rice noodle) 14:00-18:00 Group Discussion (Preparing a presentation on concept note with report of short-term training program) 18:00-19:00 Dinner (Curry, Japanese Ramen, Vietnam Rice noodle) Accommodation (Hoam Faculty House)		
13:30-14:30	<b>[Orientation] SNU College of Agriculture and Life Science (Conference room)</b> - Welcome remark (Prof. Byung Chul Park) - Orientation of Short-term Training Program (Prof. Ho Sang KANG) - Greeting from NCEM Director etc.	10:00-10:30 Keynote Presentation 1) Research and Innovation on Agro-Material in IPB University - Prof. Erwan Rusdadi, Vice-Rector for Research, Innovation, and Agri-business Community Development, IPB University 10:30-11:00 Keynote Presentation 2) Education and Research Fund for University in Indonesia - Mr. Mr. Emmanuel Agust Hartono, Director of Indonesia Endowment Fund for Education (LIPED) 11:00-11:30 Keynote Presentation 3) Green Bio Policy in Korea - Mr. Daeyoul Yoo, Deputy Director of Ministry of Agriculture, Food and Rural Affairs 12:00-14:00 Lunch (Lunch Box)	<b>5. 24 (Wed)</b> 09:30-12:00 (Visiting Facilities) Visit to Laboratories at College of Agriculture and Life Sciences, SNU 12:00-13:00 Lunch (La Cucina Restaurant) 13:00-14:00 (Visiting Institution) Veterinary Medical Teaching Hospital (Visiting Institution) Institute of Environment Protection & Safety, SNU 14:00-16:00 SNU Campus Tour 18:00-19:00 Dinner Accommodation (Hoam Faculty House)	<b>5. 27 (Sun)</b> 07:00-08:00 Breakfast (Pyeongchang alpina Resort) 10:00-12:00 Pyeongchang Ski Jump Center, Songryang Farm 12:00-14:00 Lunch (Hwangdae (Black) restaurant) 14:00-16:00 Move to Seoul 18:00-19:00 Dinner Accommodation (Hoam Faculty House)	<b>5. 30 (Tue)</b> <b>Completion Ceremony</b> 09:30-12:00 (Lecture) International Cooperation of SNU, WFP Korea Office, SNU Social Responsibility (Ibc) (SNU Social Responsibility 2 <sup>nd</sup> floor Lecture room 210) 12:00-14:00 Lunch (Lunch box) 14:00-18:00 Presenting the reports of short-term training program (SNU Social Responsibility 2 <sup>nd</sup> floor Lecture room 210) 18:00-19:00 Dinner (Banquet) Accommodation (Hoam Faculty House)		
14:30-16:30	<b>[Institution Visit] NCEM, SNU</b> Soil and Water Analysis Center, Genome Analysis and Bioinformatics, Nanobioimaging Center, Life and Environment Sciences Education Center etc. (Prof. Gun Teak LEE, Prof. Oh Kyung KWON, Prof. Kyoung Jo NA, Dr. Seung Yoon YI)	14:00-14:30 Presentation 1) Animal Nutrition and Laboratory Management Challenge in Indonesia - Prof. J Koning Gede Wiryanan (Faculty of Animal Science) 14:30-15:00 Presentation 2) Veterinary Science in Indonesia - Prof. Dewi Noviana, School of Veterinary and Biomedicine 15:00-15:30 Presentation 3) Palm oil plantation and carbon footprint in Indonesia - Prof. Dedi Subro Nurnachet, Faculty of Forestry and Environment 15:30-16:00 Break 16:00-16:30 Presentation 4) Agriculture and Food Security in Indonesia - Prof. Dwi Anshari, Faculty of Agriculture	<b>5. 25 (Thu)</b> 12:00-12:00 Lunch 12:00-14:00 (Visiting Institution) National Agricultural Museum 14:00-16:00 (Faculty Tour) Smart Farm(Farm) at Pyeongchang City (Cultural Exploration) Suwon Hwaseong Fortress, Palham Gate Market, Hwaseong Temporary Palace 18:00-19:00 Dinner Accommodation (Hoam Faculty House)	<b>5. 28 (Sun)</b> <b>Seoul Cultural Exploration</b> - Places: Gyeongbokgung Palace, Cheongdae Creek, Northern Village traditional houses, Insa-dong, etc.	<b>5. 31 (Wed)</b> <b>Wrap Up and Departure</b> 09:00-11:00 Wrap up meeting (Hoam Faculty House) Departure (15:20, Asiana Airlines, Terminal 1)		
17:00-18:30	<b>[Lecture] SNU College of Agriculture and Life Science (Conference room)</b> - Establishment and Development of National Instrumentation Center for Environmental Management (Prof. Eam Woo PARK)	<b>5. 23 (Tue)</b> 09:00-09:50 Dinner: Durianselam Accommodation (Hoam Faculty House)	<b>5. 25 (Thu)</b> 12:00-12:00 Lunch 12:00-14:00 (Visiting Institution) National Agricultural Museum 14:00-16:00 (Faculty Tour) Smart Farm(Farm) at Pyeongchang City (Cultural Exploration) Suwon Hwaseong Fortress, Palham Gate Market, Hwaseong Temporary Palace 18:00-19:00 Dinner Accommodation (Hoam Faculty House)	<b>5. 28 (Sun)</b> <b>Seoul Cultural Exploration</b> - Places: Gyeongbokgung Palace, Cheongdae Creek, Northern Village traditional houses, Insa-dong, etc.	<b>5. 31 (Wed)</b> <b>Wrap Up and Departure</b> 09:00-11:00 Wrap up meeting (Hoam Faculty House) Departure (15:20, Asiana Airlines, Terminal 1)		
18:00-19:00	Dinner: Durianselam Accommodation (Hoam Faculty House)	<b>5. 23 (Tue)</b> 09:00-09:50 Dinner: Durianselam Accommodation (Hoam Faculty House)	<b>5. 25 (Thu)</b> 12:00-12:00 Lunch 12:00-14:00 (Visiting Institution) National Agricultural Museum 14:00-16:00 (Faculty Tour) Smart Farm(Farm) at Pyeongchang City (Cultural Exploration) Suwon Hwaseong Fortress, Palham Gate Market, Hwaseong Temporary Palace 18:00-19:00 Dinner Accommodation (Hoam Faculty House)	<b>5. 28 (Sun)</b> <b>Seoul Cultural Exploration</b> - Places: Gyeongbokgung Palace, Cheongdae Creek, Northern Village traditional houses, Insa-dong, etc.	<b>5. 31 (Wed)</b> <b>Wrap Up and Departure</b> 09:00-11:00 Wrap up meeting (Hoam Faculty House) Departure (15:20, Asiana Airlines, Terminal 1)		
09:00-09:50	<b>2<sup>nd</sup> SNU-IPB GreenBio Science Forum</b> Maganghwa Hall, SNU Hoam Faculty House Registration 09:30-09:50 Moderator: Prof. Ho Sang KANG Welcome Remark: Prof. Byung Chul PARK	<b>5. 25 (Thu)</b> 12:00-12:00 Lunch 12:00-14:00 (Visiting Institution) National Agricultural Museum 14:00-16:00 (Faculty Tour) Smart Farm(Farm) at Pyeongchang City (Cultural Exploration) Suwon Hwaseong Fortress, Palham Gate Market, Hwaseong Temporary Palace 18:00-19:00 Dinner Accommodation (Hoam Faculty House)	<b>5. 28 (Sun)</b> <b>Seoul Cultural Exploration</b> - Places: Gyeongbokgung Palace, Cheongdae Creek, Northern Village traditional houses, Insa-dong, etc.	<b>5. 31 (Wed)</b> <b>Wrap Up and Departure</b> 09:00-11:00 Wrap up meeting (Hoam Faculty House) Departure (15:20, Asiana Airlines, Terminal 1)			

# 2<sup>nd</sup> SNU – IPB Green Bio Science Forum



Green Bio Science Forum and Signing MOU between Rector of IPB University and SNU

## Day – Visiting NICEM Facilities



- Lesson Learned: 1. Collaboration with company is one of key to provide excellent equipment  
2. Accreditation is necessary to provide trusted analysis services

## Day – Visiting NICEM Facilities



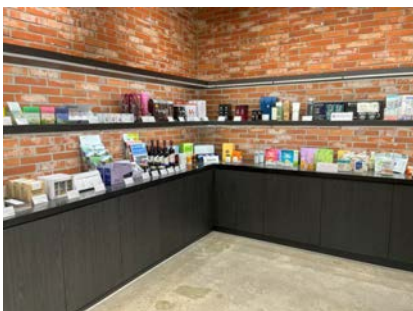
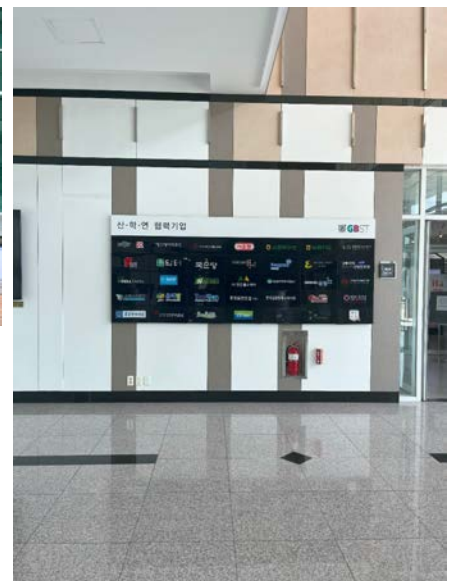
Imaging instruments : TEM, SEM, Confocal, etc

## Day – Visiting NICEM Facilities

- Air quality status is displayed for public inside campus
- Dept Civil and environmental Eng, IPB doing research with PT UniLab to development device for air quality



## Visiting Pyeongchang Campus Facilities



# Visiting Pyeongchang Campus Facilities



High resolution mass spectofotometry  
Facilities

# Visiting Pyeongchang Campus Facilities



Safety first in Lab

## Visiting Institute of Environment Protection & Safety



## Safety Education for research Workers

Article	Education Target	Training Time	Training Content
Regular Education and Training	Researchers	12 hours per year (6 hours per half year)	<ul style="list-style-type: none"> <li>Matters related to laws and regulations for creating a safe laboratory environment</li> <li>Matters concerning hazards and risk factors in the laboratory</li> <li>Matters concerning safe R&amp;D activities</li> <li>Matters concerning material safety data</li> <li>Other laboratory safety management matters</li> </ul>
New Hires Education Training	Newly Recruited Researchers (including contract workers) Universities, research institutes, etc. as a person other than the employed for new R&D activities participating researchers (college students, graduate students, etc.)	More than 8 hours  More than 6 hours (2 hours or more for undergraduate students)	<ul style="list-style-type: none"> <li>Matters related to laws and regulations for creating a safe laboratory environment</li> <li>Matters concerning hazards and risk factors in the laboratory</li> <li>Matters concerning the handling of protective equipment and safety devices, etc.</li> <li>Matters concerning laboratory accident cases and preventive measures</li> <li>Matters concerning safety signs</li> <li>Matters concerning material safety data</li> <li>Other laboratory safety management matters</li> </ul>
Education & Training due to Changes in Research Contents	Researchers	More than 2 hours	<ul style="list-style-type: none"> <li>Matters concerning hazards and risk factors in the laboratory</li> <li>Matters concerning safe R&amp;D activities</li> <li>Matters concerning material safety data</li> <li>Other laboratory safety management matters</li> </ul>

# Safety Education for research Workers

**Laboratory Safety Management**  
**Educational Programs and Online Content (110 Classes)**

안전합성, 생물안전, 방사선안전을 위한  
환경안전원 교육 프로그램 안내 및 일정

온라인 콘텐츠 리스트 (110개 차시)

번호	교육명(차시)	교육명(영문) / 차시(영문)
01	안전 교육 (1차시)	Awareness of safety / After completion in a laboratory (1 차시)
02	안전관리 책임자 임명 교육 (1차시)	Safety management (Chief) / Lab. in charge of safety and the corresponding procedure (1차시)
03	안전관리 책임자 임명 교육 (2차시)	Safety management (Chief) / Safety Management of the Lab for Matrix Resonance (2 차시)
04	안전관리 책임자 임명 교육 (3차시)	Safety management (Chief) / Procedures for Handling Hazardous Equipment in the Lab (3 차시)
05	연구실 안전 (1차시)	Research lab accidents / Cases of lab safety accidents in the area of (Electro)Biology (1 차시)
06	연구실 안전 (2차시)	Research lab accidents / Research lab First Aid for Case Categories (2 차시)
07	전기 안전 (1차시)	Electricity / Research on Electric Accidents (1 차시)
08	화물 안전 (1차시)	Handling / Case Theory of Fire Safety (1 차시)
09	실험 전 준비 (1차시)	Safety before after an experiment / Safety before after an experiment (1 차시)
10	보건 (1차시)	Health Assessment / Country Site A Research Environment (1 차시)
11	화학 (1차시)	Chemistry / Storage and handling chemical substances (1 차시)
12	생물 (1차시)	Gen / Control of Lab (1 차시)
13	기계 (1차시)	Mechanics / Safety Management of Machinery Tools (1 차시)
14	생물 (1차시)	Biology / Safety Issues of Biology Experiments (1 차시)
15	방사선 (1차시)	Radiation Laser / Radiation safety for experiments (1 차시)
16	실용교육 (1차시)	Practical Training / How to offer practical safety devices in the lab (1 차시)
17	실용교육 (2차시)	Practical Training / How to offer practical safety devices in the lab (2 차시)

# Safety Education for research Workers

**Laboratory Safety Management**  
**Sanctions against those who fail to complete Safety and Environment Training**

- Graduate school master's doctorate thesis qualification test not allowed to start (Natural Science, Engineering, Medicine)
- Researcher registration delete
- Laboratory access disapproval notice
- Affiliated with researcher case lab. delete access ID
- Graduate student ID issued or When applying for a scholarship Certificate required

# Safety Education for research Workers

**III Laboratory Safety Management**  
**Lab Safety Check**

서울대학교 환경안전팀

**Seoul National University Laboratory Inspection Status**

Inspection Name	Target	Inspector	Inspection Cycle	Inspection Method
Daily Inspection	All Laboratories	Laboratories (Researchers)	Once a day (Before the Start of Research)	SNU Lab. daily Inspection Record Book
Self-inspection	All Laboratories	Laboratories (Researchers)	Once a year (March to June)	SAFE system
Precise Safety Diagnosis (Regular Inspection)	All Laboratories except Lowrisk Laboratories	IEP&S (Safety diagnosis agency)	Once a year (July to December)	Visiting inspection
Chemical Safety Check	Chemical Use Lab	IEP&S (Chemical Safety Management Center)	Once or twice a year	Visiting inspection
Biological (LMO) Lab Safety Inspection	Biosafety Level 2 Laboratory	IEP&S	Once a year	Visiting inspection
Biological (LMO) Laboratory Self-safety Inspection	Biosafety Level 1 & 2 Laboratory	Laboratories (Researchers)	Once a day	Inspection Record Book
Radiation Safety Inspection	Experimental Facilities subject to Permission to use Radioactive Isotopes, etc.	IEP&S	Twice a month	Visiting inspection
Radiation Regular Safety Inspection	Radiation Utilization Facility	IEP&S	Once a year	Visiting inspection
Guide to Visiting New and changed Labs	New/Change Lab	IEP&S	When installing the lab	Visiting inspection
Occasional Safety Inspection (Scheduled)	All Laboratories	IEP&S	Randomly inspection	Sudden Visiting inspection

# Safety Education for research Workers



Emergency shower and fire extinguishers in Laboratory and permission for research workers

## Safety Education for research Workers



Shower emergency just installed in ARLab IPB University for safety  
Good Laboratory Practice is mandatory for research worker in ARLab University and conducted in once per month

## Safety Education for research Workers



Instalation inside laboratory for safety

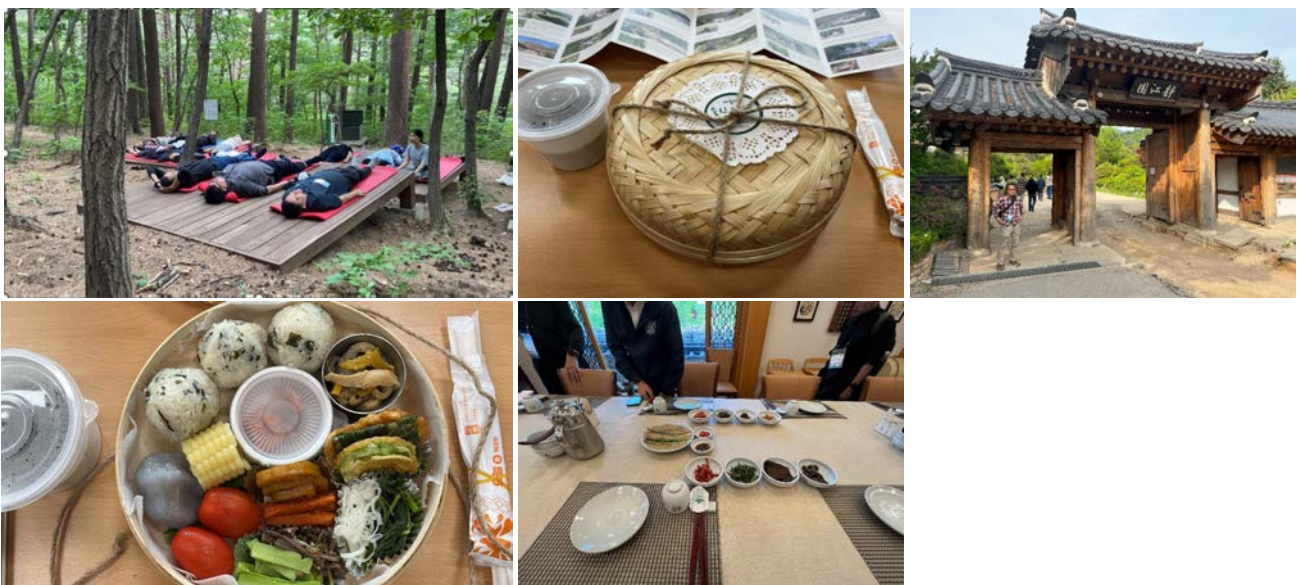
## Visiting smart farm company



Factory

Restaurant

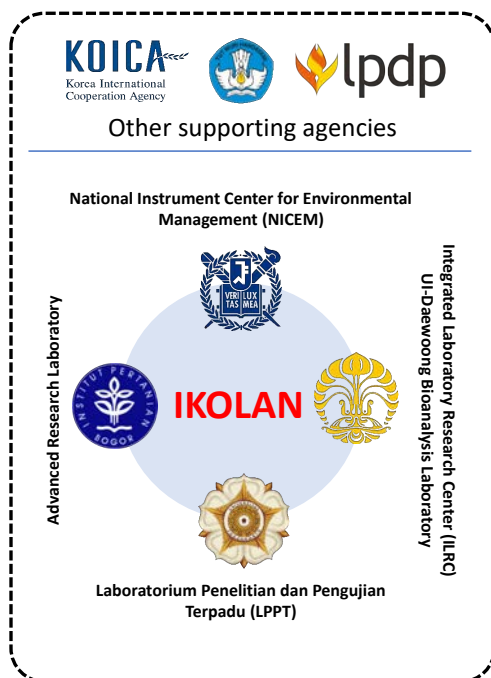
## Forest healing and dining



## Proposed Plan: Establishment of **INDONESIA-KOREA LABORATORY NETWORK (IKOLAN)**



As a follow up for 1<sup>st</sup> KOICA-ICAB Short Training Program, we agreed to initiate the establishment of a network for joint laboratories and centralized facilities within Indonesia and Korea



### Area of Collaboration



And many more opportunities...

## Collaborative Action:

1. Capacity building for laboratory members
2. Cutting-edge equipment network and sharing between 3 (IPB, UI, UGM) + 1 (NICEM)
3. Laboratory biosafety and biosecurity facilities and management
4. Warehouse and chemical management
5. Collaborative research between 3 + 1
6. Income generation from the laboratory services
7. International accreditation for the laboratory and study programs

Proposed Plan: Establishment of **INDONESIA-KOREA LABORATORY NETWORK (IKOLAN)**

# Implementation Roadmap

IKOLAN becomes the center of excellent in promoting and providing resources for research and academic collaboration in Indonesia and Korea



**2024-20XX:**  
Continue the collaboration and exploring the potential of including other universities/research agencies in Indonesia and Korea into the network

**Year of 2024:**  
Capacity building and staff/operator training within the network



**June 2023:**  
Appointing PICs of each university for drafting the first MoA for the establishment of IKOLAN



**August 2023:**  
Signing ceremony and launching of IKOLAN



**September 2023:**

- Implementing sharing facilities within UI, UGM, IPB, SNU
- Exploring potential research & academic collaboration
- Integration of lab management system
- Gap analysis and establishing roadmap for future lab development
- Knowledge sharing
- etc.



감사합니다  
최선을 다합니다

THANK YOU

READY TO GO HOME TO IMPLEMENT  
WHAT I HAVE LEARNED FROM KOREA

# LESSONS LEARNT OF 2023 MID-TERM TRAINING PROGRAM



***Dr. Anisa Rahma***

School of Veterinary Medicine and Biomedical sciences,  
IPB University

# ACTION PLAN: DEVELOPMENT NANO IMAGING LABORATORY FOR INCREASE IPB UNIVERSITY REPUTATION

**ANISA RAHMA**

Lecturer of Veterinary Pharmacy, School of Veterinary Medicine and  
Biomedical Science



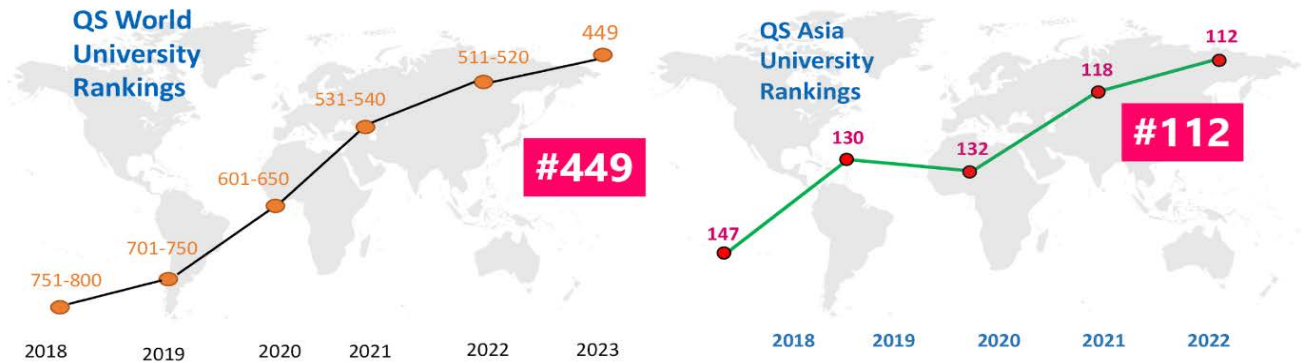
**IPB University**  
(established in 1963)

IPB was established on September 1, 1963, as an agricultural higher education institution with the purpose:

**Indonesia has world-class universities that have competence in agriculture, biosciences, and various related fields.**

# IPB University

## IPB University-World Class University Ranking



IPB does not have an integrated laboratory for research services.

The ability of employees to manage and run an integrated laboratory does not meet the required standards.

The facilities in the integrated laboratory are not complete so the service process cannot run properly.

The building structure and laboratory design need to be improved to meet safety standards and research needs.

**PROBLEMS  
CURRENTLY  
FACING By IPB**

1

## IPB does not have an integrated labo for research services



### Is that true???

Research at IPB is generally carried out in the respective laboratories in each faculty. The laboratories used by lecturers are generally laboratories that are also used for the teaching and learning process. Although some faculties also have their own service and research laboratories.

IPB has an integrated laboratory on the Baranangsiang campus. However, IPB wants to have a laboratory that has international standards to improve IPB's reputation.

**That's why:  
We need advanced  
research lab.**

## Is an integrated laboratory needed?

Integrated laboratories are needed for research services to improve campus reputation and business.



### Example:



GBST, SNU



NICEM, SNU



Collaborative lab., KNU  
Industry academic Partnership Center, KNU

1. Carry out research for government requests
2. Conducting research at the request of the company
3. Holding training for university students, elementary school students, and the surrounding community.

# That's why IPB needs an integrated laboratory.



Established Advanced Research Laboratory - IPB University

2

**The ability of employees to manage and run an integrated laboratory does not meet the required standards.**

Since 2019, after the AR lab was built, several equipment has been purchased to complete the laboratory. However, until now some equipment has not operating well enough because:

1. There are no experts who can use the equipment
2. Staff understanding in maintaining existing equipment is still inadequate
3. Low demand for incoming research or services



**That's why:  
We need capacity building.**

# HOW TO DO CAPACITY BUILDING FOR IPB STAFF

IPB received support from **KOICA** to provide training, to carry out capacity building for IPB staff. KOICA has provided support for mid-term training for 5 years.



## FIRST YEAR:



Department of Chemistry,  
FMIPA IPB

**Metabolomic lab. of AR Lab**



Division of Veterinary Pathology,  
SVMBS, IPB

**Animal Culture cell lab. of AR Lab**



Sub-Division of Veterinary  
Pharmacy, SVMBS, IPB

**Nano-imaging lab. of AR Lab**

## What we got during the training???

### Training from SNU on biosafety and biosecurity in the laboratory.

Before entering the laboratory, you will first be introduced to the laboratory in theory in class. During this time an explanation will be given regarding the equipment in the laboratory, biosecurity and biosafety for workers.,



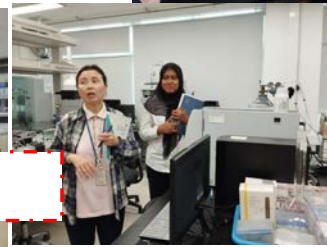
**We need this also at IPB**



# What we got during the training???

## Training from GBST on how to operate and maintain equipment in the laboratory

Each laboratory has a researcher and technician who is responsible for the equipment in the laboratory. So that the existing equipment has long-term use, and the equipment will function properly.



**We need this also at IPB**

NICEM, cell culture

GBST, Nano-Imaging

KNU, Nano-Imaging

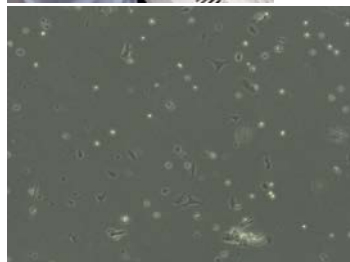
## Laboratorium Activity



*E. Coli* (transformation and midiprep)

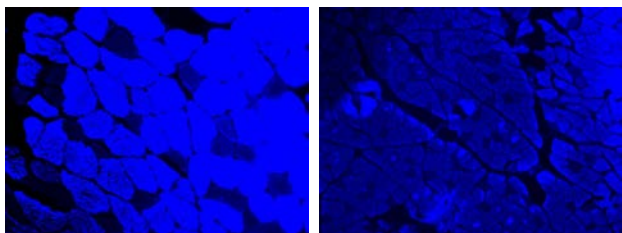


Cell Culture

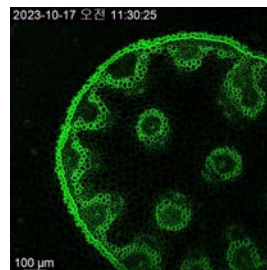


PCR for sexing

# Laboratorium Activity

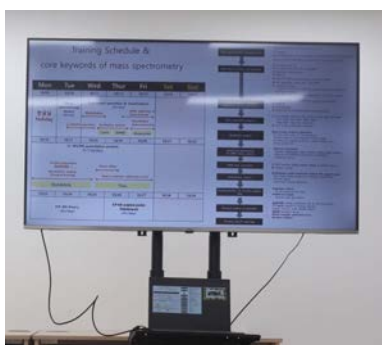


Immunohistochemistry



CLSM class and practice

# Laboratorium Activity



LC-MS/MS class and practice

ICP-MS class and practice

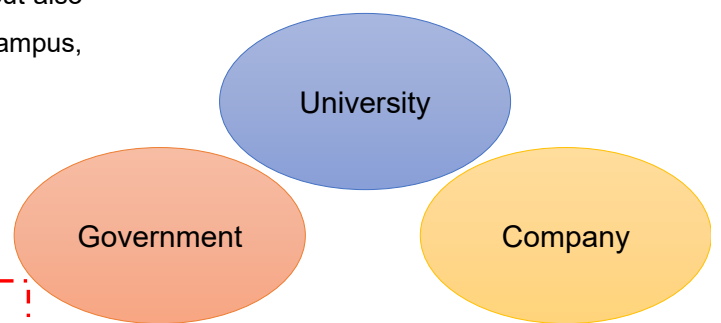
# Laboratorium Activity



## What we got during the training???

Knowledge about collaboration that can be carried out by laboratories with government and companies to ensure the quality and safety of food or commercial products.

The laboratories at GBST, NICEM, or KNU are not only used by lecturers and students at SNU, and KNU but also receive services for researchers from outside the campus, the government, and companies.



**Good Collaboration**

# Symposium activity



Attend the Forestry Seminar in Joenju

Attend the "Korean Global Adaptation Week 2023" seminar in Incheon



Rumen metabolism and Physiology

# Symposium activity



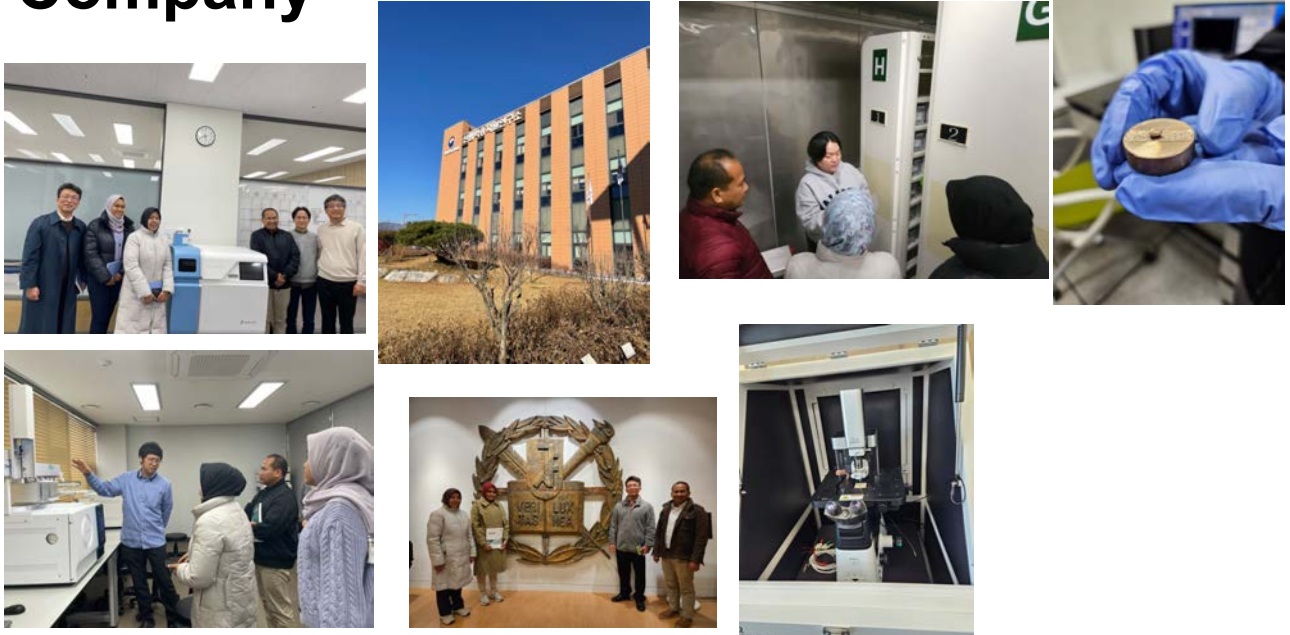
Join SNU Bio Day



Join Asian Forest Institute



# Visiting the Korean Facilities and Company



3

The facilities in the integrated laboratory are not complete so the service process cannot run properly.



**The equipment that we have currently:**



[Confocal Laser Scanning Microscope \(CLSM\)](#)



[Digital Stereo Microscope](#)

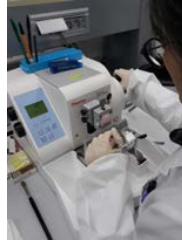
# What do we need to complete nano imaging laboratory equipment?



Tissue processing



Tissue embedding console



Microtome



sample processing for staining



storage



Fume Hood



Water bath

**That's why:  
We need KOICA support  
and a Korea company.**

## We also need other sophisticated instruments



CX-200Plus



Park NX10 Atomic Force Microscope (AFM)

1. This instrument will be used by veterinary faculty to see animal cell structures in more detail, especially in exploratory research.
2. Can be used by agricultural faculties to analyze plant structure.
3. Can be used to study the properties of materials, including metals, semiconductors, polymers, and biological samples.

**That's why:  
We need KOICA support  
and a Korea company.**

# 4

## The building structure and laboratory design need to be improved to meet safety standards and research needs.



Indonesia is famous for its many earthquakes, besides that the power grid often goes down. Currently, the nano-imaging laboratory at IPB also does not have a good enough air circulation system and does not have room for sample preparation. To provide optimal service, it is necessary to rearrange the room.



**That's why:  
We need KOICA support  
and a Korea company.**



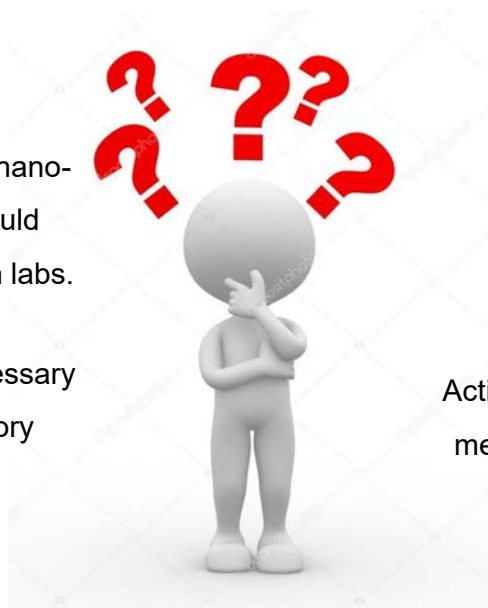
Young-in

Has services in handling laboratory biosecurity and biosafety

## WHAT SHOULD WE DO FOR NANO-IMAGING LABORATORIES?

Restructuring buildings, nano-imaging laboratories should have sample preparation labs.

Complete the necessary supporting laboratory equipment.



Holding training for researchers and students, IPB also can provide training for school students as a form of community service.

Activate promotions on social media to provide information about services.

Who Will help you?	How do you do it?	What do you do?	How do you interact?	Who do you help
Key Partners: 1. KOICA 2. Korean Company 3. GBST 4. SNU University 5. Kangwong University 6. BRIN	I. Mid-term training for lecturer II. Visiting the company III. Training for researcher IV. Collaboration with the other university.	I. Resource person Lectures to the scientists II. Dissemination to researcher in nano-imaging lab. III. Purchase of equipment for Nano-imaging lab IV. Construction of preparation lab.	1. With researchers through collaboration with BRIN, SNU and KNU 2. With AR lab staff through training at IPB. 3. With a Korean Company with the help of Koica	1. Scientists thought capacity building 2. Research through technology transfer and lab development 3. IPB's reputation will increase 4. Communities around IPB through community service and training programs
	<b>What do you need?</b> <ul style="list-style-type: none"> <li>Restructuring building</li> <li>SEM, AFM</li> </ul>		<b>How do you reach them?</b> <ol style="list-style-type: none"> <li>Social media to attract other researchers</li> </ol>	

**THANK YOU**



**Time to implementation**



# LESSONS LEARNT OF 2023 MID-TERM TRAINING PROGRAM



***Dr. Wulan Tri Wahyuni***

Faculty of Mathematic and Natural sciences,  
IPB University

# Final Report and Action Plan Midterm Training: Enhancement Role of Chromatography and Metabolomic Laboratory at ARLab IPB University in Research and Service Analysis

Wulan Tri Wahyuni

## Introduction



- Indonesia an agricultural country, the GDP from food and horticultural crop in 2022 was 18.3 billion USD and 29.6 billion USD, respectively [1].
- To increase the productivity of agricultural sector and for sustainable agriculture, soil evaluation and food safety is a crucial aspect.
- Indonesia is a global biodiversity hotspot, about 30–40% plant species of Asia and 10% of global plant species can be found in Indonesia [2].
- From the total flora of Indonesia, 10% are predicted to be medicinal plants [3-5].
- To optimize the potency of Indonesian medicinal plant, phytochemistry study (including metabolomic) and bioassay is important.

[1] <https://www.statista.com/topics/7732/agriculture-industry-in-indonesia>

[2] Myers et al., 2000), [3] Eisai, 1995; [4] Erdelen et al., 1999; [5] Cahyaningsih et al., 2021a.

# Introduction

Soil evaluation	Food Safety	Phytochemistry Study	Bioassay
<ul style="list-style-type: none"><li>• Soil fertility</li><li>• Organic and inorganic content</li></ul>	<ul style="list-style-type: none"><li>• Analysis of pesticide residue</li><li>• Analysis of inorganic fertilizer residue</li></ul>	<ul style="list-style-type: none"><li>• Standardization</li><li>• Omic study: Metabolomic</li><li>• Isolation &amp; purification</li></ul>	<ul style="list-style-type: none"><li>• <i>Invitro, invivo</i>, cell study to evaluate</li><li>• Bioactivity</li><li>• Toxicity</li></ul>



## Role of Chromatography, Metabolomic, cell bioassay

Supported by KOICA

# Purpose

Optimize and increase number & quality of metabolomic research and agricultural service analysis at Chromatography and Metabolomic Laboratory at ARLab IPB University

### How?

- Lesson learn from SNU and Other Institution in Korea: midterm training
- Action plan for implementation at AR Lab, IPB University



freepik.com

dreamstime.com

# Lesson Learn from SNU and Other Institution in Korea: Midterm Training



freepik.com



dreamstime.com

## Laboratory training: Organic and Inorganic Analysis of Agricultural Product

### Green Bio Research Facility Center (GBRFC)-SNU



LC-MS/MS and GC-MS/MS for organic analysis



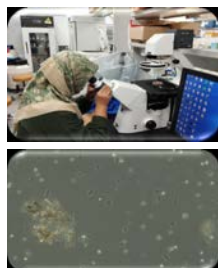
ICP/MS for inorganic analysis

### National Instrumentation Center for Environmental Management (NICEM)

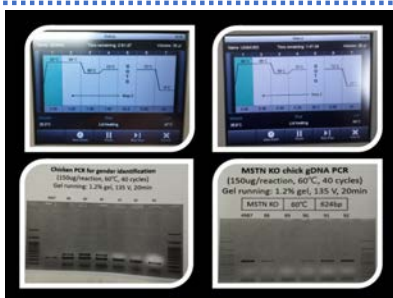


GC-MS/MS and environmental Analysis

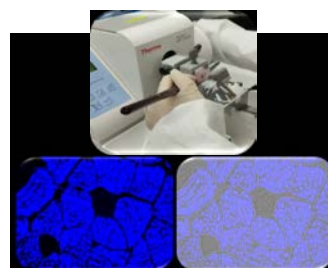
# Laboratory training: Cell Culture, Cell Bioassay Study, Genomic, & nanoimaging



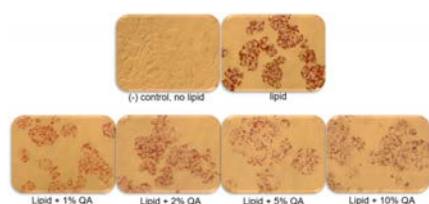
Culturing cell



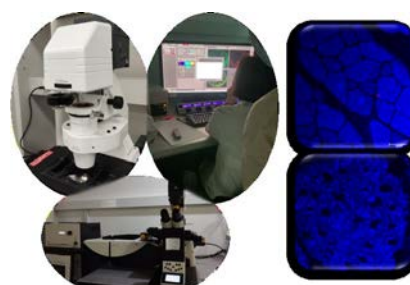
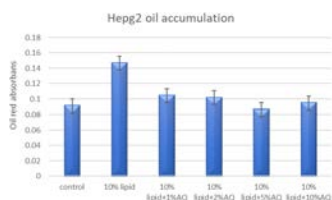
DNA & RNA extraction, PCR



Tissue Processing & Immunohistochemistry

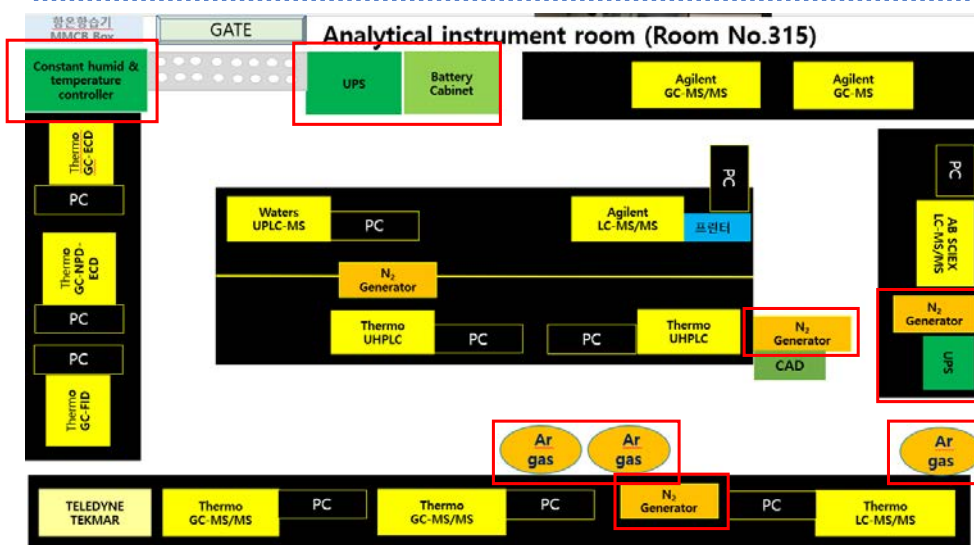


Bioassay using Hepg2 Cell culture



confocal laser scanning and light microscopy

# Laboratory Management: addressing safety, security and instrumentation maintenance



GC, LC and GC or LC-MS/MS room



Chemicals and solvent storage



Access limitation

# Academic Meeting & Networking

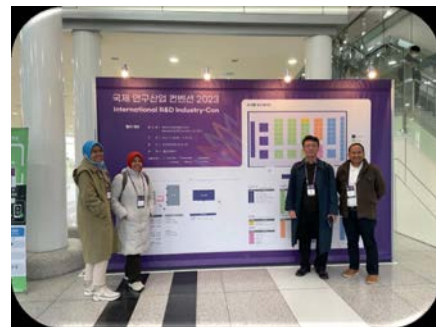
## Symposium, Conference, and Meeting



## Visiting other institution



# Academic-Industry Networking



# Action Plan for Implementation at AR Lab IPB University



alamy.com



## Action Plan for Implementation at AR Lab IPB University

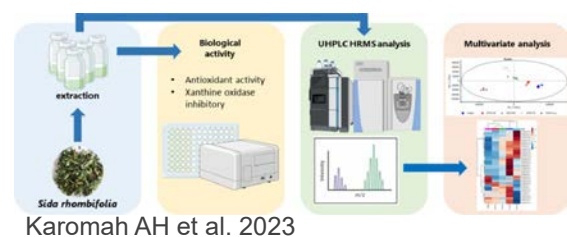
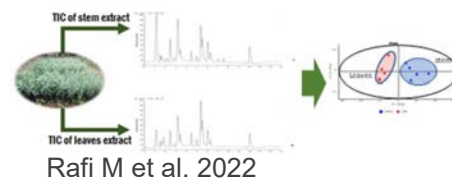


### Existing condition

Support the research which focus on metabolomic and metabolite profiling



- Liquid Chromatography (Vanquish)
- Liquid Chromatography (UltiMate 3000 RSLCnano)
- Q Exactive Plus Hybrid Quadrupole-Orbitrap Mass Spectrometer



# Action Plan for Implementation at AR Lab IPB University

**Title:** Enhancement Role of Chromatography and Metabolomic Laboratory at ARLab IPB University in Research and Service Analysis

**Goal:** Optimize and increase number & quality of metabolomic research and agricultural service analysis at Chromatography and Metabolomic Laboratory at ARLab IPB University

## Action Plan to achieve goal:

1. Laboratory setup
2. Instrumentation Procurement
3. Human Resource Capacity Building
4. Management and system
5. Monitoring and Evaluation



# Action Plan for Implementation at AR Lab IPB University

## Implementation Roadmap

### January-December 2024

- Laboratory setup
- Instrument procurement (1)
- Human resource capacity building: Midterm training, Short term training
- Monitoring&evaluation

### August-November 2023

- Midterm training
- Lesson learn internalization

### January-December 2026

- ISO and related analysis certification
- Human resource capacity building: analyst training&certification, Midterm training, Short term training
- Monitoring&evaluation

### January-December 2025

- Management & System improvement
- Instrument procurement (2)
- Human resource capacity building:analyst training&certification, Midterm training, Short term training
- Monitoring & evaluation

### January-July 2027

- Total Monitoring and Evaluation

increase number & quality of metabolomic research and agricultural service analysis at Chromatography and Metabolomic Laboratory

### December 2023

- Action plan workshop

## Action Plan for Implementation at AR Lab IPB University

### Implementation detail

#### 1. Laboratory setup

(expected completion time: 12 months)

- **Safety aspect:** air ventilation and circulation, chemical and solvent storage, fume hood, gas installation, chemicals disposal system, laboratory waste management
- **Security aspect:** controlled access to chemical storage, instrument, and laboratory
- **Instrumentation maintenance aspect:** electricity stabilizer, UPS, battery cabinet
- **Others:** laboratory working bench, laboratory flooring/tile



## Action Plan for Implementation at AR Lab IPB University

### Enhancement Role of Chromatography and Metabolomic Laboratory at ARLab IPB University in Research and Service Analysis

**2. Instrumentation Procurement** (expected completion time 24 months): GC-MS/MS and other supporting appliances (example: sample extraction apparatus, fridge etc.)

#### 3. Human Resource Capacity building

(expected completion time 24 months): analyst training, analyst certification, ISO and related analysis certification

#### 4. Management and System Improvement

(expected completion time 12 months): analysis service management, branding and advertising AR Lab analysis services

#### 5. Monitoring and Evaluation



## Action Plan for Implementation at AR Lab IPB University

### Monitoring and Evaluation

No	Scope of monitoring	Time of evaluation
1	Laboratory setup	Every 2 months
2	Instrument procurement	Every 3 months
3	Human resource & capacity building: - analyst training - analyst certification - ISO and related analysis certification	Every 2 months
4	Management and system improvement: - analysis service management - branding and advertising AR Lab analysis services	Every 2 months

## Action Plan for Implementation at AR Lab IPB University

### Investment and Cost

No	Item	Investment and Cost (USD)
1	Laboratory setup	Need to be calculated
2	Instrument procurement - GC-MS/MS - Sample preparation	285.000 232.101
3	Human resource & capacity building: - analyst training - analyst certification - ISO and related analysis certification	Need to be calculated
4	Management and system improvement: - analysis service management - branding and advertising AR Lab analysis services	Need to be calculated

# Action Plan for Implementation at AR Lab IPB University



## Expected result

No	Item	Expected result
1	Laboratory setup	Appropriate laboratory conditions to maintain good instrument performance
2	Instrument procurement - GC-MS/MS - Sample preparation	<ul style="list-style-type: none"> <li>Enhancement of academic reputation from scientific publication</li> <li>Increase number of analysis services</li> </ul>
3	Human resource & capacity building: - analyst training - analyst certification - ISO and related analysis certification	<ul style="list-style-type: none"> <li>Community trust</li> <li>Increase number of analysis services</li> <li>Increase income</li> </ul>
4	Management and system improvement: - analysis service management - branding and advertising AR Lab analysis services	<ul style="list-style-type: none"> <li>Community trust</li> <li>Increase number of analysis services</li> <li>Increase income</li> </ul>

# Action Plan for Implementation at AR Lab IPB University



## Resume

Who will help you ?	How do you do it	What do you do?	How do you interact ?	Who do you help?
IPB University  ICAB  KOICA  GBRFC  NICEM  Instrument company and supplier	1. Laboratory setup 2. Increase the capacity in term of instrumentation, analysis services, and human resources  3. Build the professional analysis service management 4. Branding and advertising AR-Lab analysis service  <b>What do you need?</b> 1. Funding 2. Instrument (GC-MS/MS) and supporting appliances 3. Human resources (trained and loyal analyst) 4. Professional management system	1. Instrumentation Procurement (GC-MS/MS) 2. Increase analyst skill and competency through training and competency certification  3. Find partner to help build professional management system, make branding and advertising for research and analysis service	Training & workshop Email communication Direct communication  <b>How do you reach them?</b> Website Dissemination Online Advertising	1. Researcher 2. Industry 3. University stake holder (including student) 4. Community which need access for chromatography analysis
<b>How much it cost</b> 600.000 USD	<b>What will you make</b> Enhancement of academic reputation through scientific publication Increasing the number and income from chromatography analysis service Community trust			

## Acknowledgement

---

- Prof. Byung Chul Park
- Prof. Ho Sang Kang
- Prof. Tae Sub Park
- GBRFC head and researchers
- Prof. Tae Sub Park students
- Prof. Goontaek Lee and NICEM researchers
- ICAB staff
- Kangwon National University
- Forest Medicinal Resources Research Center
- Korean Forestry Promotion Institute
- Baekdudaegan National Arboretum

Thank you



# LESSONS LEARNT OF 2023 MID-TERM TRAINING PROGRAM



***Dr. Mawar Subangkit***

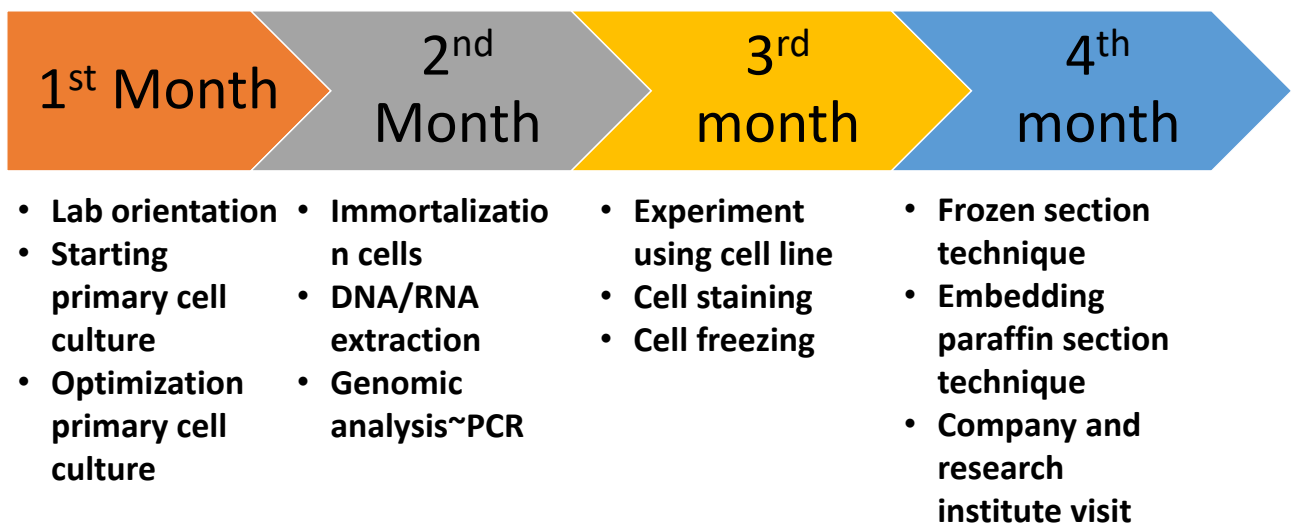
School of Veterinary Medicine and Biomedical sciences,  
IPB University

# 3<sup>rd</sup> Monthly Report Mid-Term Training KOICA 2023

Mawar Subangkit

SEOUL NATIONAL UNIVERSITY, PYEONGCHANG CAMPUS  
PYEONGCHANG, SOUTH KOREA 2023

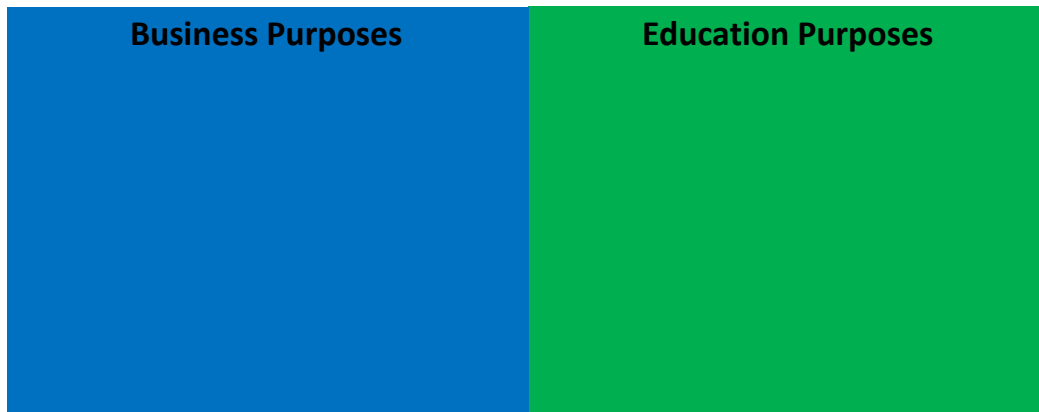
## Summary Activity





# Lesson Learn for ARLab-IPB

- Laboratory set up purposes



Maintenance << Income

Maintenance ~ Income

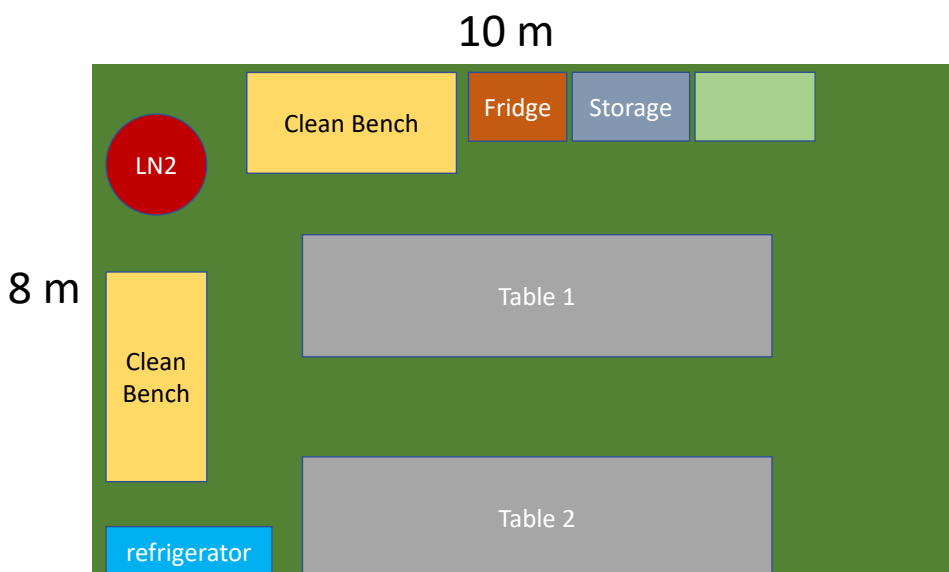
## Maintenance X Income Balancing Management

High maintenance -- > Low Instrument/Lab Usage  
Low maintenance -- > High Instrument/Lab Usage

### Strategy:

1. We identify the **Customer/Client/Market**
2. We install the instrument only what we need and high usage

## What we have in ARLab



Set up the  
Animal Cell  
Culture Facility

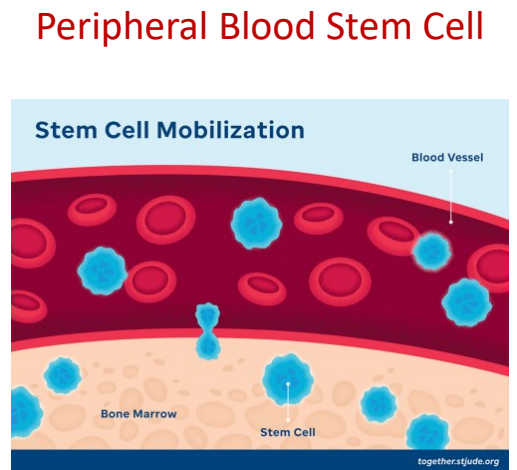
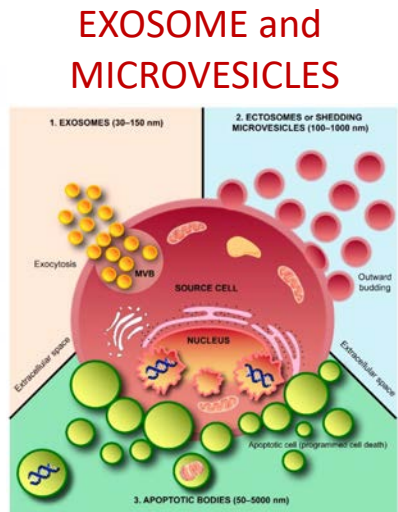
## ACTION PLAN 1: *Mapping the Market*

### *Potential market 1: Cell Culture Research* Support for IPB Researcher and Institutions

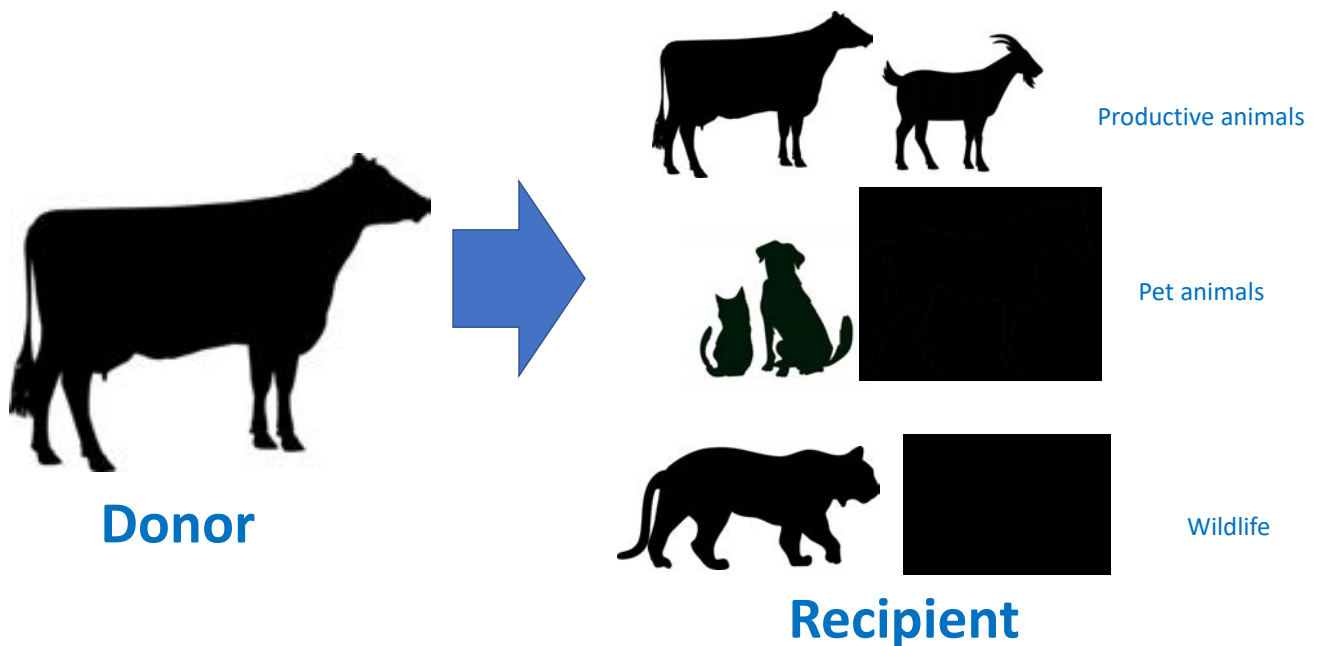
- At least 4 school and faculty in IPB may relate with cell culture, ie.: School of veterinary medicine and biomedical sciences, Faculty of Animal Sciences, Faculty of Fisheries, Faculty of Mathematics and Natural Sciences
- Supporting several research center group in IPB ie.: Biofarmaka for screening and testing the efficacy of herb product; VetStem to optimize the stem cell product
- Supporting student research to get the better result and publishable in international journal with high impact factor
- Provide the primary cell culture from various tissue from various animals

# Potential market 2: Xenogeneic Cell therapy Mass Production

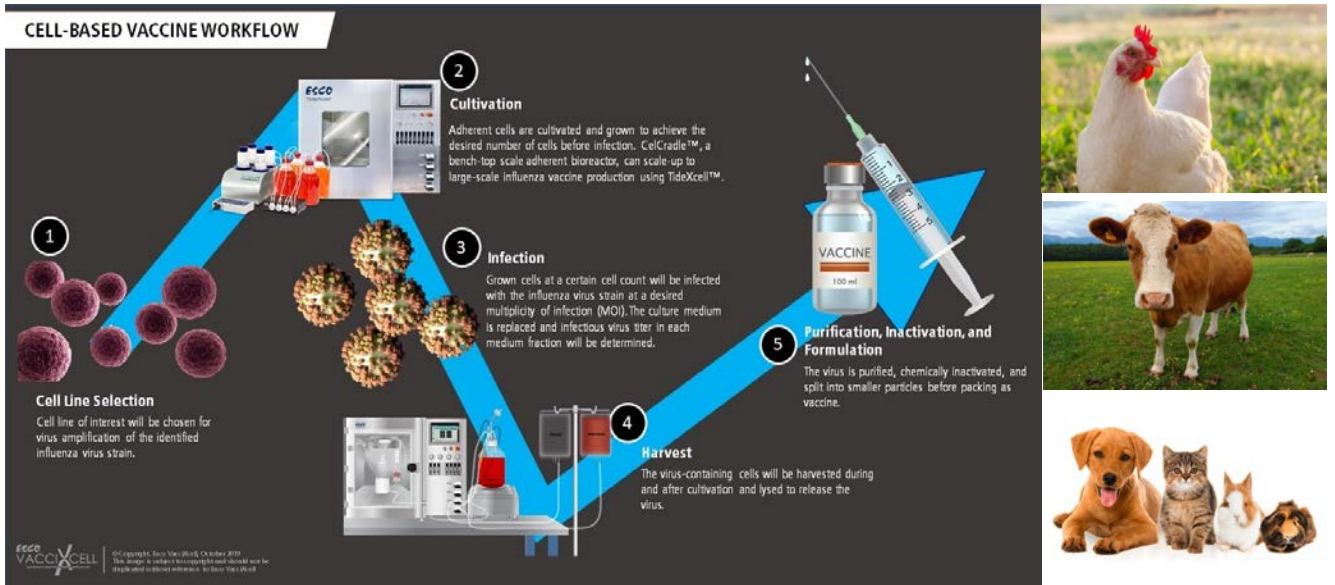
- There are three kind cell therapy the most feasible (simple and inexpensive)



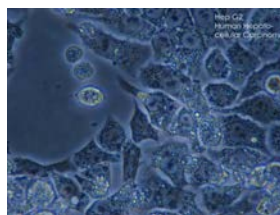
We are not thinking in autologous but **Xenogeneic** from **Animal Donor** for Mass Production



# Potential market 3: Cell-Based Vaccine Production for Animal



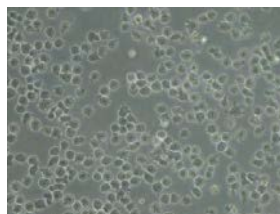
# Potential market 4: Non-Animal Testing for Drug Discovery Services



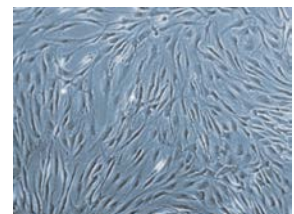
**HepG2 for lipid metabolism testing**



**Fibroblast for Wound Healing testing**



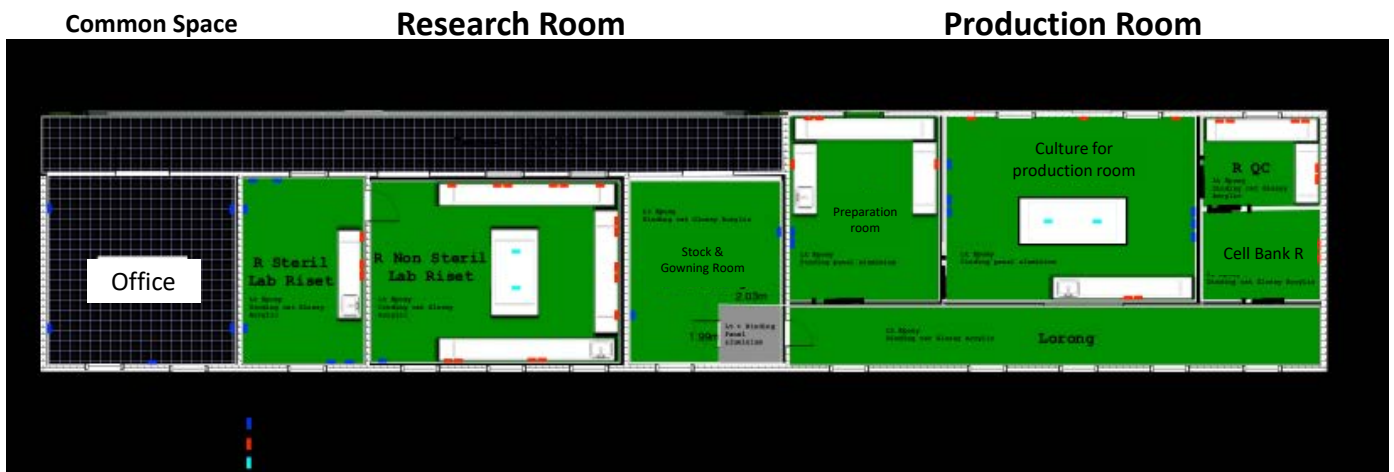
**Gluc-T01 for Genotoxicity testing**



**HOB for Bone Fracture Healing**

# Action Plan 2: Setup the Facility

- Remodeling the room (Ideally)



## Priority List of Instruments

Primary	Secondary	Additional
<ul style="list-style-type: none"> <li>• For cell culture activity</li> <li>• Production</li> </ul>	<ul style="list-style-type: none"> <li>• Supporting tools for culture activity</li> <li>• Accessories</li> </ul>	<ul style="list-style-type: none"> <li>• For cell research and analysis</li> <li>• For publishable data</li> </ul>
<i>Production Activity</i>		<i>Research Activity</i>

## Primary Needs



- **Class II Type IIA Biosafety Cabinet**
- **2 unit** necessary
- Accessories;
  - **Micropipette set**
  - **Refrigerator/Showcase**
  - **Freezer -20**

## Primary Needs



- **Swing out rotor centrifuge**

## Primary Needs



O<sub>2</sub> incubator  
unit necessary



Dry Bath

## Primary Needs



- Inverted microscope with Fluorescence
- Accessories:
  - Microscope camera
  - Operating PC
  - Cell counter kit

## Secondary Needs/Supportin



Ice maker



Vortex Mixer



Autoclave



Dry Oven



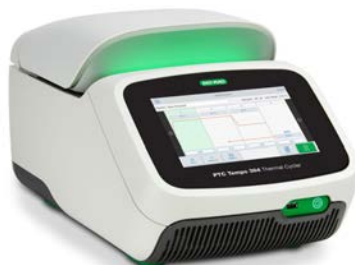
Incubator Shaker

## Additional needs/Research/Publication

- For DNA/Genomic analysis



Nanodrop  
Nucleic acid measurement



Thermal Cycler  
PCR analysis



Electrophoresis  
Gel Visualization



Gel Doc  
Gel Documentation and analysis

# Additional needs/Research/Publication

- For Protein analysis

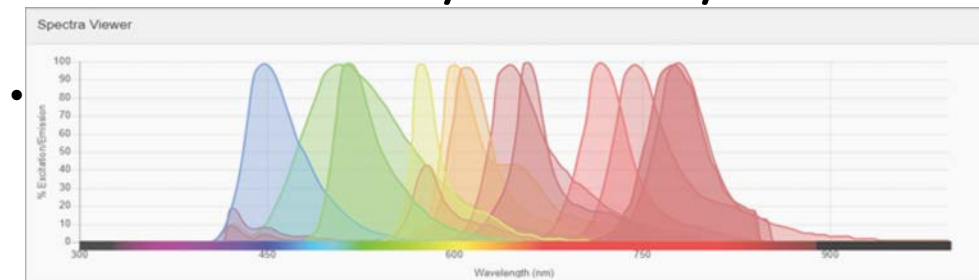


Microplate Reader Spectrophotometry  
ELISA



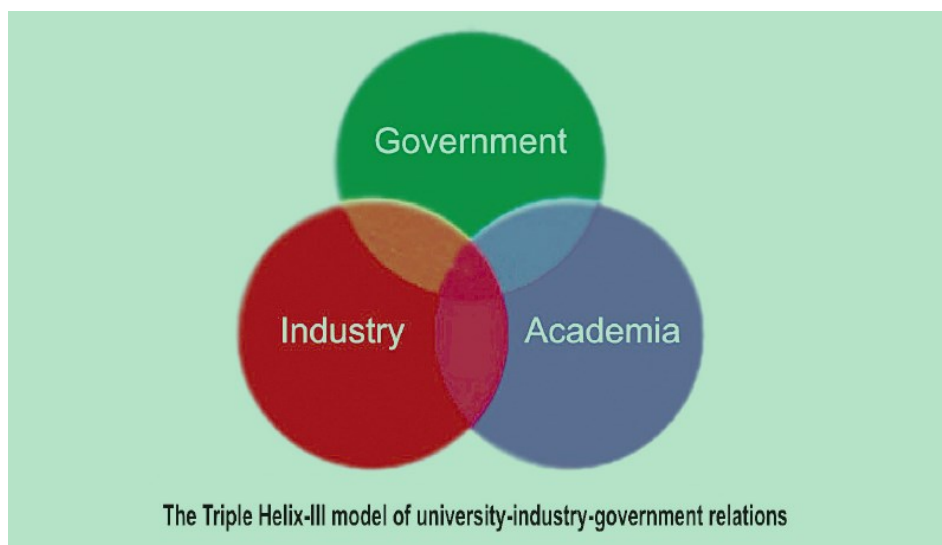
SDS-Page Instrument kit

# Additional needs/Research/Publication



## Action Plan 3: *Introducing to the Society*

### Collaborations



# Contact, discussion and MoU Signing with private company



# Scientific activity

RejasefInd **ASPI**

**Webinar Series**  
**Asosiasi Sel Punca Indonesia (ASPI)**  
 Mempersembahkan:  
**Update Penelitian Sel Punca Secara in vitro dan Penelitian Pre-Klinis**  
 18th December 2020  
 14:00-16:00 WIB

**MODERATOR**  
  
 Dr. Cynthia Retna Sartika, M.Si

**SPEAKER**

dr. Radiana Dhewayani Antarianto, M.Biomed, PhD  
 Perkembangan Penelitian Sel Punca secara in vitro

drh. Mawar Sumbangkit, M.Si, PhD  
 Perkembangan Penelitian Sel Punca pada Hewan

Registration Fee  
 RP. 55.000  
 Last Registration  
 17 Desember 2020  
**REGISTRASI HANYA PADA APLIKASI D2D**

Organized by: **Doctor to Doctor**

**COLLABORATIVE SEMINAR & WORKSHOP SERIES**  
**BRIN-ASPI 2023**  
 "The Rising Tide of Stem Cells Elaboration: Creating a Bigger Platform for Research and Community"  
 Friday, 13 January 2023

**KEYNOTE TOPICS**  
 "Building Strategic Partnership on Creating a Bigger Platform for Stem Cells Research and Development"

**MAIN TOPICS**

- "Advance in Basic Research: Upcoming on Stem Cells Research and Development"
- "Insight of Stem Cells Pre-Clinical Study: A Prelude to Clinical Application"
- "Deep into Clinical Application of Stem Cells: Accelerating from Proof of Concept to Clinical Applications"

Sponsored by:

## Product Trial Release



## Cells and Vaccine Product

Title of proposed project:

## **Establishment Animal Cell Culture Facility in ARLab IPB University**

## Problem

- The facility is limited in IPB for Animal cell Culture
- High need for cell culture services for business and academic purposes especially for journal/publications
- Self maintenance management is very poor so many instrument doesn't run well or some of them idle

## Solution

- Improve the facility and optimize the new and existing instruments in IPB
- Improve the researcher skill for cell culture
- Collaboration with private sector for develop the business to get income generation for operate and maintenance the instruments

Who Will help you ?	How do you do it	What do you do?	How do you interact ?	Who do you help?
<b>Key Partners:</b> 1. IPB University 2. KOICA and Government 3. Stem Cell Institute PT Kalbe Farma (private company) 4. ProStem Prodia (private company)	i. Training the research staff and others in IPB University ii. Seminar and scientific meeting iii. Media briefings iv. Clinical trials in veterinary clinic	<ul style="list-style-type: none"> <li>Research and development the cells and its product</li> <li>Stem Cell culture, PRP isolation and exosome extraction from the sample and cell culture</li> <li>Optimization of cell products for ready to use in treatments</li> </ul>	Scientific meeting and seminars Trainings Campaign in scientific meeting Promotion in veterinary clinics	Improve the medications in animal clinic, especially the diseases where no alternative medications, aging and metabolic disorders Reduce the treatment cost by producing the cheap medicine with high efficacy
	<b>What do you need?</b> <b>Key resources:</b> Facility Experiment Skills Marketing collaborate with private sector		<b>How do you reach them?</b> Direct communication by invited the stakeholders in online and offline scientific meeting	
<b>What will it cost?</b> USD 400.000,- for the facility USD 50.000,- for the research and optimization product USD 50.000,- for marketing (advertisement, campaign and promotions)		<b>How much will you make</b> <ul style="list-style-type: none"> <li>Improve the facility for better research</li> <li>Increasing research about cell (in vitro) and scientific publication in IPB</li> <li>Producing medicine product</li> <li>Revenue from selling the product</li> <li>Help the pet owner and veterinarians to keep the animals healthy</li> </ul>		

Thank you



***Edited by***

Ho Sang KANG  
Yoona CHANG  
Insoo HWANG  
Jean-Young SHIN

***Designed by***

Yoona CHANG

***Published in***

January 2024

***Publisher***

Ho Sang KANG  
Institutes of Green Bio Science and Technology,  
Seoul National University

***Published by***

Institutes of Green Bio Science and Technology,  
Seoul National University

---

**INSTITUTES OF GREEN BIO SCIENCE & TECHNOLOGY,  
SEOUL NATIONAL UNIVERSITY**

**T** +82-33-339-5990

**E** [icab.koica@gmail.com](mailto:icab.koica@gmail.com)

1447, Pyeongchang-ro, Pyeongchang, Gangwon,  
25354, Republic of Korea

Copyright © 2023 Institutes of Green Bio Science and Technology

All rights reserved. No part of this publication may be reproduced in any form  
by any means without permission in writing from the copyright holders.



