24TH IAA HUMANS IN SPACE
20-24 APRIL 2026, MONTECATINI TERME, ITALY

TECHNICAL PROGRAM

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Human deep space exploration can be successfully realized only with the cooperation of scientists and specialists from different countries. For many years the Human in Space Symposium, regularly organized by space agencies (this year with the support of the Italian Space Agency – ASI) and organizations of different countries under the auspices of the International Academy of Astronautics (IAA), has been being a platform for a fruitful discussion of fundamental problems and practical issues, exchange of research results and ideas in space biology and medicine. Each HIS is a significant milestone on the path of human space exploration.

HONORARY MEMBERS

J. Schumacher, IAA, USA
J.-M. Contant, IAA, France
G. Arrigo, ASI, Italy
O. Orlov, RAS/IBMP, Russia
C. Kourtidou-Papadeli, IAA /AUTH, Greece

PROGRAM COMMITTEE

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T. Agaptseva, IBMP, Russia
G. Valenti, University, Italy

GETTING TO THE CONFERENCE VENUES

To ensure a smooth experience for all participants, we recommend using public transportation or taxi services to reach the conference venues. Both locations are well connected to the city center, and options are available to suit different preferences and needs.
Below, you will find all the practical information on how to reach the two main venues of the event.

GRAND HOTEL VITTORIA

Located in the elegant heart of Montecatini Terme, the Grand Hotel Vittoria is easily reached with a pleasant walk from the Stazione di Montecatini Terme-Monsummano. Upon leaving the station, follow Viale Verdi, one of the town's most characteristic avenues, and continue through the charming Parco delle Terme, surrounded by refined Liberty-style architecture and well-kept green spaces. In just a few minutes, you will arrive at Viale Libertà, where the hotel welcomes guests in a sophisticated setting, just a short distance from the town center and its renowned thermal attractions.

PALAZZO BELVEDERE

Set in a peaceful and panoramic location on the edge of the spa park, the Palazzo BelVedere can be easily reached with a pleasant walk from the Grand Hotel Vittoria. Leaving the hotel, follow Viale Libertà towards the funicular area and continue along Viale Fedele Fedeli, along a gently uphill route surrounded by greenery and lined with elegant villas. Within a few minutes, you will arrive at Palazzo BelVedere, where the gala dinner on April 22 will be hosted in a refined and charming setting.

Monday, April 20th

9:30 – 10:00 Registration

10:00–11:00 Conference opening, welcome to the participants

Dr. J.-M. Contant, IAA, Secretary General

Dr. Gabriella Arrigo, ASI

Avv. Claudio Del Rosso, Major of Montecatini

Greetings from the astronauts from the ISS

11:00–13:00 Plenary session. Moderator: Dr. MARIA CHIARA NOTO

1. **Prof. Yulin Deng, Institute for Space Biology and Medical Engineering, China**
   Intelligence to the space: AI assists space technology to empower future health
2. **Dr. Oleg Kotov, IBMP, Russia**
   Russian biomedical investigations for piloted cosmonautics
3. **Dr. Christian Rogon, DLR, Germany**
   The German space life science program

13:00-14:00 Lunch

14:00-15:00 Poster session

14:00 – 14:10 Yevgeniy Litvinov, Olga Manko, Marina Zueva, Kotelin, Akhmed Aleskerov, Yury Bubeev
Functional activity of the visual system during a year-long isolation in the SIRIUS international experiment

14:10 – 14:20 Tatiana Shigueva, Ivan Ponomarev, Ilya Rukavishnikov, Elena Tomilovskaya
From spaceflight to earth clinics: a translational pipeline for personalized electromyostimulation countermeasures

14:20 – 14:30 Tatiana Agaptseva, Ekaterina Burliaeva, Mark Belakovsky, Anna Kussmaul
Nutritional system for future interplanetary expeditions

14:30-14:40 Anna Kussmaul, Oleg Voloshin, Mark Belakovskiy
Practical tools for outreach and popularization activities in space biomedicine: experience of the IBMP RAS

14:40 – 14:50 Antoine G. Faddoul
Lunar sports from robotics race to moon Olympics

14:50-15:00 Karagozaiym Turganbek, Sandra Haeuplik-Meusburger
Swarm-Built Worlds: Multi-Agent Robotic Precursors for Ethical ISRU Habitat Construction and Planetary Heritage Preservation on Mars

15:00-16:30 Round table with cosmonauts and astronauts (moderator Dr. J.-M. Contant and Ch. Kourtidou-Papadeli)

- **Oleg Kotov (Medical Doctor, Hero of the Russian Federation, Russian cosmonaut who completed six EVAs during three long-duration missions (over 520 days in orbit))**
- **Sergey Prokopev (Hero of the Russian Federation, Russian cosmonaut who completed eight EVAs (more than 55 hours) during two long-duration missions (over 560 days in orbit))**

18:00–20:00 Welcome reception

Tuesday, April 21th

9:30 – 10:00 Registration

Track 1 Deep space exploration - a comprehensive assessment of human health risks. Lessons from orbital missions

Orbital missions in integrated risk assessment for interplanetary missions

Co-chairs: Jean-Michel Contant and Yulin Deng

10:00 – 10:15 Elena Luchitskaya, Vasiliy Rusanov
Cardiovascular research onboard the ISS

10:15 – 10:30 Daniel L. Belavy, Kirsten Albracht, Helena Brisby, Deborah Falla, Richard Scheuring, Roope Sovelius, Hans-Joachim Wilke, Kajsa Rennerfelt, Michail Arvanitidis, Nitin Kumar Arora, Bjoern Braunstein, Fabian Göll, Svenja Kaczorowski, Eva Moreira, Florian Teichert, Gabriele Armbrecht
Longitudinal Evaluation of cervical spine structures and function in astronauts and their relation to intervertebral disc herniation

10:30 – 10:45 Daria Guseva, Olga Manko, Sergey Danilichev, Alexey Polyakov, Oleg Kotov
Assessment of the dynamics of SANS syndrome during long-term space flights

10:45 – 11:00 Antoine G. Faddoul
From Lunar to Martian Missions: Human Exploration Challenges and Technology requirements

11:00 – 11:20 Open discussion

Track 2 Preparing for Moon exploration and interplanetary flights. Lessons from model and analog experiments

Isolation experiments for the future space flights

Co-chairs: Sergey Ponomarev and Ivan Melnikov

10:00 – 10:15 Oleg Orlov, Mark Belakovskiy, Sergey Ponomarev
The SIRIUS International Experiment: Implementation Framework and Principal Findings

10:15 – 10:30 Eugeniy Litvinov, Dmitry Shved, Alla Vinokhodova, Daria Schastlivtseva
What could we bring to the future human spaceflights? Main Results of Russian Psychological Studies in SIRIUS Isolation Project and Orbital Flights

10:30 – 10:45 Federico Nemmi, Emma Chabani, Madison Diamond, Daniel Lewkowicz, Laure Boyer
Assessing team cohesion through physiological, behavioral and linguistic synchrony

10:45 – 11:00 Anna Ganicheva, Elena Fomina
Electrophysiological characteristics and functional connectivity of the brain after physical load in participants of the SIRIUS-23 experiment

11:00 – 11:15 Open discussion

11:15-11:45 Coffee break

Track 1 Deep space exploration - a comprehensive assessment of human health risks. Lessons from orbital missions

Orbital missions in integrated risk assessment for interplanetary missions

Co-chairs: Jean-Michel Contant and Yulin Deng

11:45-12:00 Giada Fregnan, Elisabeth Wyart, Maiara Colombera, Alfonso Scalera, Alessio Menga, Paolo E Porporato
The glucocorticoid-LCN2-iron axis as a common driver of muscle atrophy in clinical settings and long-duration spaceflight

12:00-12:15 Ilya Rukavishnikov, Vladimir Kitov, Igor Kofman, Millard Reschke, Alexey Polyakov, Elena Fomina, Elena Tomilovskaya, Oleg Orlov
Evaluation of medical risks at the landing site: the Field Test experiment approach

12:15-12:30 Elena Tomilovskaya, Ilya Rukavishnikov, Vladimir Kitov, Maria Bekreneva, Igor Kofman, Millard Reschke
Dynamics of sensory-motor recovery after long term space flight: the Field Test experiment results

12:30-12:45 Felice Strollo
Microgravity as an insulin resistance model to be exploited on Earth

12:45 – 13:00 Open discussion

Track 2 Preparing for Moon exploration and interplanetary flights. Lessons from model and analog experiments

Isolation experiments for the future space flights

Co-chairs: Sergey Ponomarev and Ivan Melnikov

11:45-12:00 Sergey Ponomarev, Marina Rykova, Olga Kutko, Daria Vlasova, Ksenia Orlova, Konstantin Utkin, Sofia Shulgina, Anastasia Kotikova, Viacheslav Shmarov
Immunity research as a part of the SIRIUS Project: main Results

12:00-12:15 Ivan Melnikov, Yegor. Lemeshko, and Elena V. Fomina
Multi-modal wearable biosensing for personalized cardiovascular monitoring in long-duration space missions

12:15-12:30 Galina Vassilieva, Kirill Gordienko, Nadezhda Lukicheva, Yury Solomadin, Elaterina Servuli, Valery Novikov, Oleg Orlov
Bone status and body composition under isolation conditions: results of densitometry

12:30-12:45 Ivan Vasilev, N. Sorsorova, Anastasia Senichkina, Galina Vassilieva, Lana Moukhamedieva, Oleg Orlov
Isolation Experiments: What Do Echocardiography and Doppler Ultrasound Show in the Long-Term Perspective

12:45 – 13:00 Open discussion

13:00 – 14:30 Lunch

Track 1 Deep space exploration - a comprehensive assessment of human health risks. Lessons from orbital missions

Countermeasures and Biomedical Support in the Interplanetary Missions
Co-chairs: Elena Fomina and Ilaria Cinelli

14:30 -14:45 Elena Fomina, Maria Kokueva, Natalia Senatorova, Daria Guseva, Kseniia Lipatova
Scientific groundwork for the assessment and prediction of the effectiveness of preventing the negative effects of weightlessness for interplanetary flights

14:45 -15:00 Chrysoula Kourtidou-Papadeli & Dimitrios A. Patikas, Sofia Kourtidou, Antonios Kyparos, Zafeiro Gkemou, Stavroula Chaloulakou, Nicholas Georgiou, Panagiotis D. Bamidis & Joan Vernikos
Dose-dependent neuromuscular activation during graded artificial gravity exposure using short-arm human centrifugation: Implications for countermeasure optimization

15:00 -15:15 Anna Burakova, Natalia Senatorova, Elena Fomina
Dynamics of ground reaction force volumes in a standard locomotion test during long orbital flights

15:15 -15:30 Martina Vita, Giuseppe Coviello, Giuseppe Brunetti, and Caterina Ciminelli
A modular distributed closed-loop wearable platform for multimodal astronauts health monitoring

15:30 – 15:45 Francesca Cialdai, Chiara Risaliti, Lorenzo Notari and Monica Monici
Studies on tissue regeneration in space

15:45 – 16:00 Open discussion

Track 2 Preparing for Moon exploration and interplanetary flights. Lessons from model and analog experiments

Analog platforms for estimating space flight effects
Co-chairs: Hasan Birol Çotuk and Elena Tomilovskaya

14:30 -14:45 Kussmaul A.R., Kharlamov M.M., Agaptseva T.N., Belakovsky M.S.
Analog facilities of the IBMP RAS to train candidates for cosmonauts and astronauts

14:45 -15:00 İrem Argin, İpek Yılmaz, Sercan Seven, Ali Furkan Okur, Adil Deniz Duru, and Dilek Göksel Duru
Classification of EEG features measured in a cognitive workload in dry immersion as an analog of microgravity condition

15:00 -15:15 Odette Laneuville, Ritu Shyam, Tom Cesari
A machine-learning approach to evaluate the systematic effects of an Earth-based analogue to microgravity and impact of countermeasures

15:15 -15:30 Shigueva T.A., Artamonova N.M.A., Urbanskaya A.D., Riabova A.M., Kitov V.V., Sayenko D.G., Tomilovskaya E.S.
Hypogravitational spinal hyperreflexia: results of ground-based model experiments

15:30 – 15:45 Ali Furkan Okur, Adil Deniz Duru, Hasan Birol Çotuk
Frontal high-frequency EEG activity correlates with borderline personality features in a spaceflight analog environment

15:45 – 16:00 Razvan Ioan Papacocea, Juliana Herbert, Marlise A. dos Santos, Stefan Sebastian Busnatu, Geani Danut Teodorescu, George Temes, Ioana Raluca Papacocea, Willian de Vargas, Vinicius Soares, Lucas Rehnberg, Thais Russomano
First investigation of pediatric cardiovascular responses to simulated microgravity

16:00-16:30 Coffee break

Track 1 Deep space exploration - a comprehensive assessment of human health risks. Lessons from orbital missions

Countermeasures and Biomedical Support in the Interplanetary Missions
Co-chairs: Elena Fomina and Ilaria Cinelli

16:30-16:45 Ivan Ponomarev, Elvira Gainutdinova, Olga Kurbanova, Maria Bekreneva, Ilya Rukavishnikov, Inna Zelenskaya, Vladimir Kitov, Tatiana Shigueva, Elena Tomilovskaya
Efficacy of passive countermeasures for minimizing adverse changes in muscle viscoelastic properties after one week of Dry Immersion

16:45-17:00 Matteo Cerri
Hibernation as a Multi-System Countermeasure for Long-Duration Spaceflight

17:00-17:15 Stefania Fedyay, Arslan Niyazov, Sergey Ponomarev, Alexey Polyakov, Mark Belakovskiy, Oleg Orlov
Terrestrial Foundations for Space Medicine: The Role of Isolation Experiments

17:15 – 17:30 Nandu Goswami
Advancing Space Omics, AI integration and Network Physiology for Precision Health of Astronauts in Space and Patients on Earth (astroaimed project)

17:30 -17:45 Open discussion

Track 2 Preparing for Moon exploration and interplanetary flights. Lessons from model and analog experiments

Analog platforms for estimating space flight effects
Co-chairs: Hasan Birol Çotuk and Elena Tomilovskaya

16:30-16:45 Maria Bekreneva, Alina Saveko, Alexandra Riabova, Ivan Ponomarev, and Elena Tomilovskaya
Characteristics of postural stability after 7 and 14 days of dry immersion

16:45-17:00 Serdar Orkun Pelvan, Savas Akbas, Rahmet Achylov, Hasan Birol Çotuk
Dry immersion increases hemoglobin saturation in the muscles through left-right synchronous muscle circulation oscillations

17:00-17:15 L. Daumerie, J. Studer, L. Arnaud, C. Thevenot , M. Scholaert , MA. Custaud, B. Bolmont, N. Navasiolava, A. Paillet , L. Boyer
Physiological monitoring in a novel immersive spaceflight analog using controlled neurosensorial stimulation

17:15 – 17:30 Catherine J. Taylor, Polly Jarmen, Andrew Blaber, and Nandu Goswami,
Immunoregulatory Modulation During Short-Term Dry Immersion: Integrative NF-κB and CTRA-Related Transcriptomic Signatures with Hematological and Sex Hormone Analysis in the VIVALDI I (Female Cohort)

17:30 – 17:45 Galina Vassilieva, Anna Kussmaul, Daria Komissarova, Nadezhda Lukicheva, Ksenia Orlova, Elena Tomilovskaya, Sergey Ponomarev
The effects of spaceflight simulation in the analog project on the female body: immunological, microbiological, and physiological aspects

Wednesday, April 22th

10:00 – 10:30 Registration

Track 1 Deep space exploration - a comprehensive assessment of human health risks. Lessons from orbital missions

Biological Effects of Space Radiation and Hypomagnetic fields: Risks and Countermeasures

Co-chairs: Irina Ogneva and Pietro Fre

10:30 – 10:45 Oleg Orlov, Elena Luchitskaya, Vasiliy Rusanov, Olga Popova
Beyond the Magnetic Field. Ground-Based Analog Experiments

10:45 -11:00 Morteza Maleki, Giuseppe Brunetti, Caterina Ciminelli
Radiation-hardened bolometric photonic integrated sensor for real-time astronauts' dosimetry

11:00 – 11:15 Irina Ogneva, Vladislav Sedletskiy, Vladimir Sychev, Oleg Orlov
Polar orbit of Bion-M#2 mission: the new space orbit for perspectives of the deep space exploration

11:15 -11:30 Beatrice D'Orsi, Riccardo Anzuini, Rocco Carcione, Ilaria Di Sarcina, Emiliana Mansi, Jessica Scifo, Adriano Verna and Alessia Cemmi
Experimental dosimetric evaluation of regolith simulants for gamma radiation shielding in human lunar surface missions

11:30 – 12:00 Open discussion

Track 2 Preparing for Moon exploration and interplanetary flights. Lessons from model and analog experiments

Human Centrifugation as an Analog Platform and Countermeasure: From Brain and Muscle Adaptation to Cardiovascular Control and AI-Driven Personalization

Co-Chairs: **Elena Fomina and Antonio Kyparos**

10:30 – 10:45 Stavroula Ioannidou, Chrysoula Kourtidou-Papadeli, Sofia Kourtidou, Evagelia Theodorou, Petros Skepastianos, Panagiotis Bamidis , Evgenia Lymperaki
Short-arm human centrifugation training effect on serum oxidative stress markers in patients with movement disorders: a preliminary study

10:45 -11:00 Chrysoula Kourtidou-Papadeli, Sofia Kourtidou, Eleni Dafli, Panagiotis D. Bamidis
Cardiovascular and autonomic regulation during short-arm human centrifugation: implications for artificial gravity countermeasures and rehabilitation.

11:00 – 11:15 Chrysoula Kourtidou-Papadeli, Sofia Kourtidou, Stavroula Chaloulakou, Nicholas Georgiou, Panagiotis D. Bamidis, Joan Vernikos
Neuromuscular Reorganization Under Chronic Graded Hypergravity Exposure: A Twin-Controled Human Study

11:15 -11:30 Milena Koloteva, Galina Fomina, Alexey Salnikov, Maria Fedchuk, Elena Luchitskaya, Ksenia Lipatova, Oleg Orlov
Short-arm centrifuge as a prospective countermeasure for orthostatic intolerance after long-term space missions.

11:30 – 12:00 Panagiotis D. Bamidis, Smarada Ketseridou, Chrysoula Kourtidou-Papadeli
Artificial intelligence topics in monitoring, personalization and decision support in human centrifugation

12:00 – 12:30 Open discussion

12:30 – 14:00 Lunch

15:00 Social Event

- Lecture by **Dr. Marcotulli**, Medical Director of Terme di Montecatini, on thermal waters
- Followed by transfer to **Terme Tettuccio** (UNESCO heritage site, Liberty-style landmark)
- Guided visit, water tasting and light refreshment

20:00-22:30 Gala-dinner at Palazzo Belvedere

Thursday, April 23th

9:30 – 10:00 Registration

Track 1 Deep space exploration - a comprehensive assessment of human health risks. Lessons from orbital missions

Gravitational physiology and biology - lessons from ISS and on-ground experiments
Co-chairs: Irina Larina and Yaoyuan Cui

10:00 – 10:15 Irina Larina, Evgeniy Nikolaev, Oleg Orlov
Human blood proteome in space flight

10:15 – 10:30 Jing Yang, Juan Zhao, Yaoyuan Cui, Junxiao Wang, Jie Sun, Mengke Yang, Wenjun Tu, Mingchao Ding, Guan Wang, Jilai Li, Jichen Du
Cerebroprotective mechanism of simulated microgravity on ischemic stroke rats by proteomics approach

10:30 – 10:45 Beiqin Liu, Xuelian Guo, Hong Ma, Yulin Deng, Zhimin Wang
Microgravity-Induced Desialylation Drives Blood-Brain Barrier Dysfunction and Neuroinflammation

10:45 – 11:00 Juan Zhao, Yaoyuan Cui, Anqing Wang, Shiyi Tang, Shaoyi Su, Wenjun Tu, Mingchao Ding, Guan Wang, Jilai Li, Jichen Du, Jing Yang
Investigating the Dynamic Effects of Simulated Microgravity on Cerebral Hemodynamics, Structure, and Function in Rats: An Integrated Multi-modal and Modeling Study

11:00 – 11:15 Open discussion

Track 2 Preparing for Moon exploration and interplanetary flights. Lessons from model and analog experiments

Extreme Earth ecosystems and LEO as models for deep space flights
Co-chairs: Enrico Zappino and Anna Kussmaul

10:00 – 10:15 Elena Mamonova, Mikhail Baranov, Anna Kussmaul
The Arctic and Antarctic as terrestrial analogs of the space environment: interdisciplinary parallels in the study of extreme ecosystems

10:15 – 10:30 Luka Pejic, Christopher Egg, and Sandra Häuplik-Meusburger
Promethea station: testbed for bettering human health

10:30 – 10:45 Karagozaiym Turganbek, Deniz Cetin, Sandra Haeuplik-Meusburger
S.O.S.-Geo: Space Station for Orbital Servicing in Geostationary Orbit

10:45 – 11:15 Open discussion

11:15-11:45 Coffee break

Track 1 Deep space exploration - a comprehensive assessment of human health risks. Lessons from orbital missions

Gravitational physiology and biology - lessons from ISS and on-ground experiments
Co-chairs: Irina Larina and Yaoyuan Cui

11:45 – 12:00 Hao Wang, Ting Luo, Songze Che, Yongqian Zhang, Yulin Deng
Space pharmacy: spaceborne in-situ medicine synthesis system based on cell-free protein synthesis

12:00 – 12:15 Tianyi Er, Chen Zhang, Ruoyao Zhang, Hong Ma, and Yulin Deng
Simulated Microgravity-Induced Synaptic Plasticity Impairment: A Novel Mechanism Involving Ceramide-Linked Lipid Dyshomeostasis

12:15 – 12:30 Yaoyuan Cui, Juan Zhao, Xiaoyin Li, Yan Zhao, Yingyu Lu, Wenjun Tu, Mingchao Ding, Guan Wang, Jilai Li, Jichen Du, Jing Yang
Investigation on the mechanism of simulated microgravity promoting rat cerebral angiogenesis based on proteomics

12:30 -12:45 Zi'ang Zhang, Xuyun Liu, Mingzong Yang, Guiling Wu, Wenjuan Xing, Jia Li and Feng Gao
Lycium barbarum Glycopeptide Blocks Hepatic Pro-Aging Signals to Counteract Vascular Aging in Simulated Microgravity

12:45 – 13:00 Open discussion

Track 4 Multidisciplinary approach in space exploration

Future missions and plans

Co-chairs: Antonios Kyparos and Zorica Ludzheva

11:45 – 12:00 Zorica Ludzheva, Georgi I. Petrov, and Sandra Häuplik-Meusburger
Moon village reference masterplan

12:00 – 12:15 Sara Viviani, and Alessandra Rinaldi
Advancing design exploration on a lunar rover habitation for long-term permanence on the Moon

12:15 – 12:30 J. Persson
Moon-to-Mars: The outlook for applying ESA Gateway technology to support mission design

12:30 – 13:00 Open discussion

13: 00 – 14:30 Lunch

Track 1 Deep space exploration - a comprehensive assessment of human health risks. Lessons from orbital missions

Innovations in Life Support and Nutrition for Deep Space
Co-chairs: Serge Ameye and Tatiana Agaptseva

14:30 – 14:45 Tatiana Agaptseva, Anna Kussmaul, Margarita Levinskikh, Mark Belakovskiy, Maxim Kharlamov
Opportunities for testing elements of advanced biological life support systems in ground-based isolation experiments

14:45 – 15:00 Serge Ameye
Baking bread on the Moon

15:00 – 15:15 Ekaterina Burliaeva, Mark Belakovskiy
Dietary fiber - an important component of the space diet

15:15 – 15:30 Laura Benvenuti, Chiara Bertini, Gemma Marcelli, Gaetana Gambino, Leonardo Rossi, Chiara Ippolito, Valentina Citi, Melis Emanet, Gianni Ciofani, Diego Manzoni, Alessandra Salvetti
Supplementation with the antioxidant sumac mitigates microgravity-induced intestinal barrier dysfunction under simulated Mars gravity

Track 3 Settling and colonizing outer space

The Impact of Spaceflight on Reproductive Physiology, Fertility and Women's health
Co-chairs: Irina Ogneva and Chrisoula Koutidou-Papadeli

14:30 – 14:45 Irina Ogneva, Anna Kikina, Elena Gorbacheva, M. Matrosova, K. Toniyan, Valery Boyarintsev, Oleg Kotov
Female reproductive system during and after long-term space flight: case study

14:45 – 15:00 Berardini M., Di Pauli A. Cucina G. , Bizzarri M., Tafani M. , Barreca F. , Ferranti F. , Negri R. , Presutti C. , Perfetto L. , Signore M. , Morabito C. , Mariggiò MA. , Ricci G., Catizone A.
Cofilin and sirtuins induce early microgravity cytoskeletal remodeling in human male germ cells

15:00 – 15:15 Caterina Morabito, Alessia Di Pauli, Fani Konstantinidou, Valentina Gatta, Marika Berardini, Luisa Gesualdi, Simone Guarnieri, Francesca Ferranti, Michele Signore, Giulia Ricci, Angiolina Catizone, Maria A. Mariggiò
Early Transcriptomic Responses of Human Male Germ Cells to Simulated Microgravity: Activation of TGF-β/SMAD3 Signalling

15:15 – 15:30 Irina Ogneva
Early embryogenesis and space flight factors

15:30-16:00 Coffee break

Track 1 Deep space exploration - a comprehensive assessment of human health risks. Lessons from orbital missions

Innovations in Life Support and Nutrition for Deep Space
Co-chairs: Serge Ameye and Tatiana Agaptseva

16:00-16:15 Jingxian Cui, Zekang Zhu, Difei Zhang, Hui Liu, Hong Liu
Integrating aromatic plants into space habitats: species selection based on bioactive volatiles and psychophysiological regulation

16:15-16:30 John Masengo, Jun Hong Cheong, Nguyen Van Duc Long, Veronica Soebarto, Ranjan Swarup, Volker Hessel
Biophilic plant design: (nano) fertilizing barley in hydroponics for "lush space gardens"

16:30-16:45 Cosimo Sarti, Fabiana Marino, Cosimo Matteo Profico, Silvana Nicola
Wolffia Aprhiza can be a candidate crop for space farming within bioregenerative life-support systems

16:45-17:15 Open discussion

Track 4 Multidisciplinary approach in space exploration

Innovative methods and instrumentation –
Co-chairs: Enrico Zappino and Hans-Ulrich Balzer

16:00-16:15 Hans-Ulrich Balzer
Determination of deactivation phases of the vegetative response (emotional, cognitive, muscular), maximum/minimum excitation/relaxation (basis – rest- activity cycle - BRAC), and extreme excitation during the circadian rhythm using novel AI-based wearables

16:15-16:30 Eugeniy Litvinov, Olga Manko, Eugeniy Zhovnerchuk, Oleg Ryumin, Yury Usachev
AI Based approach of personalized psychological support with VR

16:30-16:45 Trevor Tingate
AI-based analysis of cell-free DNA chromatin geometry for monitoring stress and recovery during spaceflight

16:45-17:00 Kun Wang, Fanhao Kong, Yikun Deng, Yifan Deng, Chunhua Yang, Feiyi Sun, Yahui Wang, Xiaoqiong Li, and Yulin Deng
Intent-aware cargo information management with knowledge graph and natural language interaction for space station operations

17:00-17:15 Enrico Zappino, Alfonso Pagani, Marco Petrolo, Matteo Filippi and Erasmo Carrera
Innovative habitat concepts for surface and orbital human missions: integrated structural design and digital simulation

17:15-17:30 Closing remarks

Friday, April 24th

Social events

INSIGHTS & TAKEAWAYS