Experience of a research organization

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Introduction to space life science

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Introduction to space life science

**Project:** BioPack

**Support:**
- Canadian Space Agency
- NASA
- NSERC (Canada)

**Aim:** Monitor sweating response to motion sickness during parabolic flight.

**Lessons:**
- Your knowledge and experience can contribute to the space programme.
- Participation in the space programme provides new challenges and exciting research opportunities.
Space life sciences

Project: Valdoltra 2001 Bed Rest

Support:
- Swedish National Space Board
- ARRS

Aim: Response of physiological systems, particularly cardiovascular and thermoregulatory prolonged (35-d) inactivity (bed rest).

Lesson:
- ESA will not support duplication of facilities.
Project: Lunar Habitat Simulation

Future Lunar and Mars habitats will be hypobaric hypoxic. This will reduce the risk of decompression sickness during EVAs.

Aim: Does our present knowledge allow us to predict the effects of the anticipated environments in future lunar habitats (hypobaric hypoxic and reduced gravity) on physiological systems.

Lesson:
- Topical team activities can be used to prepare EC H2020 proposal and continued ESA-supported research projects
Project: Lunar Habitat Simulation

Aim: Response of physiological systems to hypoxia and inactivity (hypoxic bed rest) in male and female subjects

Lessons:
- Full ESA members can veto a proposal.
- Proposals are prioritized at national level, with ESA providing final approval.
Advisory role(s)

• ESA Bed rest steering committee
• Evaluator of proposals for ESA and NASA
• ESA Artificial Gravity Advisory Committee

Lessons:
• Research proposals are evaluated for their science and space relevance.
• ESA provides feedback regarding evaluators’ comments.
European Commission Framework 7 Programme

**Project:** Planetary Habitati Simulation (PlanHab)

**Lessons:**
- NASA cannot financially support research in EU research organisations.
- NASA conducts high-fidelity research, ESA supports curiosity driven research.
- NASA collaboration is one-directional.
EC Horizon 2020 Programme

**Project:** The role of the habitat life support system on the International Space Station (ISS) in the aetiology of the Microgravity Ocular Syndrome (MOS) SpaceHab

**Support:** Unsuccessful

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**Lessons:**
- NASA will not support EU researcher.
- Space life sciences not supported in H2020 programme.
ESA Express Procurement

**Project:** Individual variation in human responses to prolonged bed rest in Slovene Bed rest programme.

**Lesson:**
- ESA provides funding for small projects (≤ €50k).
Ground-based research facility

**Project:** PLANICA

**Aim:** Establish the Olympic Sport Centre Planica as an ESA ground-based research facility for hypoxic bed rest studies with artificial gravity and exercise/vibration

**Lesson:**
- ESA facilitates the inclusion of partners in the overall space programme.
Concordia

Projects: HASTE & HINE

**Aim**: Effect of hypobaric hypoxia on sleep and temperature regulation & Hypoparic intermittent normoxic exercise.

**Lessons:**
- Financial support needs to be obtained from national delegations/agencies.
- Slovenia does not support research at the Antarctic Research Station.
Announcements of Opportunities

Project: AGBRESA

**Aim:** Evaluation of artificial gravity as a countermeasure

**Lessons:**
- Financial support needs to be gained from national delegations/agencies.
- Slovenia does not support participation in AOs for Life Sciences.
- Collaborate with partners in other member states,
Educational & networking opportunities

• Workshops
• Meetings (ie. International Society for Gravitational Physiology)

Lessons:
• Invest time (1-2 days) and resources (€) to attend free workshops at ESTEC
1929
Hermann Noordung
Das Problem der Befahrung des Weltraums
Der Raketen-Motor

1968

2019

esa
Conclusion

European Space Agency

European Science Advocate