



AGensi ANGKASA NEGARA • KEMENTERIAN SAINS, TEKNOLOGI DAN INOVASI
NATIONAL SPACE AGENCY • MINISTRY OF SCIENCE, TECHNOLOGY AND INNOVATION

Malaysia Kibo Activity

MOHD HELMY BIN HASHIM

National Space Agency of Malaysia (ANGKASA)

**SPACE ENVIRONMENT AND KIBO UTILIZATION WORKSHOP
(SEKUW)**

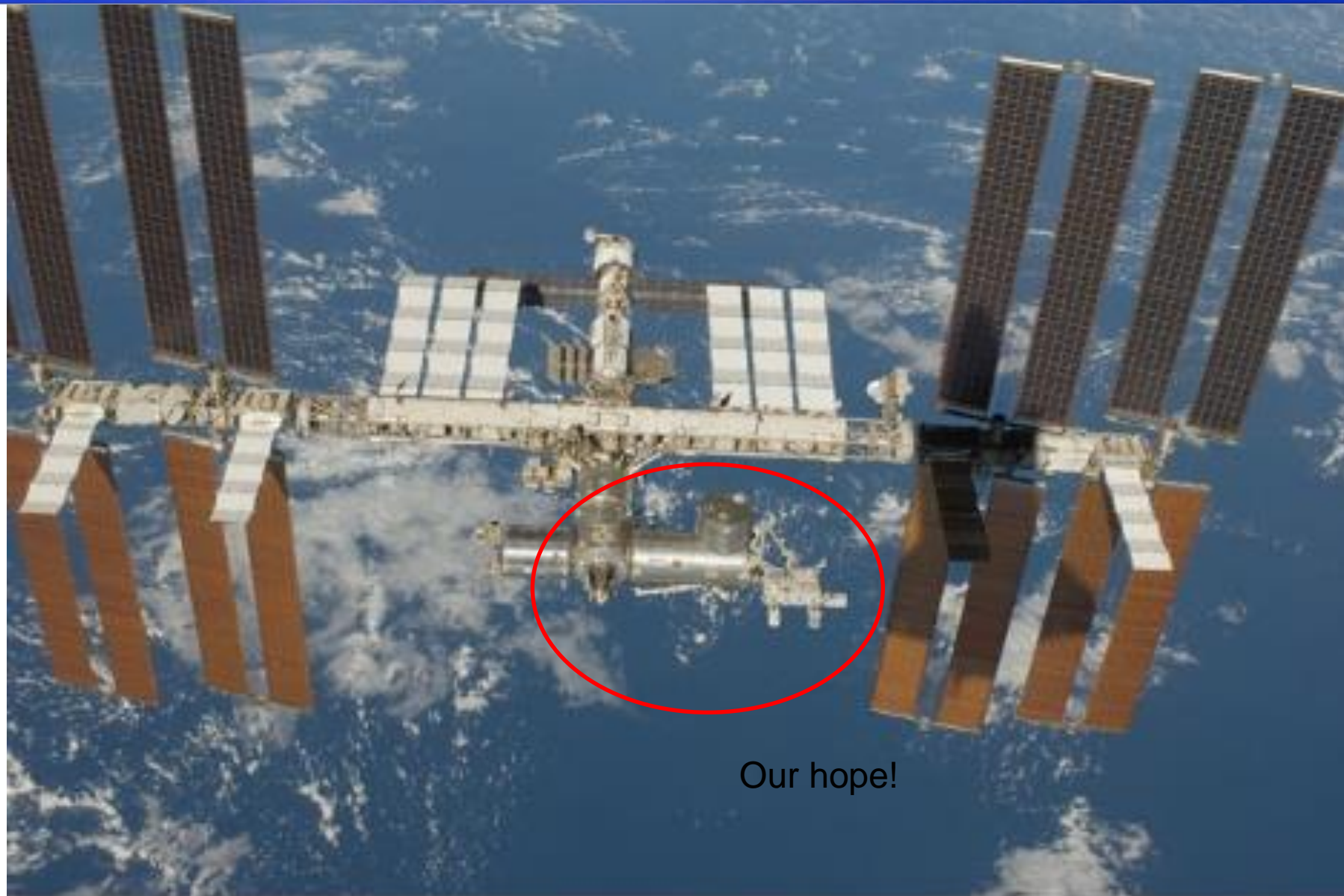
18-19 April 2016

National Planetarium

ANGKASA

CONTENT

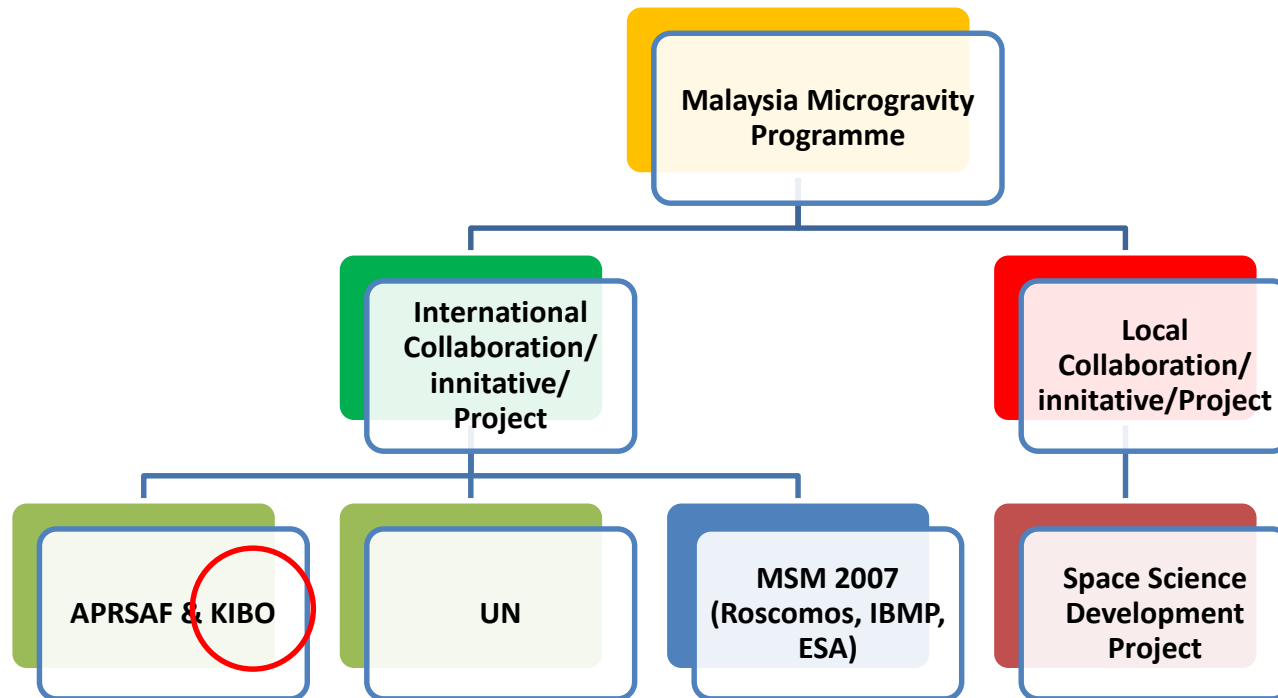
1. Introduction
2. Malaysia – Japan Kibo Activities
3. Potential future activity
4. Conclusion



Our hope!

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INTRODUCTION - MALAYSIA KIBO ACTIVITY



MALAYSIA KIBO ACTIVITY

- i. Protein Crystal Growths (PCG)
- ii. Try Zero-G
- iii. Space Seeds for Asian Future (SSAF)
- iv. Talk/ Space Awareness

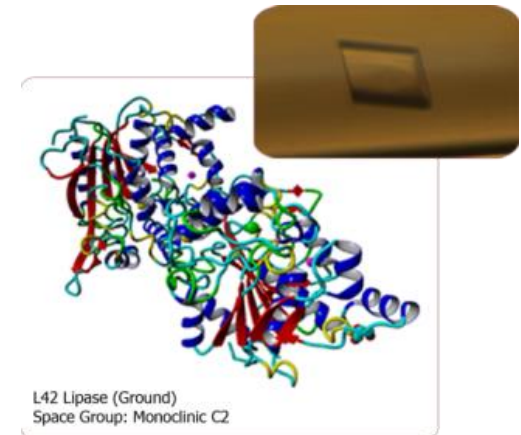
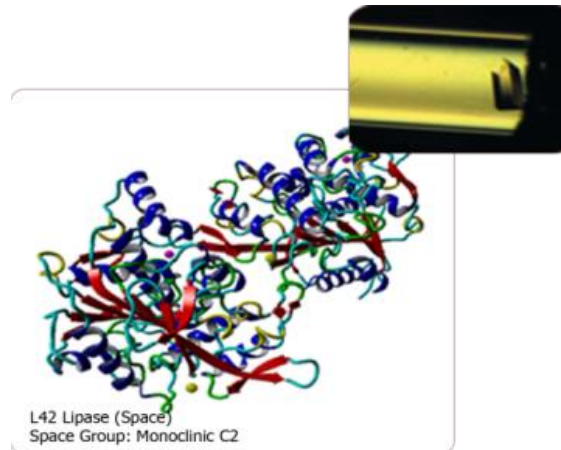
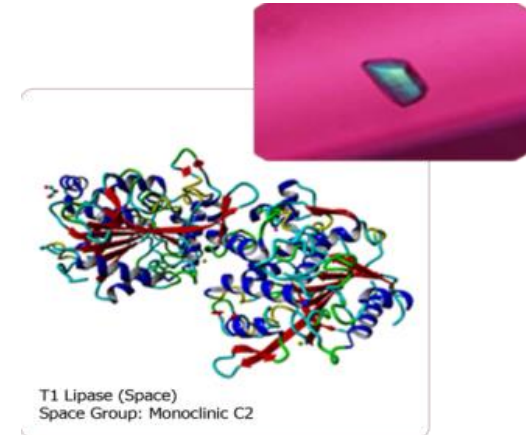
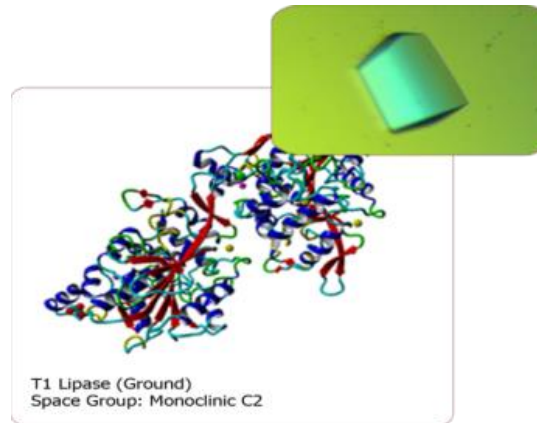
PROTEIN CRYSTAL GROWTH

Project output:

- ❑ 2009 - 2013
- ❑ 6 flights
- ❑ 17 of 24 Protein's biology structure were solved!
- ❑ RM1.5 million

Objective

- ❑ To obtain the high quality proteins crystals of industrially important enzymes under microgravity environment for more precise protein 3D structure.



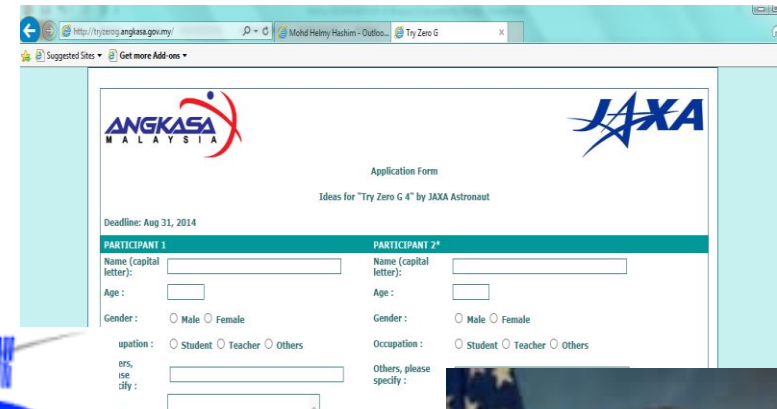
TRY ZERO-G



Call for Ideas for the "Try Zero G 4"



Deadline: 31 August 2014



The screenshot shows a web browser window with the URL <http://tryzero.angkasa.gov.my/>. The page features the ANGKASA MALAYSIA and JAXA logos. The title is "Application Form" for "Ideas for 'Try Zero G 4' by JAXA Astronaut". The deadline is "Aug 31, 2014". There are two columns for "PARTICIPANT 1" and "PARTICIPANT 2*", each with fields for Name (capital letter), Age, Gender (Male/Female), Occupation (Student/Teacher/Others), and a field for "Others, please specify".



TRY ZERO G

- Under Kibo ABC Platform
- Looking for idea of simple zero-G activity to be conducted by Japan Astronaut in Kibo, ISS
- Proposal selected for Try-Zero-G on board:

“Touch and spin a floating object (modified title)”

Demonstrated by JAXA Astronaut, Mr. Kimiya Yui during ISS Expedition 44/45 mission on July 2015 - latest.

- Next Zero-G -2016 – Malaysia Proposal under review.



TRY ZERO-G



PENYELIDIKAN di ISS biasa melibatkan graviti mikro.

Berkongsi idea dengan angkasawan Jepun di ISS

AGensi Angkasa Negara (Angkasa) di bawah Kementerian Sains, Teknologi dan Inovasi (MOSTI) akan menganjurkan Program Try Zero G buat kali keempat pada tahun ini.

Angkasa dalam kenyataannya berkata, orang ramai dijemput menyertai program tersebut dengan menyumbang idea dan cadangan aktiviti eksperimen yang sesuai untuk dijalankan di Stesen Angkasa Antarabangsa (ISS).

"Program Try Zero G 4 ini merupakan sebuah program pendidikan yang memberi penekanan untuk berfikir secara kreatif dengan menggunakan aplikasi sains dan fizik secara mudah," katanya.

Angkasa berharap dengan adanya pertandingan tersebut, ia akan membantu kerajaan

untuk mendekatkan bidang sains dan teknologi kepada rakyat, sekaligus dapat menanam minat mendalam dalam kalangan generasi muda mengenai bidang sains angkasa.

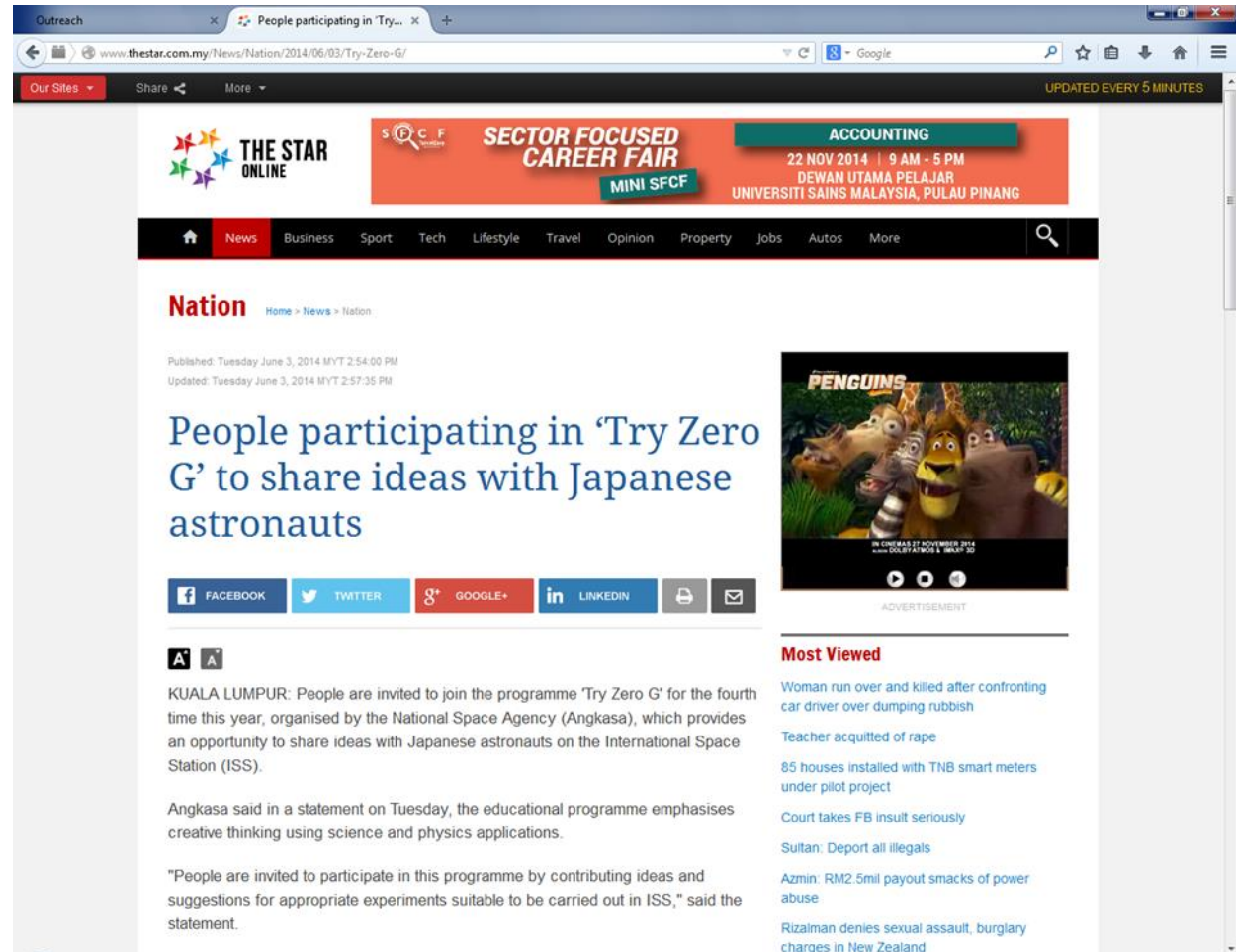
Melalui program tersebut, Angkasa percaya ia dapat memberi pendedahan serta pendidikan tentang perbezaan ciri-ciri dan ruang persekitaran di antara OG (di ISS) dan 1G (di bumi).

Sebagai panduan, orang ramai boleh menyaksikan video idea-idea aktiviti eksperimen di <http://www.youtube.com/watch?v=hjCRgK0f8vY>.

Borang penyertaan dan cadangan - cadangan perlulah dibenarkan kepada Angkasa melalui pos atau emel atau mengisi borang penyertaan online di www.angkasa.gov.my/.



SEORANG angkasawan Jepun menjalankan penyelidikan di ISS pada program Try Zero G.2.



Outreach x People participating in 'Try... x +

www.thestar.com.my/News/Nation/2014/06/03/Try-Zero-G/

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Nation

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Updated: Tuesday June 3, 2014 MYT 2:57:35 PM


People participating in 'Try Zero G' to share ideas with Japanese astronauts

FACEBOOK TWITTER GOOGLE+ LINKEDIN

KUALA LUMPUR: People are invited to join the programme 'Try Zero G' for the fourth time this year, organised by the National Space Agency (Angkasa), which provides an opportunity to share ideas with Japanese astronauts on the International Space Station (ISS).

Angkasa said in a statement on Tuesday, the educational programme emphasises creative thinking using science and physics applications.

"People are invited to participate in this programme by contributing ideas and suggestions for appropriate experiments suitable to be carried out in ISS," said the statement.



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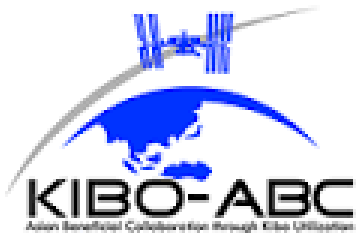
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Malaysia Space Life Sciences Experiments

Collaboration with The Japan Aerospace Exploration
Agency (JAXA)



Space Seeds for Asian Future (SSAF)



SPACE SEEDS FOR ASIAN FUTURE 2010-2011



Duration: 2010-2011 (extend to 2012)

APRSAF - 'Space Seeds For Asian Future' Cooperation program

Combination of research & education programme

OBJECTIVES

- a) To promote of microgravity science - space awareness;
- b) To develop student interest and skill in scientific space experiments and research;
- c) To compare, analyze and do hypothesis about the growth of microgravity environment – exposed seed compared to earth – grown seed



**Cili Seeds
(*Capsicum
annuum* (cv.
MC11))**



SSAF2013 - MALAYSIA



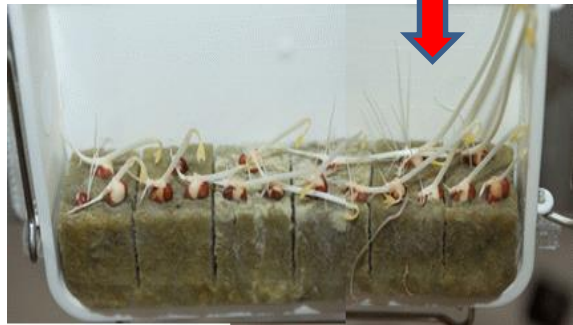
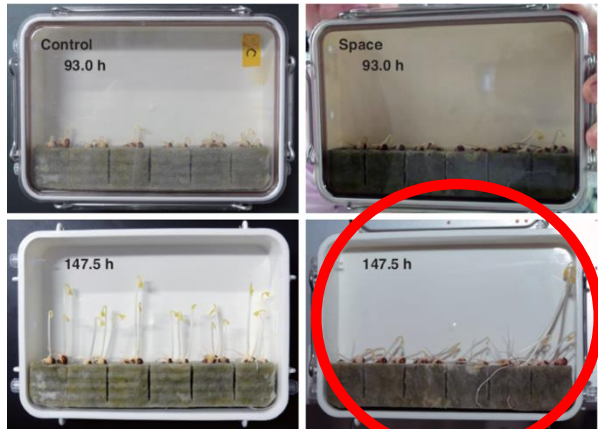
Introduction

- Implemented through the Malaysia Space Seeds 2013 (MASS2013) program
- organized by the National Space Agency of Malaysia (ANGKASA) under cooperation of the Ministry of Education (MOE), the Malaysian Agricultural Research and Development Institute (MARDI) and the National Seeds Association of Malaysia (NSAM)
- Mission: Start germination on 30 August 2013 to 6 September 2013
- Destination : Kibo, ISS

Objective

- To foster a culture of science and technology among students and the community through increasing of knowledge of agriculture and microgravity sciences





395 students were directly involved through the involvement of 25 primary schools and 54 secondary schools;

79 teachers were directly involved

ASIAN HERBS in SPACE (AHIS)

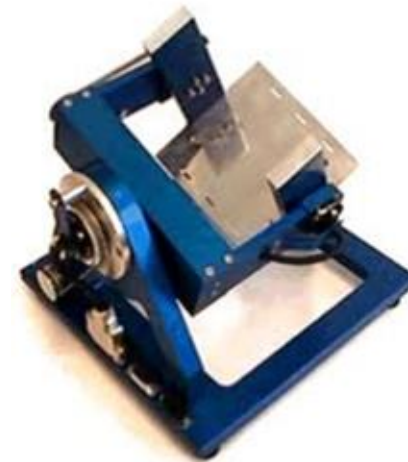
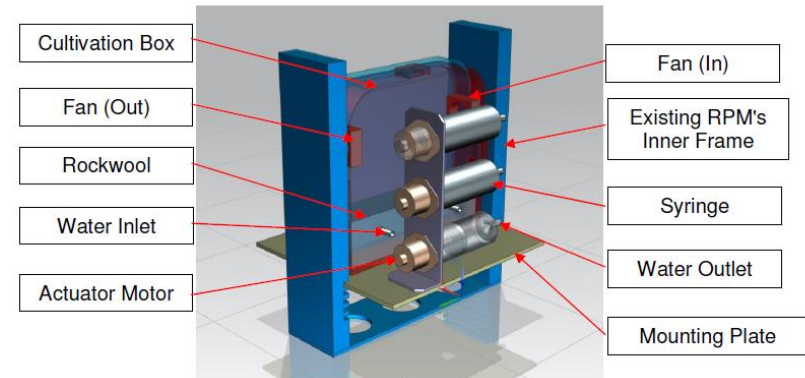
- ❑ Under Kibo-ABC implementation platform (proposed in 2014 Annual Kibo ABC Meeting, Japan)
- ❑ To send and germinate herbs seeds onboard Kibo, ISS
- ❑ To look the effect on herbs plant grow and germination under microgravity environment
- ❑ Target to be flown on board Kibo, ISS on March 2016
- ❑ **Herbs Seeds: Holy Basil (*Oscimum Sanctum*)**
- ❑ Ground experiment has been conducted in MARDI Gene Bank Laboratory, Serdang, Malaysia
- ❑ ANGKASA team up with MARDI & UPM



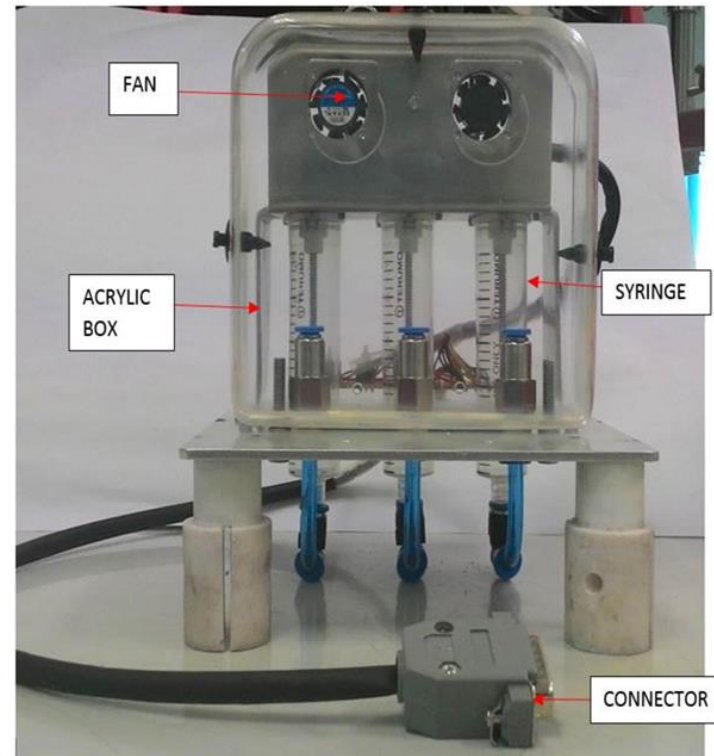
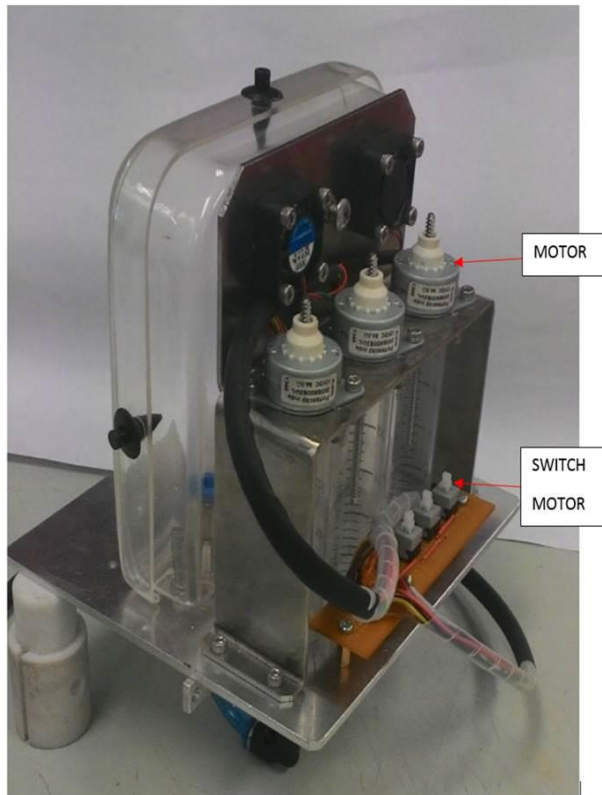
ASIAN HERBS in SPACE (AHiS)

AUTOMATED CULTIVATION SYSTEM (ACS) (1/2)

- New exercise for Malaysia on space hardware experiment development
- SSAF2013 inspiration – seeds germination under microgravity simulated environment
- Using Random Positioning Machine (RPM) – 3 Dimensional Clinostat
- ACS is a plant cultivation chamber equipped with automated watering and ventilation system
- Supporting AHiS and SSAF2013 continuation and any.



ASIAN HERBS in SPACE (AHiS)



ACS – A prototype

TALK ON KIBO UTILIZATION

22/5/2015 Special slot (Talk), National Innovation Conference and Exhibition 2015 (NICE2015), Kuala Lumpur Convention Center (KLCC)

15/4/2016 (Talk Session)
International Conference of Translational Molecular Imaging and Aero Space Medicine & Physiology Showcase 2016 (ICT-MIPS16)

10th to 4th Oct 2011 Outreach In KL, Johor, Terengganu, and Sabah.



Prof. Akira Kudo (Tokyo Institute and Tecnology University)
Dr. F. Tanigaki (JAXA)



Dr Chiaki Mukai, Director, Center for Applied Space Medicine and Human Research (CASMER) and Mr Yoshiya Fukuda, the Director of KUOA JAXA on 20 October 2014 at UKM, Bangi

Potential Planning of Kibo Utilization by Malaysia 2017 – 2020 ????



2017 (a)

ExHAM
Facilities

- LIFE SCIENCES
EXP?
- Rice Seeds experiment
- Herbs Seeds experiment



2017 (b)

ExHAM
Facilities

- SPACE
TECHNOLOGY?
- Cube-sat device
exposition test/
space proven



2018

JSSOD
Facilities

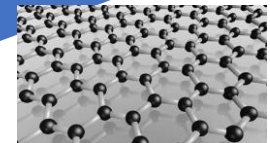
- CUBE SAT
DEPLOYMENT ?
- 1U Cube-sat launch
for scientific mission



2020

ExHAM Facilities
- MATERIAL SCIENCE
EXPERIMENT?

- Graphene for coating material/
thin film



Be grateful and thank you for the
opportunities given

Looking forward for next collaboration on
Space Environment and the utilization
through Kibo

“for the sake of knowledge generation, wealth
creation and societal well-being.”



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Thank you