

Final Programme

Sunday 17 June 2018

- 19:00 - Welcome Reception & Pre-registration at the Golden Tulip
21:00 Noordwijk Beach

Monday 18 June 2018

- 08:00 Registration desk open

Current Concepts Symposium

Chairs: Charles Fuller, Jack van Loon

Room: High Bay

- 09:00 Introduction
- 09:10 Welcome from ESA Directorate of Technology, Engineering and Quality
Torben Hendriks, ESA-TEC-M
- 09:20 Welcome from ESA Directorate of Human and Robotic Exploration Programmes
Jennifer Ngo-Anh, ESA-HRE-RS
- 09:30 Venturing Beyond LEO: Research Plans for Gateway
William Paloski, NASA JSC, Houston, USA
- 10:00 Space Food System Challenges and Integrative Solutions for Exploration Missions
Grace Douglas, Food lab, NASA JSC, Houston, USA
- 10:30 Coffee break**
- 11:00 Human milk oligosaccharides: improving health by prebiotic effects
Stefan Jennewein, Jennewein Biotechnologie GmbH, Bad Honnef, Germany
- 11:30 Sodium storage and diseases of the aging organism
Jens Titze, Duke Univ. Singapore & Univ. Erlangen, Germany
- 12:00 The Human Hypergravity Habitat, H3: A Space Flight Spin-Off for Research on Obesity and Healthy Ageing on Ground
Jack van Loon, VU-Medical Center Amsterdam & ESA-ESTEC-TEC-MMG, The Netherlands

12:30 Lunch break

Session 1: Analogues & Countermeasure Research-1

Chairs: Satoshi Iwase / Edwin Mulder

Room: High Bay

- 14:00 Simulate microgravity on the ground to prepare manned spaceflight
Bareille M¹, *Gauquelin-Koch G², Bernat M¹, Hazane P¹*
¹Medes-imps, ²CNES
- 14:15 NASA's use of Ground and Flight Analogs in Reducing Human Risks for Exploration
Corbin B¹, *Vega L¹*
¹NASA

- 14:30 Preventing lumbar spine injuries in astronauts: an exercise approach for activating the transversus abdominis muscle
Belavy D¹, Owen P¹, Rantalainen T^{1,2}, Scheuring R³
¹Deakin University, ²University of Jyväskylä, ³NASA Johnson Space Center
- 14:45 Falls and Fall-Prevention in Older Persons: Spaceflight meets Geriatrics!
Prof Nandu Goswami¹
¹Director, “Gravitational Physiology, Aging and Medicine Research Unit”, and Chair, Physiology Unit, Otto Loewi Research Center of Vascular Biology, Immunity and Inflammation, Medical University of Graz
- 15:00 A systematic review on the efficacy of resistive exercise countermeasures in microgravity studies and its ground-based analogues
Miss Leonie Fiebig¹, Dr. Andrew Winnard, Dr. Mona Nasser, Dr. Björn Braunstein, Dr. David Green, Dr. Jonathan Scott, Dr. Tobias Weber
¹European Astronaut Center
- 15:15 Contribution of the ground reaction forces in the preservation of bone tissue during the locomotor training in long term space missions
Dr. Elena Fomina^{1,2,3}, Novikov Valery¹, Alexandra Savinkina^{1,4}, Nataliya Lysova¹, Svetlana Rezvanova^{1,4}, Tatyana Kukoba^{1,2,3}
¹State Research Center Of Russian Federation - Institute Of Biomedical Problems Of The Russian Academy Of Sciences, ²Moscow State Pedagogical University, ³RUDN University, ⁴Russian State University Of Physical Education, Sport, Youth and Tourism (SCOLIPE)

Session 2: Trends in Commercialise Space Research

Chair: Veronica La Regina

Room: Auditorium

- 14:00 Current Scenario: commercialize Space Research
Veronica La Regina, RHEA for ESA
- 14:20 ESA – Call for ideas (TIA and HRE)
Jason Hatton, ESA
- 14:40 Commercial ISS facilities: ICE-Cubes
Hilde Stenuit, Space Applications Services
- 15:00 Commercial ISS facilities: Bartolomeo
Katherine Pegg, Airbus

Session 3: Biology / Cell – Animal Models-1

Chairs: Jason Hatton / John Love

Room: Multimedia Libray

- 14:00 Counteracting effects of space flight and hypergravity on human capillary endothelial cells: a comprehensive molecular and morphological study
Ph.D. Ivana Barravecchia¹, Dr. Chiara De Cesari¹, Ph.D. Olga V. Pyankova¹, Ph.D. Francesca Scebba¹, Ph.D. Mattia Forcato², Prof. M. Enrico Pè¹, Dr. Helen A. Foster³, Prof. Silvio Bicciato², Prof. Joanna M. Bridger³, **Ph.D. Debora Angeloni¹**
¹Scuola Superiore Sant'Anna, Institute of Life Sciences, ²University of Modena and Reggio Emilia, Center for Genome Research, ³Brunel University, Genome Engineering and Maintenance Network, Institute for Environmental, Health and Society
- 14:15 Blood Vessels from Space – Results of the SPHEROIDS Project
Dr. Marcus Krüger¹, Dr. Markus Wehland¹, MSc Sascha Kopp¹, Dr. Johann Bauer², Prof. Sarah Baatout³, Dr. Marjan Moreels³, Prof. Marcel Egli⁴, Dr. Stefan Riwaldt¹, Prof. Manfred Infanger¹, Prof. Daniela Grimm¹

¹AG Gravitational Biology and Translational Regenerative Medicine, Otto-von-Guericke-University Magdeburg,
²Max-Planck-Institute of Biochemistry, ³Expert Group for Molecular and Cellular Biology, Belgian Nuclear
Research Centre, ⁴Bioscience and Medical Engineering, Lucerne University of Applied Sciences and Arts

- 14:30 Paracrine response of gravisensitive cells to simulated microgravity
Prof. Ludmila Buravkova¹, Mr Andrew Ratusnyy¹, Dr. Marya Ezdakova¹, Dr. Elena Andreeva¹
¹Institute Of Biomedical Problems RAS
- 14:45 Parabolic flight-induced acute hypergravity and microgravity modulates the differentiation potential of embryonic stem cells
Mr Aviseka Acharya¹, Dr. Sonja Brungs², Ms Margit Henry¹, Ms Tamara Rotsheyn¹, Ms Nirmala Singh Yaduvanshi¹, Ms Lucia Wegener², Mr. Simon Jentzsch², Professor Jürgen Hescheler¹, Dr. Ruth Hemmersbach², Professor Helene Boeuf³, Professor Agapios Sachinidis¹
¹University of Köln, ²German Aerospace Center, Institute of Aerospace Medicine, Gravitational Biology, ³INSERM-U1026 BioTis
- 15:00 Validation of Microgravity Simulators (Random Positioning Machine and Clinostat) Using Cellular Bioassays
Dr. Sonja Brungs¹, Dr. Jens Hauslage¹, Volkan Cevik¹, Kai Wasser¹, PD Dr. Ruth Hemmersbach¹
¹German Aerospace Center, Institute of Aerospace Medicine, Gravitational Biology
- 15:15 Mitochondria in Endothelial Cells in Simulated Microgravity
Dr. Laura Locatelli¹, Dr. Valentina Romeo¹, Dr. Clara De Palma¹, Dr Sara Castiglioni¹, Dr. Alessandra Cazzaniga¹
¹University Of Milan

15:30 Coffee break & Poster Session 1

Session 4: Countermeasure Research-2

Chair: Barbara Corbin / Pierre-François Migeotte

Room: High Bay

- 16:30 Human Performance in Altered-Gravity Environments
Prof. Ana Diaz Artilles¹
¹Texas A&M University
- 16:45 Influence of acceleration levels on jump performance during centrifugation
Prof. Markus Gruber¹, Dr. Andreas Kramer¹, Dr. Jakob Kümmel¹
¹University Konstanz
- 17:00 Effect of artificial gravity with exercise on spaceflight deconditioning in humans, and project for assessment of artificial gravity in H-II Transfer Vehicle in International Space Station
Prof. Satoshi Iwase¹
¹Aichi Medical University
- 17:15 Biomechanics During Flywheel Resistance Exercise - Effects of the Gravity Vector
MSc Maria Jönsson^{1,2}, MD PhD Hans E Berg^{3,4}, PhD Lena Norrbrand^{1,2}, PhD Lanie Gutierrez-Farewik⁵, MD PhD Patrik Sundblad^{6,7}, PhD Michael S Andersen⁸, MD PhD Ola Eiken^{1,2}
¹Dept. of Environmental Physiology, CBH, KTH Royal Institute of Technology, ²Swedish Aerospace Physiology Centre, SAPC, ³Dept. of Orthopaedics, Karolinska University Hospital, ⁴CLINTEC, Karolinska Institutet, ⁵KTH Mechanics, Royal Institute of Technology, ⁶Dept. of Clinical Physiology, Karolinska University Hospital, ⁷Inst. for Laboratory Medicine, Karolinska Institutet, ⁸Dept. of Materials and Production, Aalborg University
- 17:30 Virtual reality technology and exercise in artificial gravity and bed rest settings as a countermeasure for spaceflight deconditioning
Dr. Gabriel G. De La Torre¹, Dr. Ana Diaz-Artiles², Jesper Jorgensen⁴, Dr. Andreas Vogler³
¹University of Cadiz, ²Texas AM University, ³Andreas Vogler Studio, ⁴University of Roskilde

- 17:45 Six weeks of exercise training with the Functional Re-adaptive Exercise Device (FRED) increases Lumbar Multifidus cross-sectional area and improves patient reported function in people with chronic, non-specific low back pain
Ms Kirsty Lindsay¹, Prof. Nick Caplan¹, Prof Paul Hodges⁵, Prof Julie Hides³, Dr Tobias Weber⁴, Dr Sauro Salomoni⁵, Dr Jonathon Scott⁴, Dr Enrico De Martino⁶, Dr Andrew Winnard¹, Ms Elizabeth Young¹, Ms Gunda Lambrecht⁴, Prof Dorothee Debuse²
¹Northumbria University, ²LUNEX University, ³Griffith University, ⁴Space Medicine Office, EAC ESA, ⁵University of Queensland, ⁶Aalborg University

Session 5: Interactive Session: Getting Prepared to use the New ISS Commercial Facilities

Chairs: Veronica La Regina

Room: Auditorium

- 16:30 - Identification of research and development areas
18:00
Brainstorming of scientific objectives

Brainstorming / preliminary sketching of Space experiments

Session 6: Biology / Cell – Animal Models-2

Chairs: Monica Monici / Hisashi Kato

Room: Multimedia Library

- 16:30 Wound Healing in Weightlessness: An in Vivo Study on the Medicinal Leech (*Hirudo Medicinalis*)
Dr. Francesca Cialdai¹, Dr. Desirée Pantalone², Prof. Daniele Bani³, Prof. Paolo Romagnoli³, Prof. Angela Maria Rizzo⁴, Prof. Fabio Celotti⁴, Dr. Alessandra Colciago⁴, Dr. Elettra Sereni⁵, Dr. Francesco Ranaldi⁵, Dr. Monica Monici¹
¹ASAcampus Joint Lab., ASA Res. Div., Dept. of Experimental and Clinical Biomedical Sciences, University of Florence, ²Dept. of Surgery and Translational Medicine, University of Florence, ³Dept. of Experimental and Clinical Medicine, University of Florence, ⁴Dept. of Pharmacological and Biomolecular Sciences, University of Milan, ⁵Dept. of Experimental and Clinical Biomedical Sciences, University of Florence
- 16:45 Hypergravity Impact on Cell Traction Forces
Julia Eckert^{1,2,3}, Jack J.W.A. van Loon^{3,4}, Lukas M. Eng², Thomas Schmidt¹
¹Physics of Life Processes, Leiden Institute of Physics, Leiden University, ²School of Science, Department of Physics, Technische Universität Dresden, ³Life & Physical Science, Instrumentation and Life Support Laboratory (TEC-MMG), ESA/ESTEC, ⁴DESC (Dutch Experiment Support Center), Dept. Oral and Maxillofacial Surgery / Oral Pathology, VU University Medical Center & Academic Centre for Dentistry Amsterdam (ACTA)
- 17:00 Growing Tissues in Space
Prof. Daniela Grimm¹, Dr. Marcus Krüger², MSc Sascha Kopp², Dr. Markus Wehland², Professor Manfred Infanger², Dr. Johann Bauer³
¹Department of Biomedicine, Aarhus University, ²AG Gravitational Biology and Translational Regenerative Medicine, Otto-von-Guericke-University-Magdeburg, ³Max-Planck-Institute of Biochemistry
- 17:15 Tissue Engineering Research on the International Space Station
Mr John Love¹
¹NASA
- 17:30 A ground-based facility for Artificial Gravity allowing translational research from cellular to human physiology
Mr Timo Frett¹, Michael Arz¹, Guido Petrat¹, Dr Christian Liemersdorf¹, PD Dr Ruth Hemmersbach¹
¹German Aerospace Center (DLR e.V.)
- 17:45 Mechanoregulation of Proliferation, Differentiation, Senescence and Survival of Bone Marrow Primary Osteoprecursor Cells
Dr. Cassandra Juran¹, Dr. Elizabeth Blaber¹, Dr. Eduardo Almeida²
¹Universities Space Research Association (USRA) at NASA Ames Research Center, ²NASA

Student initiative

Room: Auditorium

18:00 Students corner: Presentation of SELGRA
Jeremy Rabineau, Université libre de Bruxelles, Belgium

18:30 End of Day 1

Tuesday 19 June 2018

Plenary Session: Skeletal Muscle Remodeling during Gravitational Unloading and other Disuse Models

Chairs: Carlo Reggiani / Boris Shenkman

Room: High Bay

- 09:00 Support afferentation is a master of postural muscle activity, cytoskeleton stability and proteostasis
Boris Shenkman, SSC RF Institute of Biomedical Problems, RAS, Moscow, Russia
- 09:30 Novel transitional approaches how to modulate titin filament based myofibrillar load sensing
Siegfried Labeit, Universitätsmedizin Mannheim, University of Heidelberg, Mannheim, Germany
- 10:00 Disuse skeletal muscle atrophy on earth and in space: cellular, proteomic and molecular adaptations
Roberto Bottinelle, University of Pavia, Pavia, Italy

10:30 Coffee break

- 11:00 The impact of disuse on skeletal muscles is exacerbated by aging
Carlo Reggiani, Univ. Padova, Via Italy
- 11:30 Contraction signalling in skeletal muscle: How is specificity achieved?
Martin Flück, Balgrist Campus, Univ. of Zurich, Zurich, Switzerland

12:00 General discussion

12:30 Lunch break

Session 7: Neuroscience-1

Chair: Stefan Schneider / Alexander Stahn

Room: High Bay

- 14 :00 Regional Cerebral Blood Flow during Head-down Tilt Bed Rest Combined with 0.5% CO₂ and Neuro-Ocular Impairment – Results from the VaPER Study
Dr. Donna Roberts¹
¹*Medical University Of South Carolina*
- 14 :15 Alterations of the Cortical Control of Locomotions in the Long-Term Spaceflights Revealed by fMRI
Inesa Kozlovskaya¹, Ekaterina Pechenkova², Inna Nosikova¹, Angeliqve Ombergen van³, Liudmila Litvinova², Ilya Rukavishnikov¹, Floris Wyuts³, Ben Jeurissen⁴, Valentin Sinitsyn², Alena Rumshiskaya², Elena Tomilovskaya¹
¹*Institute Of Biomedical Problems (ras),* ²*Radiology Department, Federal Center of Treatment and Rehabilitation,* ³*Antwerp Universtiy Research Center for Equilibrium and Aerospace (AUREA), University of Antwerp,* ⁴*Imec/Vision Lab, University of Antwerp*
- 14 :30 Hyper-gravity promotes motor learning in goldfish and humans
Shohei Miura¹, Yuki Takagi¹, Takafumi Kashima¹, Kohei Urase¹, Shuntaro Miki¹, Prof. Yutaka Hirata¹
¹*Chubu University College of Engineering*
- 14 :45 Exercise as a countermeasure for impaired brain function? - Evidence from the RSL Bed rest study
Mrs Anika Werner^{1,3}, Mrs Katharina Brauns¹, Prof. Hanns-Christian Gunga¹, Prof. Dr. Simone Kühn⁴, Dr. Alexander Christoph Stahn^{1,2}
¹*Charite Universitätsmedizin Berlin, Center for Space Medicine and Extreme Environments Berlin,* ²*University of Pennsylvania, Perelman School of Medicine,* ³*Normandie Université, UMR INSERM U 1075 COMETE,* ⁴*University Medical Center Hamburg-Eppendorf, Dept. of Psychiatry and Psychotherapy*

15 :00 Development and Functional Validation of a Ground-Based Analog for Post-Spaceflight Sensorimotor/Neurovestibular Impairment: The Wheelchair Head Immobilization Paradigm
Mr Jordan Dixon¹, Dr Torin Clark¹
¹University Of Colorado (Boulder)

15:15 Motor and cognitive functions in Parkinson's disease patients across the program of "dry immersion"
Professor Alexander Meigal¹, Professor Liudmila Gerasimova-Meigal¹, Olesya Tretjakova¹, Kirill Prokhorov¹, Professor Natalia Subbotina¹, Nina Popadeikina¹, Docent Irina Sayenko²
¹Petrozavodsk State University, ²State Scientific Center "Institute of Biomedical Problems" (RAS)

Session 8: Bone & Muscle

Chairs: Ruth Globus / Yoshinobu Ohira

Room: Multimedia Library

14:00 ESA Bedrest Cocktail: effects of an anti-oxidant and an anti-inflammatory cocktail on the prevention of skeletal muscle deconditioning during a 2-month head down tilt bedrest
Coralie Arc-Chagnaud^{1,2}, Théo Fovet¹, Thomas Brioché¹, Rémi Roumanille¹, Guillaume Py¹, Angèle Chopard¹
¹University of Montpellier ; INRA , UMR 866 Dynamique Musculaire et Métabolisme, ²Freshage Research Group - Dept. Physiology - University of Valencia, CIBERFES, INCLIVA

14:15 Estimation of Gait Characteristics during Walking in Lower Gravity Environment Using a Wearable Device
Mr. Léo Lamassoure¹, Mr. Keisuke Araki¹, Dr. Akihito Ito^{1,3}, Dr. Kiyotaka Kamibayashi^{2,3}, Dr. Yoshinobu Ohira^{2,3}, Dr. Nobutaka Tsujiuchi^{1,3}
¹Graduate School of Engineering, Doshisha University, ²Graduate School of Health and Sports Science, Doshisha University, ³Research Center for Space and Medical Sciences, Doshisha University

14:30 Investigation of additional low-level axial body load on neuromuscular responses during running in simulated lunar gravity
Miss Julia Attias¹, Mr Alexander Suss³, Dr Katya Mileva², Professor Thais Russomano¹, Dr David Green^{1,3}
¹King's College London, ²London South Bank University, ³KBR Wyle, Space Medicine Office, European Astronaut Centre

14:45 Analysis of the Locomations Strategy during Walking under Ground and Reduced Gravitational Loads on Musculoskeletal System
Dr. Alexey Shpakov¹, Dr. Anton Artamonov¹
¹Research Institute For Space Medicine Federal Research Clinical Center Of Federal Biomedical Agency Of Russia

15:00 Modulation of MLC2 regulatory protein and AKT signaling factor by phosphorylation/glycosylation states in human skeletal muscle after short-term dry immersion and longer bed rest studies
Prof. Laurence Stevens¹, Marie Pourrier¹, Laetitia Cochon¹, Valerie Montel¹, Prof. Bruno Bastide¹
¹Universite de Lille - Urepss

15:15 Protein Synthesis Alterations in Isolated Soleus Muscle after Ex Vivo Eccentric Exercise following Gravitational Unloading
Mr Sergey Tyganov¹, Mr Timur Mirzoev¹, Mr Sergey Rozhkov¹, Mr Boris Shenkman¹
¹SSC RF Institute of Biomedical Problems, RAS

Session 9: Plant / Technology / Commercial

Chairs: Iliya Bulavin / Yair Glick

Room: Auditorium

14:00 GRAVI-2 space experiment: The effects of statolith location on early stages of gravity sensing pathways in lentil roots
Dr François Bizet¹, Dr Veronica Pereda-Loth², Dr Nicole Brunel¹, Claire Szczpaniak³, Irène Hummel⁴, David Cohen⁴, Philippe Label¹, Eric Badel¹, **Valerie Legué¹**
¹Université Clermont Auvergne, INRA, PIAF, F-63000 Clermont-Ferrand, ²GSBMS, University of Toulouse, ³Université Clermont Auvergne, CICS, F-63000 Clermont-Ferrand, ⁴INRA, Université de Lorraine, UMR EEF, 54280 Champenoux

- 14:15 "We fly your research in Microgravity": The Airbus Commercial Service Products for Microgravity Research
Mr Christian Bruderrek¹, Mrs Maria Birlem¹, Mr Philipp Schullien¹, Mrs Noemie Bernede¹
¹Airbus Defence And Space
- 14:30 Enhanced Concept of a Multipurpose Bioreactor for Pilot Processing in Space Environments
Mrs Ann Delahaye¹, **Mr Dries Demey¹**
¹Qinetiq Space
- 14:45 Observation of larger fluctuation of mass values of peptides, as compared to the predicted values due to the tidal forces
Serhiy Souchelnytskyi
College of Medicine, Proteomics Facility, Qatar University, Doha, Qatar
- 15:00 Fabrication of patterned colloidal photonic crystals on stretchable PDMS films
Miss Vanja Miskovic¹, Dr. Christophe Minetti¹, Dr. Hatim Machrafi¹, Prof. Frank Dubois¹, Dr. Carlo Saverio Iorio¹, Mr. Patrick Queeckers¹
¹Universite libre de Bruxelles
- 15:15 10 Years of the Large Diameter Centrifuge (LDC): Overview Hyper-g Life Sciences Research @ ESTEC
Jack Van Loon^{1,2}, Alan Dowson², Jutta Krause³, Pedro Raposo⁴, Francois Gaubert², Robert Lindner², José Gavira Izquierdo⁶, Torben K. Henriksen⁷
¹VUmc Amsterdam, ²ESA-ESTEC-TEC-MMG, ³ESA-ESTEC-HRE-PPD, ⁴Zeugma, ⁵ESA-TEC-MMG, ⁶ESA-TEC-MM, ⁷ESA-TEC-M

15:00 Coffee break & Poster Session 2

Session 10: Neuroscience-2

Chairs: Daniela Santucci / William Paloski

Room: High Bay

- 16:30 From Antarctica to Alzheimers – Exercise helps to prevent Cognitive Decline
Prof. Stefan Schneider¹
¹German Sport University Cologne
- 16:45 Postural Stability of Cosmonauts after long-term Space Flights
Dr. Nikita Shishkin¹, Mr. Vladimir Kitov¹, Mrs. Tatiana Shigueva¹, PhD Elena Tomilovskaya¹, Prof. Inesa Kozlovskaya¹
¹RF SSC - Institute Of Biomedical Problems RAS
- 17:00 BDNF - A Key Biomarker for Assessing Acute Stress Responses and Brain Plasticity During Spaceflight?
Dr. Alexander Stahn^{1,2}, Katharina Brauns¹, Anika Werner¹, Dr David Dinges², Dr Mathias Basner², Dr Simone Kuehn³, Dr Hanns-Christian Gunga¹
¹Charité Universitätsmedizin Berlin, ²University of Pennsylvania, Perelman School of Medicine, ³University Medical Center Hamburg-Eppendorf, Dept. of Psychiatry and Psychotherapy
- 17:15 Changes in intrinsic functional brain connectivity after first-time exposure to Parabolic Flight
Dr. Angelique Van Ombergen¹, Prof. Floris Wuyts¹, Dr. Ben Jeurissen¹, Prof. Jan Sijbers¹, Floris Vanhevel², Steven Jillings¹, Prof. Paul M. Parizel^{1,2}, Prof. Stefan Sunaert³, Prof. Paul H. Van de Heyning², Prof. Vincent Dousset⁴, Prof. Steven Laureys⁵, Dr. Athena Demertzi⁵
¹University Of Antwerp, ²Antwerp University Hospital, ³KU Leuven - University of Leuven, ⁴University of Bordeaux, ⁵University of Liège
- 17:30 Changes in neuronal activity and episodic memory after 30 days of isolation and confinement
Mrs Anika Werner^{1,3}, Mrs Katharina Brauns¹, Prof. Dr. Hanns-Christian Gunga¹, Prof. Dr. Simone Kühn⁴, Dr. Alexander Christoph Stahn^{1,2}
¹Charité Universitätsmedizin Berlin, Center for Space Medicine and Extreme Environments Berlin, ²University of Pennsylvania, Perelman School of Medicine, ³Normandie Université, UMR INSERM U 1075 COMETE, ⁴University Medical Center Hamburg-Eppendorf, Dept. of Psychiatry and Psychotherapy

17:45 Morphofunctional peculiarities of ischemic and hemorrhagic injuries of the brain in rats under microgravity effects modelling
Dr. Mikhail Baranov¹, Prof. Aleksander Paltzin^{2,3}, Prof. Galina Romanova², Dr. Fatima Shakova²
¹Federal Scientific Clinical Center Of Fmba Of Russia, ²Institute of General Pathology and Pathophysiology, ³Russian Medical Academy of Postgraduate Education

18:00 End of Day 2

Session 11: Biology / Cel – Animal Models-3

Chairs: Laurence Stevens / Ruth Hemmersbach

Room: Auditorium

16:30 Microvacuature on a chip
Mr Mehdi Inglebert¹, Mrs Daria Tsvirkun³, Mr Alexei Grichine⁴, Mr Alain Duperray⁴, Mr Chaouqi Misbah², Mr Lionel Bureau²
¹Univ. Grenoble Alpes, LIPHY, ²CNRS, LIPHY, ³Research Center for Obstetrics, Gynecology and Perinatology, ⁴INSERM, IAB

16:45 Tissue Repair and Regeneration in Space and on Earth
Dr. Monica Monici¹, Dr Francesca Cialdai¹, Dr Michele Balsamo², Dr Liyana Popova², Eng Alessandro Donati², Prof Daniele Bani³, Prof Paolo Romagnoli³, Eng Jack J.W.A. van Loon⁴, MDr Desirée Pantalone⁵
¹ASAcampus Joint Lab., ASA Res. Div., ASA srl & Dept. of Experimental and Clinical Biomedical Sciences, University of Florence, ²Kayser Italia Srl, ³Dept. of Experimental and Clinical Medicine, University of Florence, ⁴Dept. Oral and Maxillofacial Surgery, ACTA/VU Medical Center, Vrije University, ⁵Dept. of Surgery and Translational Medicine, University of Florence

17:00 Regulation of gene expression in the testes, heart and lungs of mice under long-term modelling microgravity
Mr. Sergey Loktev¹, **Dr. Irina Ogneva^{1,2}**
¹Institute for biomedical problems RAS, ²I.M. Sechenov First Moscow State Medical University

17:15 C. elegans as a model for understanding spaceflight induced muscle decline
Dr. Amelia Pollard¹, Dr Christopher Gaffney⁴, Dr Colleen Deane², Mr Michael Cooke², Miss Jennifer Hewitt³, Dr Bethan Phillips¹, Professor Nathaniel Szewczyk¹, Dr Siva Vanapalli³, Dr Timothy Etheridge²
¹University Of Nottingham, ²University of Exeter, ³Texas Tech University, ⁴Lancaster University

17:30 The SERISM project: Modulation of Osteogenic Markers in human Blood-Derived Stem Cells Aboard the ISS during the VITA Mission of the Italian Space Agency
Prof. Mauro Maccarrone¹, Dr. Giulia Merlini², Dr. Cristina Ruggiero², Dr. Sara Piccirillo³, Dr. Giovanni Valentini³, Dr. Gabriele Mascetti³, Mr. Michele Balsamo⁴, Dr. Natalia Battista⁵, Dr. Monica Bari², Dr. Alessandra Gambacurta²
¹Department of Medicine, Campus Bio-Medico University of Rome, ²Department of Experimental Medicine and Surgery, Tor Vergata University of Rome, ³Italian Space Agency, ⁴Kayser Italia S.r.l., ⁵Faculty of Biosciences and Technology for Food, Agriculture and Environment, University of Teramo

17:45 Maintaining muscle health in C. elegans: new protective compounds and methods
Dr. Amelia Pollard¹, Christopher Gaffney⁴, Jennifer Hewitt³, Siva Vanapalli³, Roberta Torregrossa², Matthew Whiteman², Nathaniel Szewczyk¹, Timothy Etheridge²
¹University of Nottingham, ²University of Exeter, ³Texas Tech University, ⁴Lancaster University

18:00 End of Day 2

Wednesday 20 June 2018

Plenary Session: Radiation

Chairs: Christine Hellweg / Peter Norsk

Room: High Bay

09:00 The Journey to Mars and Intracellular Signaling Pathways: Effects of Space Radiation

Christine Hellweg, DLR Institute of Aerospace Medicine, Cologne, Germany

09:45 Gravity, radiation and age-related tissue degeneration: experimental models to identify shared mechanisms

Ruth Globus, NASA Ames, Moffett Field, USA

10:30 Coffee break

11:00 Heart in space: effect of the extraterrestrial environment on the cardiovascular system

Richard Hughson, Schlegel-University of Waterloo Research Institute for Aging, Waterloo, Canada

11:45 Will space radiation stop human space exploration? health effects, astronaut radioresistance & countermeasures.

Sarah Baatout, Belgian Nuclear Research Center, SCK-CEN, Mol, Belgium

12:30 Lunch break

Session 12: Metabolism / Nutrition

Chairs: Jochum Zange / Lichar Dillon

Room: High Bay

14:00 Effects of antioxidants on bone turnover markers in 6° head-down tilt bed rest

Miss Katharina Austermann¹, Dr. Natalie Baecker¹, Dr. Rolf Fimmers², Dr. Peter Stehle¹, Dr. Scott Smith³, Dr. Martina Heer¹

¹Department of Nutrition and Food Sciences, Nutritional Physiology, University of Bonn, ²Department of Medical Biometry, Informatics and Epidemiology, University of Bonn, ³Human Health and Performance Directorate, NASA Lyndon B. Johnson Space Center

14:15 The effects of 60 days bed rest on the physical and metabolic characteristics of young, healthy men

Miss Kiera Ward¹, Dr Diane Cooper¹, Dr Donal O'Gorman²

¹Athlone Institute of Technology, ²Dublin City University

14:30 Role of skeletal muscle atrophy and inflammation in microgravity-induced iron misdistribution. Potential perspectives to fight spaceflight anemia

Dr. Frédéric Derbré¹, Mr. Kévin Nay¹, Dr. Nicolas Pierre², Dr. / M.D Thibault Cavey^{3,4}, Dr. Luz Lefevre-Orfila¹, Mrs. Dany Saligaut¹, M.D Martine Ropert^{3,4}, Dr. / M.D Olivier Loréal³

¹Laboratory "Movement, Sport and health Sciences " (M2S) - University of Rennes / ENS Rennes, ²Liège University - GIGA Institute, ³INSERM, University of Rennes, INRA, Institut NUMECAN (Nutrition Metabolisms and Cancer) UMR A1341, UMR S1241, ⁴Department of Biochemistry, CHU Rennes

14:45 Metabolic Response of Rats to Chronic Centrifugation at a Small Radius

Charles A. Fuller¹, Amy L. McElroy¹, Tana M. Hoban-Higgins¹

¹University Of California, Davis

- 15:00 Resistive vibration exercise and nutritional supplementation during 21 days of head-down tilt bed rest: effects on cartilage health in relation to morphological changes of thigh muscles
Dr. Anna-Maria Liphardt^{1,2}, Prof. Dr. Felix Eckstein^{3,4}, Vera Bolte¹, Dr. Torben Dannhauer^{3,4}, Dr. Eva-Maria Steidle-Kloc³, Prof. Dr. Gert-Peter Brüggemann¹, PD Dr. Anja Niehoff^{1,5}
¹German Sport University Cologne (DSHS Köln), Biomechanik & Orthopädie, ²Friedrich-Alexander-University Erlangen-Nuremberg, Internal Medicine 3 - Rheumatology & Immunology, Universitätsklinikum, ³Paracelsus Medical University Salzburg & Nuremberg, Institute of Anatomy, ⁴Chondrometrics GmbH, ⁵University of Cologne, Medical Faculty, Cologne Center for Musculoskeletal Biomechanics (CCMB)
- 15:15 Prevention of spaceflight-induced bone loss: A promising dietary countermeasure
Dr. Ann-Sofie Schreurs¹, Dr. Candice Tahimic³, Mrs. Sonette Steczina⁴, Mrs. Moniece Lowe⁴, Dr. Josh Alwood², Dr. Ruth Globus²
¹NASA, USRA, ²NASA, ³KBR/Wyle Laboratories, ⁴Blue Marble Space Institute of Science

Session 13: Immune System / Respiratory / Radiation

Chairs: Debora Angeloni / Francesco Pampaloni

Room: Auditorium

- 14:00 Dysregulation of Cellular-Mediated Immune Response in an in vitro model due to exposure to Simulated Microgravity and Simulated Psychological Stress
Mr Richard Thomas Deyhle Jr^{1,2}, Doctor Bjorn Baslet¹, Professor Sarah Baatout^{1,2}, Doctor Marjan Moreels¹
¹SCK•CEN, Belgian Nuclear Research Centre, ²Ghent University, Department of Molecular Biotechnology
- 14:15 GRAIN V2.0 (Influence of altered gravity on immune responses demonstrated with neutrophil migration performance)
Migration and activation of immune cells in altered gravity
Dr. Dominique Moser¹, Dr. Shujin Sun², Dr. Ning Li², Katharina Biere¹, Marion Hörnl¹, Sandra Matzel¹, Dr. Cora Thiel³, Dr. Yuxin Gao², Prof. Oliver Ullrich³, Prof. Mian Long², Prof. Alexander Choukèr¹
¹Hospital Of The Ludwig Maximilians University, ²Chinese Academy of Sciences, ³University of Zurich
- 14:30 Gravitational stress during parabolic flights induced changes in human leukocyte subsets
Dr. Ulrik Stervbo¹, Dr. Toralf Roch², Dr. Tina Kornprobst², Dr. Gerald Grütz², Prof. Birgit Sawitzky², PhD Andreas Wilhelm², PhD Francis Lacombe³, Kaoutar Allou³, Dr. Markus Kaymer⁴, Prof. Timm Westhoff¹, **Dr. Felix S. Seibert¹**, Prof. Nina Babel¹
¹Ruhr University Bochum; University Hospital Marien Hospital Herne, ²Berlin-Brandenburg Center for Regenerative Therapies; Charité-Universitätsmedizin Berlin, ³Laboratoire d'hématologie, CHU de Bordeaux, Hôpital Haut-Lévêque, ⁴Beckman Coulter GmbH
- 14:45 The Coenzyme Q10 (CoQ10) as countermeasure for retinal damage onboard the International Space Station: the CORM project
Dr. Matteo Lulli¹, Dr. Francesca Cialdai², Dr. Leonardo Vignali², Dr. Monica Monici², Dr. Alessandro Cicconi³, Dr. Stefano Cacchione³, Dr. Alberto Magi¹, Dr. Michele Balsamo⁴, Dr. Marco Vukich⁴, Dr. Gianluca Neri⁴, Dr. Alessandro Donati⁴, Prof. Sergio Capaccioli¹
¹University Of Florence, ²ASAcampus Joint Laboratory, ³Sapienza University of Rome, ⁴Kayser Italia srl
- 15:00 Gradual reduction of exhaled nitric oxide during the preflight preparation and inflight periods in ISS astronauts
Dr. Lars L Karlsson¹, Dr. Alain Van Muylem², Prof. Dag Linnarsson¹
¹Karolinska Institutet, ²Erasmus University Hospital and Université Libre de Bruxelles
- 15:15 IMMUNO3D: effects of simulated microgravity and hypergravity on a three-dimensional model of human bone marrow
Dr. Francesco Pampaloni¹, Dr. Sonja Brungs², Mrs. Berit Reinhardt¹, Dr. PD Ruth Hemmersbach², Prof. Dr. Ernst H.K. Stelzer¹
¹Goethe University Frankfurt, Buchmann Institute for Molecular Life Sciences (BMLS), ²DLR – German Aerospace Center, Institute of Aerospace Medicine, Gravitational Biology Department

15:30 Coffee break & Poster Session 3

Session 14: Space Medicine & International Cooperation

Chairs: Martina Heer / Victor Demaria-Pesce

Room: High Bay

- 16:30 Welcome - Opening remarks
Martina Heer, Univ. of Bonn, Germany
- 16:35 Landmarks of history of international cooperation in human space exploration
Victor Demaria-Pesce, ESA-EAC, Cologne Germany
- 16:40 The European Astronaut Centre: a hub for Human Spaceflight Education
David Green, KBRwyle / European Astronaut Centre
- 16:50 Cardiospace French-Chinese Cooperation in Space Physiology : lessons learnt and perspectives
Mr Jean-christophe Lloret¹, Dr Ming Yuan², Mr Laurent Arnaud¹, Dr Xuemin Yin², Dr Guillemette Gauquelin¹, Dr Yinhui Li²
¹French Space Agency, ²Astronaut Center of China
- 17:00 We'll go nowher but together
Dr. Laurence Vico-pouget¹
¹Inserm U1059 University of Lyon, University Jean Monnet
- 17:10 Animal Studies in Bion-M Missions: benefits of scientific cooperation
Dr. Olga Vinogradova¹, Dr. Boris Shenkman¹, Dr. Vladimir Sychev¹
¹SRC RF Institute of Biomedical Problems RAS, Russia
- 17:20 NASA Space Medicine Research for Exploration
Dr. Erik Antonsen¹
¹Nasa
- 17:30 International scientific and medical cooperation: a must for Human Space Exploration
Dr. Guillaume Weerts¹, Dr. Victor Demaria-Pesce¹
¹Esa
- 17:40 Questions
- 17:50 Conclusions
Victor Demaria-Pesce
- 18:00 End of Day 3
- 19:30 Symposium Dinner**
Tulum Tulum
Zeereep 104
2202 NW Noordwijk

Session 15: Psychology / Neuroscience

Chairs: Rainer Herpers / Fabio Ferlazzo

Room: Auditorium

- 16:30 Evaluation of Anxiety in situation of short-term microgravity (EVA-0G): sensitivity of cognitive parameters
Miss Cécile Guillot¹, Doctor Jean-Philippe Hainaut¹, Doctor Cécile Langlet¹, Professor Benoît Bolmont¹
¹University Of Lorraine
- 16:45 Effects of long-term immobilization on affective picture processing - an ERP study
Mrs Katharina Brauns¹, Mrs Anika Werner¹, Prof. Hanns-Christian Gunga¹, Dr. Alexander Christoph Stahn^{1,2}
¹Charité Universitätsmedizin Berlin, Center for Space Medicine and Extreme Environments Berlin, ²University of Pennsylvania, Perelman School of Medicine

- 17:00 Locomotion on the Earth after long-duration space flights as step to locomotion on other celestial bodies
Dr. Nataliya Lysova¹, Mr. Vladimir Kitov¹, Dr. Elena Fomina¹
¹RF SRC – Institute of Biomedical Problems, Russian Academy of Sciences
- 17:15 Changes in the characteristics of voluntary movements after long term space flights
Dr. Nikolay Osetskiy¹, Mr. Vladimir Kitov¹, Dr. Inna Sosnina¹, Dr. Natalia Lysova¹, Mrs. Lyubov Amirova¹, Dr. Marissa Rosenberg², PhD Igor Koffman², Prof. Millard Reschke², Dr. Ilya Rukavishnikov¹, PhD Elena Tomilovskaya¹, Pfor. Inesa Kozlovskaya¹
¹RF SSC Institute of Biomedical Problems RAS, ²NASA Johnson Space Center
- 17:30 Acute Weightlessness Impairs Spatial Updating Performance
Dr. Alexander Stahn^{1,2}, Anika Werner¹, Katharina Brauns¹, Dr Stephane Besnard³, Dr Pierre Denise³, Dorothee Grevers¹, Dr Thomas Wolbers⁴, Dr Martin Riemer⁴, Dr Simone Kuehn⁵, Dr Hanns-Christian Gunga¹
¹Charité Universitätsmedizin Berlin, ²University of Pennsylvania, Perelman School of Medicine, ³Normandie Université, UMR INSERM U 1075 COMETE, ⁴German Center for Neurodegenerative Diseases - Site Magdeburg, ⁵University Medical Center Hamburg-Eppendorf, Dept. of Psychiatry and Psychotherapy
- 17:45 Sympathetic activity during acute simulated microgravity
Mr Marc Kermorgant¹, Dr Marc Labrunée^{1,2}, Dr Thomas Geeraerts^{3,4}, Dr Eric Schmidt⁵, Dr Nathalie Nasr^{1,6}, Dr Alexandra Weckel⁷, Dr Alexander Choukèr⁸, Dr Jean-Michel Senard^{1,9}, **Dr Anne Pavy-Le Traon^{1,6}**
¹UMR INSERM 1048, Institute of Cardiovascular and Metabolic Diseases (I2MC), ²Department of Rehabilitation, University Hospital of Toulouse, ³Department of Anesthesiology and Intensive Care, University Hospital of Toulouse, ⁴Toulouse NeuroImaging Center – ToNIC, UMR 1214, Inserm / Université Toulouse III - Paul Sabatier, ⁵Department of Neurosurgery and Institute for Neurosciences, University Hospital of Toulouse, ⁶Department of Neurology and Institute for Neurosciences, University Hospital of Toulouse, ⁷Department of Otorhinolaryngology and Otoneurology, University Hospital of Toulouse, ⁸Department of Anaesthesiology, “Stress and Immunity” Laboratory, University Hospital of Munich, ⁹Department of Clinical Pharmacology, University Hospital of Toulouse
- 18:00 End of Day 3
- 19:30 Symposium Dinner**
Tulum Tulum
Zeereep 104
2202 NW Noordwijk

Thursday 21 June 2018

Plenary Session: Effect of Gravity and Spaceflight on Fluid Shifts and Neuro-Ocular Impairment

Chairs *Inessa Kozlovskaya / Alan Hargens*

Room: *High Bay*

- 09:00 Introduction to Spaceflight and Fluid Shifts
Inessa Kozlovskaya, IMBP, Moscow, Russia
- 09:15 Spaceflight Associated Neuro-ocular Syndrome during Exploration Missions
Brandon Macias, Medical Univ. South Carolina, Charleston, SC USA
- 09:45 Intracranial Adaptation to Spaceflight: Results from the retrospective review of brain MRI scans of ISS and Shuttle Astronauts
Donna Roberts, KBRwyle, Houston, USA
- 10:15 Mechanisms of Endothelium Effects on Murine Arteries during Spaceflight
Olga Vinogradova, IMBP, Moscow, Russia

10:45 Coffee break

- 11:15 Intracranial Hemodynamics in Space and on Earth
Mark Wilson, Imperial College London, UK
- 11:45 Artificial Gravity to Reverse Headward Fluid Shifts
Lonnie Petersen, Univ. California, San Diego, USA
- 12:15 Summary of Spaceflight and Fluid Shifts
Alan Hargens, Univ. California, San Diego, USA

12:30 Lunch

Session 16: Cardiovascular-1

Chairs: *Liudmila Gerasimova-Meigal / Richard Hughson*

Room: *High Bay*

- 14:00 Preliminary results for Jugular vein volume and middle cerebral vein velocity increase during 6 month ISS spaceflight
Prof. Philippe Arbeille¹, *Dr Kathryn Zuj¹, Dr Brandon Macias², Dr Doug Ebert², Dr Steven Laurie², Pr Scott Dulchavsky³, Dr Mike Stenger⁴, Dr Alan Hargens⁵*
¹UMPS-CERCOM University Hospital Tours, ²KBRwyle, ³Henry Ford Innovation Institut and Hospital, ⁴Cardiovascular & Vision Lab, NASA Johnson Space Center, ⁵Dept of Orthopaedic Surgery, UCSD Medical Center, La Jolla
- 14:15 The mechanisms of endothelium influences in murine arteries differently affected in spaceflight
Dr. Olga Vinogradova^{1,2}, *Dr. Dina Gaynullina^{1,2}, Ms Oksana Kiryukhina¹, Dr Olga Tarasova^{1,2}*
¹SRC RF Institute of Biomedical Problems RAS, ²M.V. Lomonosov Moscow State University
- 14:30 A comparison of squatting exercise on a centrifuge and with terrestrial attraction
Dr. Jochen Zange¹, *Timothy Piotrowski¹, Prof. Dr. Jörn Rittweger¹*
¹DLR, Deutsches Zentrum für Luft- und Raumfahrt
- 14:45 High-intensity training as cardiovascular countermeasure for 60-day bed rest
Dr. Martina Anna Maggioni^{1,2}, *Dr Paolo Castiglioni³, Prof. Giampiero Merati², Mr Stefan Mendt¹, Ms Katharina Brauns¹, Ms Anika Werner¹, Prof Hanns-Christian Gunga¹, Dr Alexander Stahn^{1,4}*
¹Charité Universitätsmedizin Berlin, Center for Space Medicine and Extreme Environments Berlin, ²Università degli Studi di Milano, Department of Biomedical Sciences for Health, ³IRCCS Don Gnocchi Foundation, ⁴University of Pennsylvania, Perelman School of Medicine

- 15:00 Evaluation of combined effects of lunar gravity simulation and the altered magnetic field on cardiovascular system of healthy volunteers
Dr. Yury Gurfinkel¹, Dr. Mikhail Baranov², Dr. Roman Pishchalnikov³
¹Lomonosov Moscow State University, Laboratory of blood microcirculation head; ²Research Institute for Space Medicine, Federal Biomedical Agency of Russia, ³Prokhorov General Physics Institute of the Russian Academy of Sciences (GPI RAS)
- 15:15 Differences between left and right ventricular cardiac output during (simulated) hyper- to micro-gravity transitions
Mr Lutz Thieschäfer¹, Dr. Jessica Koschate¹, Dr. Uwe Drescher¹, Dr. Andreas Werner^{2,3}, Dr. Daniel Dumitrescu⁴, Dr. Uwe Hoffmann¹
¹Institute of Physiology and Anatomy, German Sport University Cologne, ²German Air Force - Center of Aerospace Medicine, Aviation Physiology Training Center, Aviation Physiology Diagnostics and Research, ³Center for Space Medicine and Extreme Environments, Institute of Physiology, ⁴Cologne Heart Center, Division of Cardiology

Session 17: Sleep / Neuroscience

Chairs: Donna Roberts / Charles Fuller

Room: Auditorium

- 14:00 How sleep restriction and fragmentation affect the autonomic nervous system – an intervention study
Miss Naima Laharnar¹, Miss Maria Zemann¹, Miss Joanna Fatek¹, Dr. Alexander Suvorov², Mr. Mark Belakovskiy², Prof. Oleg Orlov², Dr. Martin Glos¹, Prof. Thomas Penzel¹, Prof. Ingo Fietze¹
¹Charité-Universitätsmedizin Berlin, ²Russian Academy of Science - Institute of Biomedical Problems
- 14:15 Isolation, Sleep, Cognition and Neurophysiological Responses – An Investigation in the Human Exploration Research Analog (HERA)
Mr Timo Klein^{1,2}, Ms Andrea Rossiter³, Mr Jan Weber¹, Dr Tina Foitschik¹, Dr Brian Crucian⁴, Dr Stefan Schneider^{1,2}, Dr Vera Abeln¹
¹German Sport University Cologne, ²University of the Sunshine Coast, ³King's College London, ⁴NASA Johnson Space Center
- 14:30 Alterations in resting state electrocortical activity after 60 days of bed rest
Mrs Katharina Brauns¹, Mrs Anika Werner¹, Prof. Hanns-Christian Gunga¹, Dr. Alexander Christoph Stahn^{1,2}
¹Charité Universitätsmedizin Berlin, Center for Space Medicine and Extreme Environments Berlin, ²University of Pennsylvania, Perelman School of Medicine
- 14:45 What space tells us about sleep
Dr. Alain Gonfalone¹
¹European Space Agency
- 15:00 Modelling Brain Injuries under Altered Gravity Conditions: Understanding Brain Plasticity
Dr. Ilaria Cinelli¹
¹NUIG
- 15:15 Biological rhythms and decision-making performance of high arctic residents during summer and winter
Dott. Pierpaolo Zivi¹, Prof. Vittorio Pasquali¹, Prof. Stefano Sdoia¹, Prof. Fabio Ferlazzo¹
¹Department of Psychology - Sapienza University of Rome

15:30 Coffee break & Poster Session 4

Session 18: Cardiovascular-2

Chairs: Marc-Antoine Custaud / Nandu Goswami

Room: High Bay

- 16:30 Influence of otolithic afferents on the cardiovascular system during a 3-days dry immersion
Phd Steven De Abreu¹, Dr Shigehiko Ogoh³, Pr Pierre Denise^{1,2}, Pr Hervé Normand^{1,2}
¹University of CAEN, ²CHU de CAEN, ³University of TOYO

- 16:45 Blood pressure and heart rate variability in Parkinson's disease patients under "dry immersion"
Prof. Liudmila Gerasimova-Meigal¹, Prof. Alexander Meigal¹
¹Petrozavodsk State University
- 17:00 Central blood pressure and pulse wave velocity before and after six months in space
Mr Fabian Hoffmann¹, Mr Stefan Möstl¹, Dr Elena Luchitskaya², Mrs Irinia Funtova², Dr Roman Baevsky², Prof Jens Tank¹
¹DLR (German Aerospace Center), ²Institute for Biomedical Problems
- 17:15 24-hr Ambulatory BP and Cerebral Hemodynamics in Crewmembers: Arterial Stiffness and Cerebrovascular Pulsatility
Prof. Richard Hughson¹, Dr. Katelyn Wood¹, Ms. Danielle Greaves¹, Prof. Philippe Arbeille²
¹Schlegel-UWaterloo Research Institute For Aging, ²University of Tours
- 17:30 Altered venous function during long-duration spaceflights
Dr Jeanne Hersant¹, Dr Kathryn Zuj², Dr Ana De Holanda¹, Dr Guillemette Gauquelin Koch³, Pr Claude Gharib⁴, Dr. Jacques-olivier Fortrat¹
¹Faculté De Médecine CNRS 6214 Inserm 1083, ²University of Waterloo, ³Centre National d'Etudes Spatiales, ⁴Faculté de Médecine Lyon Est
- 17:45 Remote Echography Onboard the ISS fully controlled from the ground CNES Space Center - Application in isolated medical centre on earth (200 patients)
Prof. Philippe Arbeille¹, PHD Didier Chaput², PHD Arielle Depriester³, PHD Olivier Belbis², PHD Alain Maillet³, PHD Patrice Benarroche², PHD Sebastien Barde²
¹UMPS-CERCOM University Hospital Tours, ²CADMOS - CNES, ³MEDES
- 18:00 End of Day 4

Session 19: Space Analogues / Microgravity Model / Medication

Chairs: Erik Antonsen / Arnaud Runge

Room: Auditorium

- 16:30 Cardiac autonomic modulation during 14-month Overwintering at the Antarctic Station Neumayer III
Dr. Martina Anna Maggioni^{1,2}, Dr. Paolo Castiglioni³, Prof. Giampiero Merati^{2,3}, Mr Stefan Mendt¹, Prof. Hanns-Christian Gunga¹, Ms. Katharina Brauns¹, Ms. Anika Werner¹, Dr. Alexander Stahn^{1,4}
¹Charité Universitätsmedizin Berlin, Center for Space Medicine and Extreme Environments, ²Università degli Studi di Milano, Department of Biomedical Sciences for Health, ³IRCCS Don Gnocchi Foundation, ⁴University of Pennsylvania, Perelman School of Medicine
- 16:45 Astronaut Training in Weightlessness using Virtual Reality
Dr. Amaury Solignac¹, Dr. Vincent Rieuf¹, Mr. Jean-Francois Clervoy², Mr. Thierry Gharib³
¹I.C.E.B.E.R.G., ²ESA, ³Novespace
- 17:00 Sex-specific Brain Adaptations During Short-Term Isolation and Confinement: Results from the NASA HERA C3 Mission
Dr. Alexander Stahn^{1,2}, Anika Werner¹, Katharina Brauns¹, Dr David Dinges², Dr Mathias Basner², Dr Hanns-Christian Gunga¹, Dr Simone Kuehn³
¹Charité Universitätsmedizin Berlin, Center for Space Medicine and Extreme Environments Berlin, ²University of Pennsylvania, Perelman School of Medicine, ³University Medical Center Hamburg-Eppendorf, Dept. of Psychiatry and Psychotherapy
- 17:15 Role of axial and support unloading in development of hypogravitational motor syndrome
Dr. Elena Tomilovskaya¹, Dr. Ilya Rukavishnikov¹, Dr. Tatiana Kukoba¹, Mrs. Tatiana Shigueva¹, Ms. Inna Sosnina¹, Mrs. Lyubov Amirova¹, Prof. Inessa Kozlovskaya¹
¹RF SSC - Institute of Biomedical Problems RAS

- 17:30 Proteomic Investigation of Human Skeletal Muscle Before and After 70 Days of Head Down Bed Rest With or Without Exercise and Testosterone Countermeasures
Dr. Lichar Dillon¹, *Dr. Kizhake Soman¹, Dr. John Wiktorowicz¹, Ms. Ria Sur¹, Dr. Daniel Jupiter¹, Mr. Christopher Danesi¹, Mrs. Kathleen Randolph¹, Mr. Charles Gilkison¹, Dr. Larry Denner¹, Dr. William Durham¹, Dr. Randall Urban¹, Dr. Melinda Sheffield-Moore¹*
¹University of Texas Medical Branch
- 17:45 Dose Tracker: an iOS app for collection of medication use data from volunteer crewmembers on the International Space Station
Dr. Virginia Wotring¹
¹Baylor College Of Medicine
- 18:00 The Effects of Long-Duration Space Flight on Skeletal Muscle: Electrically-Evoked and Voluntary Properties of a Slow Muscle
Prof. Yuri Koryak¹, *Inessa Kozlovskaya, Steven Siconolfi, John Gilbert*
¹State Scientific Center of the Russian Federation – Institute of Biomedical Problems of the Russian Academy of Sciences, ²Space Biomedical Research Institute NASA-JSC, ³RUG Life Sciences
- 18:15 End of Day 4

Friday 22 June 2018

- 09:00 – Tour in Haarlem
16:30

Poster Session - Monday 18 / Tuesday 19 June

- 1 Is Artificial Gravity able to protect the Musculoskeletal System in a Murine Model of Knee Osteoarthritis?
Dr. Benoit Dechaumet¹, Dr. Damien Cleret¹, Mr Norbert Laroche¹, Mr Arnaud Vanden-Bossche¹, Pr. Marie-Hélène Lafage-Proust¹, Dr. Laurence Vico-pouget¹
¹Inserm, U1059, University of Lyon, University Jean Monnet
- 2 Nuclear–Cytoplasmic Traffic of Class IIa Histone Deacetylases in Rat Soleus Muscle at the Early Stage of Gravitational Unloading
Mrs Natalia Vilchinskaya¹, Mr Boris Shenkman¹
¹SSC RF-Institute of Biomedical Problems, RAS
- 3 Differentiation of mesenchymal stem cells into osteoblasts under simulated microgravity
Dr. Gabriela Chiritoiu¹, Stefana Iosub², Alexandru Nistorescu³, Adrian Dinculescu³, Dr. Florin Jipa², Dr. Cristian Vizitiu³, Dr. Felix Sima², Dr. Stefana Petrescu¹
¹Institute of Biochemistry, Romanian Academy, Splaiul Independentei 296, Bucharest, Romania, ²Center for Advanced Laser Technologies (CETAL), National Institute for Laser, Plasma and Radiation Physics (INFLPR), Atomistilor 409, 0077125 Magurele, Romania, ³Institute of Space Science (ISS), 409 Atomistilor Street, Magurele, Romania
- 4 Bone Remodelling Study using Strontium Enriched Hydroxyapatite Nanoparticles
Prof. Angela Maria Rizzo¹, Dr. Getano Campi², Dr. Francesco Cristofaro³, Dr. Giuseppe Pani¹, Dr. Paola Antonia Corsetto¹, Dr. Barbara Pascucci², Prof. Livia Visai³
¹Department of Pharmacological and Biomolecular Sciences, Università Degli Studi di Milano, ²Institute of Crystallography, CNR, ³Department of Molecular Medicine, University of Pavia
- 5 Nuclear accumulation of HSP70 protein in mouse skeletal muscles in response to reloading following unloading
Prof. Katsumasa Goto¹, Mr. Antonios Apostolopoulos², Mrs. Ayane Nakamura¹, Prof. Yoshinobu Ohira³
¹Graduate School of Health Sciences, Toyohashi SOZO University, ²Graduate School of Space Physiology and Health, King's College London, ³Research Center for Space and Medical Sciences, Doshisha University
- 6 Analysis and Characterization of Bone tissue using modeled microgravity analogues as Tissue Engineering Models
Dr. Vivek Mann¹, Dr. Alamelu Sundaresan¹, Dr. Daniela Grimm², Dr. Thomas Corydon², Dr. Stefan Riwaldt², Dr. Sascha Kopp³, Mr. Elvis Okoro¹, Dr. Janne Reseland⁴
¹Texas Southern University, ²Aarhus University, ³Otto- Von - Guericke Universit, ⁴University of Oslo
- 7 Effect of clomipramine on lipid raft disorders in soleus muscle of rats exposed to short-term hindlimb unloading
Prof. Irina Bryndina¹, Prof. Alexey Petrov², Prof. Andrey Zefirov², Dr Maria Shalagina¹, Mr Alexey Sekunov¹, Mr Vladimir Protopopov¹
¹Izhevsk State Medical Academy, ²Kazan State Medial University
- 8 The effect of 30 day hindlimb unloading and overload on murine bone marrow stromal progenitors
Mrs Elena Markina¹, Mrs Irina Andrianova¹, Mr Andrey Shtemberg¹, Mrs Ludmila Buravkova¹
¹State Scientific Center Of The Russian Federation - Institute Of Biomedical Problems (ibmp)
- 9 The definition of the cellular and molecular mechanisms of plants gravisensitive
Dr. Olga Artemenko¹
¹Institute Of Botany Nasu
- 10 Clinorotation impacts the plasmalemma lipid bilayer and its functional domains—rafts in plant cells
Prof. Elizabeth Kordyum¹, PhD Iliya Bulavin¹, Dr. Olena Nedukha¹, Tamara Vorob'eva¹
¹Institute Of Botany

- 11 Investigation of plant tolerance to radioactive environment of space flights
*Dr. Galina Shevchenko*¹
¹*Institute of Botany, NAS Ukraine*
- 12 Response of calcium ions to hypergravity
*Dr. Olena Nedukha*¹
¹*Institute Of Botany*
- 13 HSP90s and HSP70s stabilize root gravitropic response in Arabidopsis
*Dr. Liudmyla Kozeko*¹
¹*Institute of Botany, NAS of Ukraine*
- 14 Clinorotation impact on respiration and photosynthesis of pea plants under the low light conditions
*Dr. Vasyl Brykov*¹
¹*M.G. Kholodny Institute of Botany, NAS of Ukraine*
- 15 “Rhizogenesis in vitro” from leaf explants as a model for studying root cell differentiation under real and simulated microgravity
*Dr. Iliya Bulavin*¹
¹*Institute Of Botany*
- 16 Adaptive responses in mammals to altered gravitational environments
*dr Arianna Racca*¹, *dr Nadia Francia*¹, *dr Sara Tavella*², **Dr. Daniela Santucci**¹
¹*Center for Behavioural Sciences and Mental Health, Istituto Superiore di Sanità*, ² *Department of Oncology, Biology and Genetics, University of Genova*
- 17 HypoCampus - Effects of Long-Duration Spaceflight on Spatial Cognition and Its Neural Basis
Dr. Alexander Stahn^{1,2}, *Katharina Brauns*¹, *Anika Werner*¹, *Dr Stephane Besnard*³, *Dr Pierre Denise*³, *Dr Tom Hartley*⁴, *Dr Bernhard E. Riecke*⁵, *Dr Thomas Wolbers*⁶, *Dr Mathias Basner*², *Dr David Dinges*², *Dr Hanns-Christian Gunga*¹, *Dr Simone Kuehn*⁷
¹*Charité Universitätsmedizin Berlin, Center for Space Medicine and Extreme Environments Berlin*, ²*University of Pennsylvania, Perelman School of Medicine*, ³*Normandie Université, UMR INSERM U 1075 COMETE*, ⁴*University of York, Dept. of Psychology*, ⁵*Simon Fraser University, School of Interactive Arts and Technology*, ⁶*German Center for Neurodegenerative Diseases - Site Magdeburg*, ⁷*University Medical Center Hamburg-Eppendorf, Dept. of Psychiatry and Psychotherapy*
- 18 Plantar mechanical stimulation prevents neurochemical alterations in the hippocampus induced by stimulated microgravity
Ms. Anna Berezovskaya¹, *Mr. Sergey Tyganov*², *Dr. Boris Shenkman*², *Dr. Margarita Glazova*¹
¹*Sechenov Institute of Evolutionary Physiology and Biochemistry Russian Academy of Sciences*, ²*Institute of Biomedical Problem Russian Academy of Sciences*
- 19 Effect of endurance exercise training on neurogenesis of adipose-derived stem cells, isolated from fat-depot in Wistar rats
Dr. Hisashi Kato^{1,2}, *Dr. Yoshinobu Ohira*^{1,2}, *Dr. Tetsuya Izawa*^{1,2}
¹*Graduate School of Health and Sports Science, Doshisha University*, ²*Research Center for Space and Medical Sciences, Doshisha University*
- 20 Cardiovascular Response to Different Doses of Applied External Pressure
Miss Elizabeth Bird¹, *Mr Alan Hargens*¹, *Mrs Lonnie Petersen*¹
¹*University Of California, San Diego*
- 21 Dynamic foot stimulation prevents calcineurin/NFATc1 inactivation and slow-to-fast shift in rat soleus muscle under unloading
Mrs Christina Sharlo¹, *Mr Sergei Tyganov*¹, *Ms Inna Paramonova*¹, *Ms Olga Turtikova*¹, *Mr Boris Shenkman*¹
¹*The Russian Federation State Research Center – Institute Of Biomedical Problems Of The Russian Academy Of Sciences*

- 22 The influence of body size and exercise countermeasures on resources required for human exploration missions
Dr Jonathan Scott^{1,2}, *Dr David Green*^{1,2,3}, *Dr Guillaume Weerts*²
¹Wylelabs GmbH, ²Space Medicine Office, European Astronaut Centre, European Space Agency, ³Centre of Human and Aerospace Physiological Sciences, King's College London
- 23 Zinc oxide and graphene as sensing platforms towards enabling skin wound healing assessment in space
Dr. Gemma Rius¹, *Dr Elisabet Prats-Alfonso*², *Dr Marta Duch*¹, *Dr Jaume Esteve*¹, *Prof. Philippe Godignon*¹
¹Institut de Microelectronica de Barcelona IMB-CNM-CSIC, ²Centro de Investigación Biomédica en Red en Bioingeniería, Biomateriales y Nanomedicina (CIBER-BBN)
- 24 Influence of the transformed environment on the yield of soybean plants and resistance to soybean mosaic virus
Prof. Lidiya Mishchenko¹, *Associate Prof. Ivan Mishchenko*², *Scientific Researcher Alina Dunich*¹
¹Taras Shevchenko National University Of Kyiv, ²National University of Life and Environmental Sciences of Ukraine
- 25 Eight days of Earth reambulation worsen bone loss induced by 1-month spaceflight in the major weight-bearing ankle bones of mature mice
*Dr. Laurence Vico-pouget*¹
¹Inserm U1059 University of Lyon, University Jean Monnet

Poster Session - Wednesday 20 / Thursday 21 June

- 26 EEG response of volunteers of different sexes who are in a rotating short-range centrifuge
Miss Daria Schastlivtseva¹, PhD Tatiana Kotrovskaya¹, PhD Milena Koloteva¹, Prof. Yuriy Bubeev¹
¹SSC RF - Institute Of Biomedical Problems Of RAS
- 27 VaPER-Study: Strict adherence of 6°-Head Down Tilt Bed Rest
– An Improvement to the Ground-Based Microgravity Analogue?
Dr. Melanie von der Wiesche¹, **Alexandra Noppe¹**, Freia Paulke¹, Dr. Edwin Mulder¹
¹DLR - German Aerospace Center, Institute of Aerospace Medicine
- 28 Individualized dose of exercise for counteracting astronaut post-flight orthostatic intolerance
Prof Ferdinando Iellamo^{1,2}, **Dr Giuseppe Caminiti¹**, Dr Vincenzo Manzi¹, Miss Serena Selli¹, Dr Maurizio Volterrani¹
¹S.raffaele Irccs, ²University of Tor Vergata
- 29 Proteomics of Microparticles derived from Endothelial Cells after modelled Microgravity conditions
Mrs Daria Kashirina¹, Mr Andrey Ratushny¹, Mrs Olga Zhidkova¹, Dr Alexey Kononikhin^{1,2}, Prof Irina Larina¹, Prof Lyudmila Buravkova¹
¹Institute For Biomedical Problems – Russian Federation State Scientific Research Center Ras, ²Institute of Energetic Problems of Chemical Physics RAS
- 30 The dynamic adaptive response of Endothelial Cells to simulated Microgravity
Dr. Alessandra Cazzaniga¹, Laura Laura Locatelli¹, Dr Roberta Scrimieri¹, Dr Sara Castiglioni¹
¹University Of Milan
- 31 Vascular Echo: Faster central and peripheral pulse wave velocity in astronauts while on International Space Station
Mrs Danielle Greaves¹, Dr. Richard Hughson¹, Dr. Philippe Arbeille²
¹University Of Waterloo, ²University of Tours Francois Rabelais
- 32 Changes observed on the inotropic state of the heart between first and second month in microgravity, assessed by CARDIOVECTOR-1
Mr Jeremy Rabineau¹, Dr Irina Funtova², Dr Elena Luchitskaya², Pr Philippe van de Borne¹, Pr Jens Tank³, Dr Pierre-François Migeotte¹
¹Université Libre De Bruxelles, ²Institute of Biomedical Problems, ³Deutsches Zentrum für Luft- und Raumfahrt
- 33 The effect of microgravity on central aortic blood pressure
Dr. Felix S. Seibert¹, Fabian Bernhard¹, Dr. Ulrik Stervbo¹, Sinthuya Vairavanathan¹, Dr. Frederic Bauer¹, Dr. Benjamin Rohn¹, Dr. Nikolaos Pagonas¹, Prof. Nina Babel¹, Prof. Joachim Jankowski², Prof. Timm H. Westhoff¹
¹Ruhr University Bochum; University Hospital Marien Hospital Herne, ²Institute for Molecular Cardiovascular Research; RWTH Aachen University
- 34 Cardiac Mechanical Function Measurement by Kino-cardiography: Effect of acute postural changes vs RSL 60 Days Head-down Tilt Test
PhD Applicant Amin Hossein¹, MSci Farhana Pinky¹, PhD Applicant Damien Gorlier¹, PhD Applicant Jérémy Rabineau¹, Prof Philippe Van De Borne³, Prof Antoine Nonclercq², PhD Pierre-François Migeotte¹
¹Université Libre de Bruxelles, LPHYS, ²Université Libre de Bruxelles, BEAMS, ³Université Libre de Bruxelles, Cardiology Dept.
- 35 Cardiac deconditioning after the 60-days ESA-RSL head-down bed-rest: wearable monitoring of heart kinetic energy and machine learning
Mr Damien Gorlier¹, Ms Federica Landreani², Prof Philippe van de Borne¹, Mrs Irina Funtova³, Prof Jens Tank⁴, Dr Enrico Caiani², Dr Pierre-François Migeotte¹
¹Université Libre de Bruxelles, ²Politecnico di Milano, ³Institute for Biomedical Problems, ⁴DLR Institute of Aerospace Medicine

- 36 Gravitational stress during parabolic flights induced changes in human leukocyte subsets
Dr. Ulrik Stervbo¹, Dr. Toralf Roch², Dr. Tina Kornprobst², Dr. Gerald Grütz², Prof. Birgit Sawitzky², PhD Andreas Wilhelm², PhD Francis Lacombe³, Kaoutar Allou³, Dr. Markus Kaymer⁴, Prof. Timm Westhoff⁴, Dr. Felix S. Seibert¹, Prof. Nina Babel¹
¹Ruhr University Bochum; University Hospital Marien Hospital Herne, ²Berlin-Brandenburg Center for Regenerative Therapies; Charité-Universitätsmedizin Berlin, ³Laboratoire d'hématologie, CHU de Bordeaux, Hôpital Haut-Lévêque, ⁴Beckman Coulter GmbH
- 37 Influence of short-term suborbital flight factors on human lymphocytes functional activity
Dr. Irina Alchinova¹, Mrs. Margarita Polyakova¹, Prof. Mikhail Karganov¹, Dr. Mikhail Baranov¹, Mr. Nikolay Mullin², Mr. Sergey Kalinkin³, Mr. Kirill Morozov³, Mr. Nikolay Balugin⁴, Dr. Vladimir Yushkov⁴
¹Research Institute For Space Medicine, Federal Biomedical Agency Of Russia, ²Skolkovo Institute of Science and Technology, ³Moscow Polytechnic University, ⁴Central aerological observatory
- 38 Altered Anandamide Metabolism in Microgravity: the "RESLEM" experiment
Prof. Mauro Maccarrone¹, Dr. Monia Di Tommaso², Mr. Gianluca Neri³, Mr. Alessandro Donati³, Dr. Natalia Battista², Dr. Monica Bari⁴
¹Department of Medicine, Campus Bio-Medico University of Rome, ²Faculty of Biosciences and Technology for Food, Agriculture and Environment, University of Teramo, ³Kayser Italia S.r.l., ⁴Department of Experimental Medicine and Surgery, Tor Vergata University of Rome
- 39 Radiation-induced DNA damage in plasmid DNA model
Dr. Katerina Pachnerova Brabcova¹, Prof. Lembit Sihver², Dr. Egor Ukraintsev³, Dr. Marie Davidkova¹, Dr. Christian J. Schwarz⁴
¹Nuclear Physics Institute, Czech Academy of Sciences, ²Atominstytut, Technische Universität Wien, ³Institute of Physics, Czech Academy of Sciences, ⁴ESTEC ESA
- 40 Effect of microgravity on characteristics of the accuracy control of movements
Tatiana Shigueva¹, Vladimir Kitov¹, Nicolay Osetskiy¹, Liubov Amirova¹, Dr Elena Tomilovskaya¹, Prof. Inesa Kozlovskaya¹
¹State Scientific Center of the Russian Federation – Institute of Biomedical Problems of the Russian Academy of Sciences
- 41 The European Active Dosemeter on ISS
Matthias Dieckmann, Dr. Ulrich Straube², Dr. Thomas Berger³, Dr. Matthias Dieckmann¹
¹ESA, ²EAC, ³DLR
- 42 Effect of imitated microgravity on plasma membrane epicotyls and roots in plant
Dr. Olena Nedukha¹, Prof Elizabeth Kordyum, assist Tamara Vorob'eva, Dr Vladimir Grakhov
¹Institute Of Botany
- 43 The somatogravic illusion during centrifugation: sex differences
Prof. Rainer Herperts^{1,2,3}, Prof. Laurence R. Harris², Ms Meaghan McManus², Mr. Thomas Hofhammer¹, Ms Alexandra Noppe⁴, Mr Timo Frett⁴, Prof. Michael Jenkin²
¹Bonn-Rhein-Sieg University Of Applied Sciences, ²York University, ³University of New Brunswick, ⁴German Aerospace Centre (DLR), Institute of Aerospace Medicine
- 44 The probable neural mechanisms of thick-toed geckos' attachment to the surfaces in weightlessness
Dr. Valeriy Barabanov¹, Dr. Victoria Gulimova¹, Dr. Alexandra Proschina¹, Dr. Anastasia Kharlamova¹, Dr. Rustam Berdiev², Prof. Sergey Saveliev¹
¹Research Institute Of Human Morphology, ²Research and educational center for wild animal rehabilitation, Faculty of Biology, M.V. Lomonosov Moscow State University
- 45 Unraveling non-cancer effects of spaceflight: How are the brain and skin affected in astronauts?
Miss Greta Lamers^{1,2}, Dr. Marjan Moreels¹, Dr. Mieke Verslegers¹, Prof. Dr. Sarah Baatout^{1,2}
¹Radiobiology Unit, Interdisciplinary Biosciences Expert Group, SCK•CEN | Belgian Nuclear Research Centre, ²UGent, Faculty of Bioscience Engineering

- 46 Age Peculiarities in the Disease Structure of Cosmonauts after Finishing Their Flight Activity
Mr Serguei Zakharov¹, Mrs. Ekaterina Rudenko¹, Mrs. Oksana Novikova¹
¹The Research Institute For Space Medicine Federal Research Clinical Center Of Federal Biomedical Agency Of Russia
- 47 Next generation of life science hardware for Space research
Dr. Michele Balsamo¹, Dr. Eng. Gianluca Neri¹, Dr. Alessandro Donati¹, Dr. Eng. Valfredo Zolesi¹
¹Kayser Italia Srl
- 48 Effect of microgravity on breast cancer cells
Mr Mohamed Zakaria Nassef¹, Mr Sascha Kopp¹, Dr Markus Wehland¹, Dr Marcus Krüger¹, Ms Daniela Melnik¹, Professor Manfred Infanger¹, Professor Daniela Grimm
¹Universitätsklinikum Magdeburg, ²Aarhus University
- 49 Effect of microgravity on human thyroid carcinoma cells
Miss Daniela Melnik¹, Mr. Sascha Kopp¹, Dr. Marcus Krüger¹, Dr. Markus Wehland¹, Dr. Johann Bauer², Prof. Manfred Infanger¹, Prof. Daniela Grimm³
¹Universitätsklinikum Magdeburg, ²Max-Planck-Institut für Biochemistry, ³Department of Biomedicine, Aarhus University