

**29TH**  
**APRSAF**  
ASIA-PACIFIC REGIONAL  
SPACE AGENCY FORUM  
INDONESIA



**Space Frontier Working Group**

# **Working Group Summary Report**

**Co-Chairs:**

**Dr. Emanuel Sungging (BRIN)**

**Dr. Shirakawa Masaki (JAXA)**

# Participants

**88 Participants from 16 countries/regions, 41 organizations**  
**(Including on-line/video participants)**



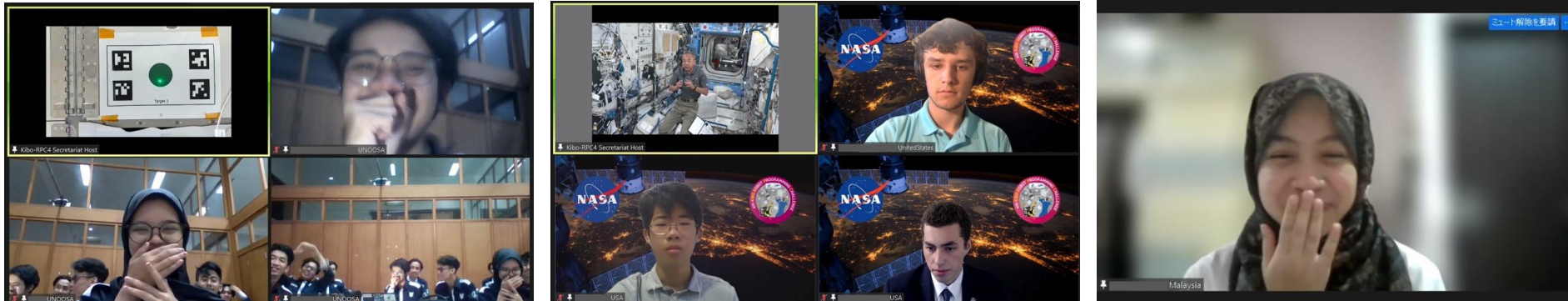
Country/Region	No	Organizations
Australia	2	ASA, Seinburne University of Technology
Austria	1	UNOOSA
Bangladesh	2	STEMX365
India	1	Indian Space Research Organisation
Indonesia	27	BRIN, Surya Satellite-1, Universitas Negeri Yogyakarta, Universitas Bandar Lampung
Japan	31	JAXA, Ministry of Education, Culture, Sports, Science and Technology (MEXT), Prime International, Ministry of Economy, Trade and Industry, MBA, JICA, Kyushu Institute of Technology, JAMSS, Mitsui & Co.,Ltd., ANA HOKDINGS INC., Axiom Space, Inc., SpaceBD, Digitalblast, Inc.

Country/Region	No	Organizations
Korea	1	Korea Aerospace Research Institute
Malaysia	3	MYSA
The Philippines	2	PhilSA
Singapore	3	Space Faculty
Sweden	1	Swedish Space Corporation
Taiwan	5	TASA, Industrial Technology Research Institute, China Medical University, National Taiwan University
Thailand	4	GISTDA, NSTDA, Mahidol University, Asian Institute of Technology
UAE	2	MBRSC, Khalifa University
UK	2	UK Space Agency, Teledyne UK Ltd.
USA	1	Blue Origin

# Activity Summary

## Kibo Robot Programming Challenge (Kibo-RPC)

- The 4<sup>th</sup> Kibo-RPC is currently in the midst of hosting the Final Round.
- **1,168** participants from **19** countries/region have joined in the competition, and it is the largest number of participants to date.
- There are 3 updates from the previous Kibo-RPC.
  - New game rules
  - **Established the UNOOSA International Slot**
  - Released tutorial video clips
- Onboard Astrobbee runs have been already done, and the **Final Round Event** will be held at JAXA/TKSC on October 21st, 2023.



# Activity Summary

## Asian Try Zero-G

- **6** themes for Asian Try Zero-G 2022 had been successfully conducted onboard the ISS in January 2023.
- The students analyzed the results of their experiments and made a presentation on the Wrap-Up session in March.
- **570** participants from **9** countries/region have taken part in Asian Try Zero-G 2023, and **16** themes have been selected.
  - For the proposal of exercises, the secretariat have introduced Category B for the first time.
- The launch items were handed over to Cargo and the on-orbit experiment will be conducted on January 31<sup>st</sup>, 2024.



# Activity Summary

## Asian Herb in Space (AHiS)

- **AHiS is ongoing with the participation of 13 organizations.**  
(Australia, Bangladesh, Indonesia, Japan, Malaysia, Nepal, New Zealand, Philippines, Singapore, Taiwan, Thailand, UAE, and Vietnam)
- **It is recognized that AHiS ignites the passion of the next generation in the region.**
- **Education programs with space seeds are being held by some organizations.**



AHiS



# Activities and future plans from each organization



- Space activities and future plans for space environment utilization were reported from **8** countries/region.

(Australia, Bangladesh, Indonesia, Japan, Philippines, Singapore, Taiwan and Thailand)

- ✓ Space policy and space program
- ✓ CubeSat development and deployment through J-SSOD
- ✓ Asian Herb in Space (AHiS)
- ✓ Kibo Robot Programming Challenge
- ✓ Asian Try Zero-G
- ✓ Conferences, Workshops, and Space science festivals
- ✓ Commercialization and new projects



# Kibo Utilization in Kibo Pressurized Module



- **Protein Crystal Growth (PCG) Experiments**

- **JAXA PCG project** has achieved numerous accomplishments in research and development of medicine.
- **The 1st UAE Protein Crystal Growth Experiment**, under the agreement between UAESA, MBRSC, and JAXA, was conducted in June 2023.  
The 2nd experiment sample from Khalifa University will be launched in 2024.



- **UAE Long-Duration Astronaut Mission 2023**

- **Emirati astronaut, Sultan AlNeyadi** stayed on the ISS from March to September 2023.
- There are many experimental and educational collaborations with various international organizations.



# Kibo Utilization in Kibo Pressurized Module

## ● Proposed New Experiments

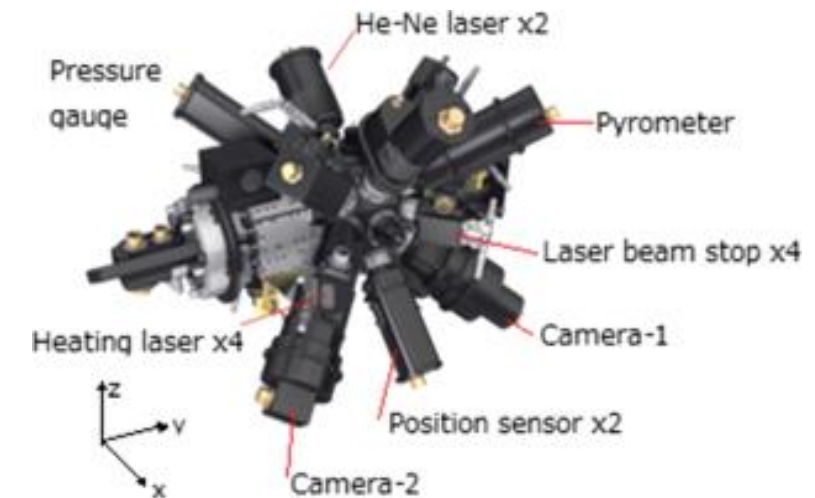
- **Silica Optical Fibers Personal Dosimeter Badge (SOFPeD)** from Malaysia
- **Cell Ark for Space Travel** (cell culture experiments) from Taiwan



Cell Ark experiment

## ● Electrostatic Levitation Furnace (ELF)

- ELF's status that it is utilized by many researchers and companies in Japan, US, and Turkey is introduced.

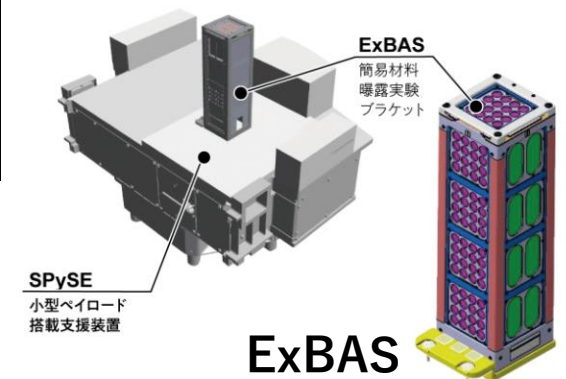
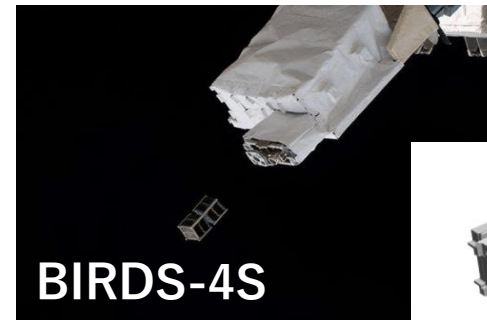




# Kibo/J-SSOD and Exposed facility



- **Innovation Award - STEM education**
  - J-SSOD and KiboCUBE won the award during the ISS R&D conference in 2023.
- **SuryaSat (KiboCUBE) by Surya University, Indonesia**
  - SS-1 was successfully deployed from Kibo using J-SSOD in January 2023.
- **Maya Satellites (J-CUBE) by University of the Philippines Diliman, Philippines**
  - BIRDS-4S (MAYA-5, MAYA-6) was successfully deployed from Kibo using J-SSOD in July 2023.
- **i-SEEP and ExBAS**
  - Introduced opportunities for utilization of exposed experiment platform, i-SEEP and its bracket ExBAS



# Technical Demonstration Platform, Kibo

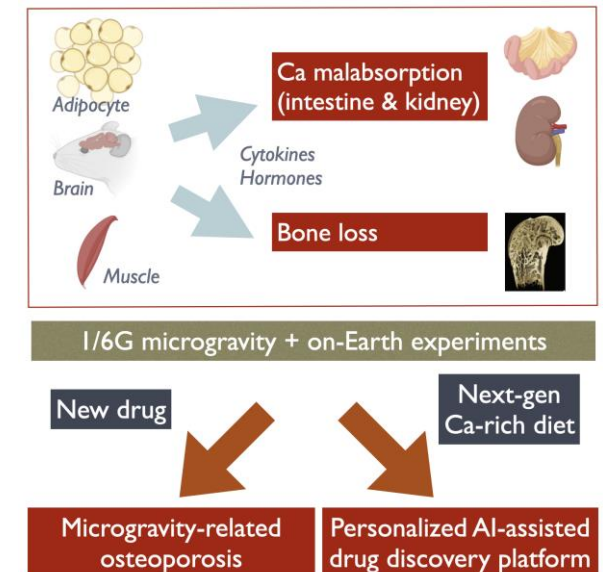


- **Kibo Rodent Missions: Zero-G and Moon-G**

- JAXA conducted the first Moon-G (1/6G) mission in 2019.
- JAXA and NASA joint partial-gravity rodent research mission (MHU-8) under JP-US OP3 was conducted in 2023.

- **Post-flight Rodent Tissue Sharing Program**

- GISTDA and JAXA signed the collaborative agreement.
- Mahidol University (Thailand) will analyze the JAXA's post-flight rodent tissue aiming to contribute to health research.



# International Space Exploration



## ● Agencies' update:

- Speakers(\*) provided their space exploration activities.

\* BRIN/ITB (Indonesia), KARI (Korea), ISRO (India), JAXA (Japan)

- Recognizing the expansion of activities in Asia, as exemplified by India's Chandrayaan-3.

## ● R&D and Utilization plan for Space Exploration:

- Promoting research and development to acquire the necessary technologies.

- Active consideration is also being given to scientific utilization of the Moon's surface.

- Asia is at the stage of demonstrating its presence in lunar exploration.

## ● New role of this session:

- For the first time, a roundtable discussion among the speakers was conducted.

- This adds a new value to the space exploration session: to discuss Asia's strengths and future possibilities for cooperation.

# Summary



- 1. Welcomed the continuation and development of various international cooperation projects and increased the number of participants of the Kibo-ABC programs as a contribution to the SDGs in the Asia-Pacific region.**
- 2. Welcomed the realization of proactive and academic utilization of “Kibo” by inquisitive countries and regions.**
- 3. Encouraged regional information exchange on international space exploration initiatives. The first roundtable discussion was held, and it was meaningful as a stepping-stone for the future information-sharing platform.**