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
Barelle M1, Gauquelin-Koch G2, Bernat M4, Hazane P2
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 T1,2, 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 Fomina1,2,3, Novikov Valery1, Alexandre Savinkina1,4, Nataliya Lysova1, Svetlana Rezvanova1,4, Tatyana Kukoba1,2,9
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 Library

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. Bridger2, 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 Weiland1, MSc Sascha Kopp1, Dr. Johann Bauer2, Prof. Sarah Baatout3, Dr. Marjan Moreels3, Prof. Marcel Egli1, Dr. Stefan Riwaldt2, Prof. Manfred Infanger1, Prof. Daniela Grimm1
14:30 Paracrine response of gravisensitive cells to simulated microgravity  
**Prof. Ludmila Buravkova**¹, *Mr Andrew Ratusnyy*¹, *Dr. Marya Ezdakova*¹, *Dr. Elena Andreeva*¹  
¹Institute Of Biomedical Problems RAS

14:45 Parabolic flight-induced acute hypergravity and microgravity modulates the differentiation potential of embryonic stem cells  
**Mr Aviseka Acharya**¹, *Dr. Sonja Brungs*², *Ms Margit Henry*¹, *Ms Tamara Rotsheyn*³, *Ms Nirmala Singh Yaduvanshi*¹, *Ms Lucia Wegener*², *Mr. Simon Jentzsch*², *Professor Jürgen Hescheler*², *Dr. Ruth Hemmersbach*², *Professor Helene Boeuf*³, *Professor Agapios Sachinidis*¹  
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 Brungs**¹, *Dr. Jens Hauslage*¹, *Volkan Cevik*¹, *Kai Wasser*¹, *PD Dr. Ruth Hemmersbach*²  
¹German Aerospace Center, Institute of Aerospace Medicine, Gravitational Biology

15:15 Mitochondria in Endothelial Cells in Simulated Microgravity  
**Dr. Laura Locatelli**¹, *Dr. Valentina Romeo*¹, *Dr. Clara De Palma*¹, *Dr Sara Castiglioni*¹, *Dr. Alessandra Cazzaniga*¹  
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 Artiles**¹  
¹Texas A&M University

16:45 Influence of acceleration levels on jump performance during centrifugation  
**Prof. Markus Gruber**³, *Dr. Andreas Kramer*¹, *Dr. Jakob Kümmel*²  
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 Iwase**¹  
¹Aichi Medical University

17:15 Biomechanics During Flywheel Resistance Exercise - Effects of the Gravity Vector  
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 Torre**¹, *Dr. Ana Diaz-Artiles*², *Jesper Jorgensen*³, *Dr. Andreas Vogler*³  
¹University of Cadiz, ²Texas AM University, ³Andreas Vogler Studio, ⁴University of Roskilde
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 Hodges3, Prof Julie Hides1, Dr Tobias Weber4, Dr Sauro Salamone5, Dr Jonathon Scott6, Dr Enrico De Martino5, Dr Andrew Wynnard1, Ms Elizabeth Young2, Ms Gunda Lambrecht4, Prof Dorothee Debuse6
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. Eleetta Sereni5, Dr. Francesco Ranaldi6, 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 Eckert1,2,3, Jack J.W.A. van Loon4,5, Lukas M. Eng6, Thomas Schmidt2
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 Arz2, Guido Petrat4, 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 Robineau, 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  
Siegried 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 Roberts  
1Medical University Of South Carolina

14:15 Alterations of the Cortical Control of Locomotions in the Long-Term Spaceflights Revealed by fMRI  
Inesa Kozlovskaya  
1Ekaterina Puchenkova, Inna Nosikova, Angelique Omergen van, Liudmila Litvinova, Ilya Rukavishnikov, Floris Wyuts, Ben Jeurissen, Valentin Sinitsyn, Alena Rumshiskaya, Elena Tomilovskaya

1Institute Of Biomedical Problems (ras), 2Radiology Department, Federal Center of Treatment and Rehabilitation, 3Antwerp Universit Pev Research Center for Equilibrium and Aerospace (AUREA), University of Antwerp, 4imec/Vision Lab, University of Antwerp

14:30 Hyper-gravity promotes motor learning in goldfish and humans  
Shohei Miura, Yuki Takagi, Takafumi Kashima, Kohei Urase, Shuntaro Miki, Prof. Yutaka Hirata

1Chubu University College of Engineering

14:45 Exercise as a countermeasure for impaired brain function? - Evidence from the RSL Bed rest study  
Mrs Anika Werner  
13, Mrs Katharina Brauns, Prof. Hans-Christian Gunga, Prof. Dr. Simone Kühn, Dr. Alexander Christoph Stahn

1Charite 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
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 Meigal², Professor Liudmila Gerasimova-Meigal², 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-Chagnaud¹, Théo Fovet¹, Thomas Brioche¹, 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, INLIVA  

14:15  Estimation of Gait Characteristics during Walking in Lower Gravity Environment Using a Wearable Device  
Mr. Léo Lamassoure¹, Mr. Keisuke Araki¹, Dr. Akihito Ito¹,², Dr. Kiyotaka Kamibayashi¹,²,³, Dr. Yoshinobu Ohira¹,²,³, Dr. Nobutaka Tsujiuchi¹,²,³  
¹University of Montpellier; INRA, UMR 866 Dynamique Musculaire et Métabolisme, ²Freshage Research Group - Dept. Physiology - University of Valencia, CIBERFES, INLIVA, ³Dept. Physiology - University of Valencia, CIBERFES, INLIVA  

14:30  Investigation of additional low-level axial body load on neuromuscular responses during running in simulated lunar gravity  
Miss Julia Attias¹, Mr Alexander Suss¹, Dr Katya Mileva², Professor Thais Rissomano¹, Dr David Green¹,²  
¹King's College London, ²London South Bank University, ³KBR Wyle, Space Medicine Office, European Astronaut Centre  

14:45  Analysis of the Locomotion Strategy during Walking under Ground and Reduced Gravitational Loads on Musculoskeletal System  
Dr. Alexey Shpakov¹, Dr. Anton Artamonov²  
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 - Urepsys  

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 Rozhkov², 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 Szczanik³, Irène Hummel⁴, David Cohen⁴, Philippe Label³, Eric Badel⁴, Valerie Legué⁴  
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 Bruderrek\textsuperscript{1}, Mrs Maria Birlem\textsuperscript{1}, Mr Philipp Schulien\textsuperscript{1}, Mrs Noemie Bernede\textsuperscript{1}  
\textsuperscript{1}Airbus Defence And Space

14:30 Enhanced Concept of a Multipurpose Bioreactor for Pilot Processing in Space Environments
Mrs Ann Delahaye\textsuperscript{1}, Mr Dries Demey\textsuperscript{1}  
\textsuperscript{1}Qinetiq 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 Miskovic\textsuperscript{1}, Dr. Christophe Minetti\textsuperscript{1}, Dr. Hatim Machrafi\textsuperscript{1}, Prof. Frank Dubois\textsuperscript{1}, Dr. Carlo Saverio Iorio\textsuperscript{1}, Mr. Patrick Queueckers\textsuperscript{1}  
\textsuperscript{1}Université libre de Bruxelles

15:15 10 Years of the Large Diameter Centrifuge (LDC): Overview Hyper-g Life Sciences Research @ ESTEC
Jack Van Loon\textsuperscript{1,2}, Alan Dowson\textsuperscript{1}, Jutta Krause\textsuperscript{1}, Pedro Raposo\textsuperscript{1}, Francois Gaubert\textsuperscript{1}, Robert Lindner\textsuperscript{2}, José Gavira Izquierdo\textsuperscript{6}, Torben K. Henriksen\textsuperscript{7}  
\textsuperscript{1}VUmc Amsterdam, \textsuperscript{2}ESA-ESTEC-TEC-MMG, \textsuperscript{3}ESA-ESTEC-HRE-PPD, \textsuperscript{4}Zeugma, \textsuperscript{5}ESA-TEC-MM, \textsuperscript{6}ESA-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 Schneider\textsuperscript{2}  
\textsuperscript{2}German Sport University Cologne

16:45 Postural Stability of Cosmonauts after long-term Space Flights
Dr. Nikita Shishkin\textsuperscript{1}, Mr. Vladimir Kitov\textsuperscript{1}, Mrs. Tatiana Shigueva\textsuperscript{1}, PhD Elena Tomilovskaya\textsuperscript{1}, Prof. Inesa Kozlovskaya\textsuperscript{1}  
\textsuperscript{1}RF 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\textsuperscript{1,2}, Katharina Brauns\textsuperscript{1}, Anika Werner\textsuperscript{1}, Dr David Dinges\textsuperscript{2}, Dr Mathias Basner\textsuperscript{2}, Dr Simone Kuehn\textsuperscript{3}, Dr Hanns-Christian Gunga\textsuperscript{1}  
\textsuperscript{1}Charité Universitätsmedizin Berlin, \textsuperscript{2}University of Pennsylvania, Perelman School of Medicine, \textsuperscript{3}University 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 Omeringen\textsuperscript{1}, Prof. Floris Wuyts\textsuperscript{1}, Dr. Ben Jeurissen\textsuperscript{1}, Prof. Jan Sijbers\textsuperscript{1}, Floris Vanhevel\textsuperscript{1}, Steven Jilling\textsuperscript{2}, Prof. Paul M. Parizel\textsuperscript{1,2}, Prof. Stefan Sunaert\textsuperscript{1}, Prof. Paul H. Van de Heyning\textsuperscript{2}, Prof. Vincent Dousset\textsuperscript{3}, Prof. Steven Laureys\textsuperscript{2}, Dr. Athena Demertzi\textsuperscript{3}  
\textsuperscript{1}University Of Antwerp, \textsuperscript{2}Antwerp University Hospital, \textsuperscript{3}KU Leuven - University of Leuven, \textsuperscript{4}University of Bordeaux, \textsuperscript{5}University of Liège

17:30 Changes in neuronal activity and episodic memory after 30 days of isolation and confinement
Mrs Anika Werner\textsuperscript{1,3}, Mrs Katharina Brauns\textsuperscript{1}, Prof. Dr. Hanns-Christian Gunga\textsuperscript{1}, Prof. Dr. Simone Kühn\textsuperscript{1}, Dr. Alexander Christoph Stahn\textsuperscript{1,2}  
\textsuperscript{1}Charité Universitätsmedizin Berlin, Center for Space Medicine and Extreme Environments Berlin, \textsuperscript{2}University of Pennsylvania, Perelman School of Medicine, \textsuperscript{3}Normandie Université, UMR INSERM U 1075 COMETE, \textsuperscript{4}University 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 Paltzin²,³, 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 Tsvirkun¹, Mr Alexei Grichine⁴, Mr Alain Duperray⁴, Mr Chaouqi Misbah³, Mr Lionel Bureau³  
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 Loon³, 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 Ogneva¹,²  
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 Phillips⁵, Professor Nathaniel Szewczyk⁶, Dr Siva Vanapalli⁷, Dr Timothy Etheridge⁸  
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 Piccirillo², Dr. Giovanni Valentini³, Dr. Gabriele Mascetti¹, Mr. Michele Balsamo³, Dr. Natalia Battista¹, Dr. Monica Bari¹, 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 Vanapalli⁷, Roberta Torregrossa², Matthew Whiteman², Nathaniel Szewczyk⁶, 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 Heer⁴
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 Covey³, Dr. Luz Lefeuvre-Orfila¹, Mrs. Dany Saligaut¹, M.D Martine Ropert³, 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-Higginsª
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 Liphardt1,2, Prof. Dr. Felix Eckstein3,4, Vera Bolte5, Dr. Torben Dannhauer3,4, Dr. Eva-Maria Steidle-Kloc6, Prof. Dr. Gert-Peter Brüggenmann4, PD Dr. Anja Niehoff1,5

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 Tahimic2, Mrs. Sonette Steczkina3, Mrs. Moniece Lowe4, Dr. Josh Alwood5, Dr. Ruth Globus

1NASA, USRA, 2NASA, 3KBR/Wyle Laboratories, 4Blue Marble Space Institute of Science

Session 13: Immune System / Respiratory / Radiation

Chair: 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 Jr1,2, Doctor Bjorn Baslet1, Professor Sarah Baoutou1,2, 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 Li3, Katharina Biere4, Marion Hörfl, Sandra Matzel5, Dr. Cora Thiel6, Dr. Yuxin Gao7, Prof. Oliver Ullrich8, Prof. Mian Long9, Prof. Alexander Choukér1

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. Uliik Sterbo1, Dr. Toralf Roch2, Dr. Tina Komprobst3, Dr. Gerald Grütz4, Prof. Birgit Sawitzky5, PhD Andreas Wilhelm6, PhD Francis Lacombe7, Kaoutar Allou8, Dr. Markus Kaymer9, Prof. Timm Westhoff10, Dr. Felix S. Seibert11, Prof. Nina Babel12

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 Monici3, Dr. Alessandro Cicconi4, Dr. Stefano Cacchiò5, Dr. Alberto Magi6, Dr. Michele Balsamo7, Dr. Marco Vukich8, Dr. Gianluca Neri9, Dr. Alessandro Donati10, Prof. Sergio Capaccioni11

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 Linnarsson3

1Karolinska Institutet, 2Erasme 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. Stelzer3

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 nowhere 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 Shenkman², Dr. Vladimir Sychev²
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-Pesce²
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 Bolmont²
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 Stahn¹,²
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 Lysova**\(^1\), Mr. Vladimir Kitov\(^1\), Dr. Elena Fomina\(^1\)

\(^1\)RF 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 Osetskiy**\(^1\), Mr. Vladimir Kitov\(^1\), Dr. Inna Sosnina\(^1\), Dr. Natalia Lysova\(^1\), Mrs. Lyubov Amirova\(^1\), Dr. Marissa Rosenberg\(^1\), PhD Igor Koffman\(^2\), Prof. Millard Reschke\(^3\), Dr. Ilya Rukavishnikov\(^1\), PhD Elena Tomilovskaya\(^1\), Pfor. Inesa Koizovskaya\(^1\)

\(^1\)RF SSC Institute of Biomedical Problems RAS, \(^2\)NASA Johnson Space Center

17:30 Acute Weightlessness Impairs Spatial Updating Performance

**Dr. Alexander Stahn**\(^1,2\), Anika Werner\(^1\), Katharina Brauns\(^1\), Dr Stephane Besnard\(^1\), Dr Pierre Denise\(^3\), Dorothee Grevers\(^1\), Dr Thomas Wolbers\(^1\), Dr Martin Riemer\(^1\), Dr Simone Kuehn\(^1\), Dr Hanns-Christian Gunga\(^1\)

\(^1\)Charité Universitätsmedizin Berlin, \(^2\)University of Pennsylvania, Perelman School of Medicine, \(^3\)Normandie Université, UMR INSERM U 1075 COMETE, \(^4\)German Center for Neurodegenerative Diseases - Site Magdeburg, \(^5\)University Medical Center Hamburg-Eppendorf, Dept. of Psychiatry and Psychotherapy

17:45 Sympathetic activity during acute simulated microgravity

**Mr Marc Kermorgant**\(^1\), Dr Marc Labrunée\(^1,2\), Dr Thomas Geeraerts\(^1,4\), Dr Eric Schmidt\(^5\), Dr Nathalie Nas\(^1,6\), Dr Alexandra Weckel\(^7\), Dr Alexander Choukère\(^8\), Dr Jean-Michel Senard\(^1,9\), Dr Anne Pavy-Le Traon\(^1,6\)

\(^1\)UMR INSERM 1048, Institute of Cardiovascular and Metabolic Diseases (I2MC), \(^2\)Department of Rehabilitation, University Hospital of Toulouse, \(^3\)Department of Anesthesiology and Intensive Care, University Hospital of Toulouse, \(^4\)Toulouse NeuroImaging Center – ToNIC, UMR 1214, Inserm / Université Toulouse III - Paul Sabatier, \(^5\)Department of Neurosurgery and Institute for Neurosciences, University Hospital of Toulouse, \(^6\)Department of Neurology and Institute for Neurosciences, University Hospital of Toulouse, \(^7\)Department of Otorhinolaryngology and Otoneurology, University Hospital of Toulouse, \(^8\)Department of Anaesthesiology, “Stress and Immunity” Laboratory, University Hospital of Munich, \(^9\)Department 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 Zuji², Dr Brandon Macias³, Dr Doug Ebert², Dr Steven Laurie⁴, 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 Vinogradova¹-², Dr. Dina Gaynullina¹-², Ms Oksana Kiryukhina¹, Dr Olga Tarasova¹-²
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 Piotrowski², 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 Maggioni¹-², Dr Paolo Castiglioni³, Prof. Giampiero Merati², Mr Stefan Mendt², Ms Katharina Brauns¹, Ms Anika Werner¹, Prof Hanns-Christian Gunga¹, Dr Alexander Stahn¹,⁴
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 Gurfinkel\textsuperscript{1}, Dr. Mikhail Baranov\textsuperscript{2}, Dr. Roman Pishchalnikov\textsuperscript{3}
\textsuperscript{1}Lomonosov Moscow State University, Laboratory of blood microcirculation head; \textsuperscript{2}Research Institute for Space Medicine, Federal Biomedical Agency of Russia; \textsuperscript{3}Prokhorov 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 Thieschäfer\textsuperscript{1}, Dr. Jessica Koschate\textsuperscript{1}, Dr. Uwe Drescher\textsuperscript{1}, Dr. Andreas Werner\textsuperscript{2,3}, Dr. Daniel Dumitrescu\textsuperscript{4}, Dr. Uwe Hoffmann\textsuperscript{1}
\textsuperscript{1}Institute of Physiology and Anatomy, German Sport University Cologne, \textsuperscript{2}German Air Force - Center of Aerospace Medicine, Aviation Physiology Training Center, Aviation Physiology Diagnostics and Research, \textsuperscript{3}Center for Space Medicine and Extreme Environments, Institute of Physiology, \textsuperscript{4}Cologne 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 Laharnar\textsuperscript{1}, Miss Maria Zemann\textsuperscript{1}, Miss Joanna Fatek\textsuperscript{1}, Dr. Alexander Suvorov\textsuperscript{2}, Mr. Mark Belakovsky\textsuperscript{3}, Prof. Oleg Orlov\textsuperscript{4}, Dr. Martin Glos\textsuperscript{1}, Prof. Thomas Penzel\textsuperscript{1}, Prof. Ingo Fietze\textsuperscript{1}
\textsuperscript{1}Charité-Universitätsmedizin Berlin, \textsuperscript{2}Russian 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\textsuperscript{1,2}, Ms Andrea Rossiter\textsuperscript{3}, Mr Jan Weber\textsuperscript{4}, Dr Tina Foitschik\textsuperscript{1}, Dr Brian Crucian\textsuperscript{4}, Dr Stefan Schneider\textsuperscript{1,2}, Dr Vera Abeln\textsuperscript{1}
\textsuperscript{1}German Sport University Cologne, \textsuperscript{2}University of the Sunshine Coast, \textsuperscript{3}King’s College London, \textsuperscript{4}NASA Johnson Space Center

14:30 Alterations in resting state electrocortical activity after 60 days of bed rest

Mrs Katharina Brauns\textsuperscript{1}, Mrs Anika Werner\textsuperscript{1}, Prof. Hanns-Christian Gunga\textsuperscript{1}, Dr. Alexander Christoph Stahn\textsuperscript{1,2}
\textsuperscript{1}Charité Universitätsmedizin Berlin, Center for Space Medicine and Extreme Environments Berlin, \textsuperscript{2}University of Pennsylvania, Perelman School of Medicine

14:45 What space tells us about sleep

Dr. Alain Gonfalone\textsuperscript{1}
\textsuperscript{1}European Space Agency

15:00 Modelling Brain Injuries under Altered Gravity Conditions: Understanding Brain Plasticity

Dr. Ilaria Cinelli\textsuperscript{1}
\textsuperscript{1}NUIG

15:15 Biological rhythms and decision-making performance of high arctic residents during summer and winter

Dott. Pierpaolo Zivi\textsuperscript{1}, Prof. Vittorio Pasquali\textsuperscript{1}, Prof. Stefano Sdoia\textsuperscript{1}, Prof. Fabio Ferlazzo\textsuperscript{1}
\textsuperscript{1}Department 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 Abreu\textsuperscript{1}, Dr Shigehiko Ogoh\textsuperscript{1}, Pr Pierre Denise\textsuperscript{1,2}, Pr Hervé Normand\textsuperscript{1,2}
\textsuperscript{1}University of CAEN, \textsuperscript{2}CHU de CAEN, \textsuperscript{3}University of TOYO
16:45 Blood pressure and heart rate variability in Parkinson’s disease patients under “dry immersion”
Prof. Liudmila Gerasimova-Meilal, Prof. Alexander Meigal
1Petrozavodsk State University

17:00 Central blood pressure and pulse wave velocity before and after six months in space
Mr Fabian Hoffmann, Mr Stefan Mösl, Dr Elena Luchitskaya, Mrs Irinia Funtova, Dr Roman Baevsky, Prof Jens Tank
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 Hughson, Dr. Katelyn Wood, Ms. Danielle Greaves, Prof. Philippe Arbeille
1Schlegel-UWaterloo Research Institute For Aging, 2University of Tours

17:30 Altered venous function during long-duration spaceflights
Dr Jeanne Hersant, Dr Kathryn Zuj, Dr Ana De Holanda, Dr Guillemette Gauquelin Koch, Pr Claude Gharib, Dr. Jacques-olivier Fortrat
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 Arbeille, PHD Didier Chaput, PHD Arielle Depriester, PHD Olivier Belbjs, PHD Alain Maillet, PHD Patrice Benarocco, PHD Sebastien Barde
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, Dr. Paolo Castiglioni, Prof. Giampiero Merati, Mr Stefan Mendt, Prof. Hanns-Christian Gunga, Ms. Katharina Brauns, Ms. Anika Werner, Dr. Alexander Stahn
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 Solignac, Dr. Vincent Rieuf, Mr. Jean-Francois Clervoy, Mr. Thierry Gharib
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, Anika Werner, Katharina Brauns, Dr David Dinges, Dr Mathias Basner, Dr Hanns-Christian Gunga, Dr Simone Kuehn
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 Tomilovskaya, Dr. Ilya Rukavishnikov, Dr. Tatiana Kukoba, Mrs. Tatiana Shigueva, Ms. Inna Sosnina, Mrs. Lyubov Amirova, Prof. Inessa Kozlovskaya
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 Dillon**, **Dr. Kizhake Soman**, **Dr. John Wiktorowicz**, **Ms. Ria Sur**, **Dr. Daniel Jupiter**, **Mr. Christopher Danesi**, **Mrs. Kathleen Randolph**, **Mr. Charles Gilkison**, **Dr. Larry Denner**, **Dr. William Durham**, **Dr. Randall Urban**, **Dr. Melinda Sheffield-Moore**
   **1**University 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 Wotring**
   **1**Baylor 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 Koryak**, **Inessa Kozlovskaya**, **Steven Siconolfi**, **John Gilbert**
   **1**State Scientific Center of the Russian Federation **2**Institute of Biomedical Problems of the Russian Academy of Sciences, **3**Space Biomedical Research Institute NASA-JSC, **3**RUG Life Science

18:15  End of Day 4

**Friday 22 June 2018**

09:00 –  Tour in Haarlem
16:30
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<td>1</td>
<td>Is Artificial Gravity able to protect the Musculoskeletal System in a Murine Model of Knee Osteoarthritis?</td>
<td>Dr. Benoit Dechaumet, Dr. Damien Cleret, Mr Norbert Laroche, Mr Arnaud Vanden-Bossche, Pr. Marie-Hélène Lafage-Proust, Dr. Laurence Vico-pouget</td>
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<td>2</td>
<td>Nuclear–Cytoplasmic Traffic of Class Ila Histone Deacetylases in Rat Soleus Muscle at the Early Stage of Gravitational Unloading</td>
<td>Mrs Natalia Vilchinskaya, Mr Boris Shenkman</td>
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<td>3</td>
<td>Differentiation of mesenchymal stem cells into osteoblasts under simulated microgravity</td>
<td>Dr. Gabriela Chiritoiu, Stefana Iosub, Alexandru Nistorescu, Adrian Dinculescu, Dr. Florin Jipa, Dr. Cristian Vizitiu, Dr. Felix Sima, Dr. Stefana Petrescu</td>
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<td>4</td>
<td>Bone Remodelling Study using Strontium Enriched Hydroxyapatite Nanoparticles</td>
<td>Prof. Angela Maria Rizzo, Dr. Getano Campi, Dr. Francesco Cristofaro, Dr. Giuseppe Pani, Dr. Paola Antonia Corsetto, Dr. Barbara Pascucci, Prof. Livia Visai</td>
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<td>5</td>
<td>Nuclear accumulation of HSP70 protein in mouse skeletal muscles in response to reloading following unloading</td>
<td>Prof. Katsumasa Goto, Mr. Antonios Apostolopoulus, Mrs. Ayane Nakamura, Prof. Yoshinobu Ohira</td>
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<td>6</td>
<td>Analysis and Characterization of Bone tissue using modeled microgravity analogues as Tissue Engineering Models</td>
<td>Dr. Vivek Mann, Dr. Alamelu Sundaresan, Dr. Daniela Grimm, Dr. Thomas Corydon, Dr. Stefan Riwald, Dr. Sascha Kopp, Mr. Elvis Okora, Dr. Janne Reseland</td>
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<td>7</td>
<td>Effect of clomipramine on lipid raft disorders in soleus muscle of rats exposed to short-term hindlimb unloading</td>
<td>Prof. Irina Bryndina, Prof. Alexey Petrov, Prof. Andrey Zefirov, Dr Maria Shalagina, Mr Alexey Sekunov, Mr Vladimir Protopopov</td>
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<td>8</td>
<td>The effect of 30 day hindlimb unloading and overload on murine bone marrow stromal progenitors</td>
<td>Mrs Elena Markina, Mrs Irina Andrianova, Mr Andrey Shтемберг, Mrs Ludmila Buravkova</td>
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<td>9</td>
<td>The definition of the cellular and molecular mechanisms of plants gravisensitive</td>
<td>Dr. Olga Artemenko</td>
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<td>10</td>
<td>Clinorotation impacts the plasmalemma lipid bilayer and its functional domains—rafts in plant cells</td>
<td>Prof. Elizabeth Kordyum, PhD Iliya Bulavin, Dr. Olena Nedyukha, Tamara Vorob'eva</td>
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11 Investigation of plant tolerance to radioactive environment of space flights
   Dr. Galina Shevchenko^1
   ^1Institute of Botany, NAS Ukraine

12 Response of calcium ions to hypergravity
   Dr. Olena Nedukha^2
   ^2Institute Of Botany

13 HSP90s and HSP70s stabilize root gravitropic response in Arabidopsis
   Dr. Liudmyla Kozeko^2
   ^2Institute of Botany, NAS of Ukraine

14 Clinorotation impact on respiration and photosynthesis of pea plants under the low light conditions
   Dr. Vasyl Brykov^1
   ^1M.G. Khodolny 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
   ^1Institute Of Botany

16 Adaptive responses in mammals to altered gravitational environments
   dr. Arianna Racca^1, dr Nadia Francia^2, dr Sara Tavella^2, Dr. Daniela Santucci^2
   ^1Center for Behavioural Sciences and Mental Health, Istituto Superiore di Sanità, ^2Department 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^2, Anika Werner^1, Dr Stephane Besnard^3, Dr Pierre Denise^3, Dr Tom Hartley^2, Dr Bernhard E. Riecke^2, Dr Thomas Wolbers^6, Dr Mathias Basner^2, Dr David Dinges^2, Dr Hanns-Christian Gunga^1, Dr Simone Kuehn^7
   ^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 of York, Dept. of Psychology, ^5Simon Fraser University, School of Interactive Arts and Technology, ^6German Center for Neurodegenerative Diseases - Site Magdeburg, ^7University 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 Berezovskaya^1, Mr. Sergey Tyganov^2, Dr. Boris Shenkman^2, Dr. Margarita Glazova^1
   ^1Sechenov Institute of Evolutionary Physiology and Biochemistry Russian Academy of Sciences, ^2Institute 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
   ^1Graduate School of Health and Sports Science, Doshisha University, ^2Research Center for Space and Medical Sciences, Doshisha University

20 Cardiovascular Response to Different Doses of Applied External Pressure
   Miss Elizabeth Bird^1, Mr Alan Hargens^1, Mrs Lonnie Petersen^1
   ^1University 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 Sharlo^1, Mr Sergei Tyganov^1, Ms Inna Paramonova^1, Ms Olga Turtikova^1, Mr Boris Shenkman^1
   ^1The 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 Scott¹,², Dr David Green¹,²,³, Dr Guillaume Weerts²**
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-Alfonso², Dr Marta Duch¹, Dr Jaume Esteve¹, Prof. Philippe Godignon¹**
¹Institut de Microelectronica de Barcelona IMB-CNMC-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 Mishchenko², Scientific Researcher Alina Dunich¹**
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-pouget¹**
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26 EEG response of volunteers of different sexes who are in a rotating short-range centrifuge
Miss Daria Schastlivtseva, PhD Tatiana Kotrovskaya, PhD Milena Koloteva, Prof. Yuriy Bubeev
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 Wiesche, Alexandra Noppe, Freia Paulke, Dr. Edwin Mulder
1DLR - German Aerospace Center, Institute of Aerospace Medicine

28 Individualized dose of exercise for counteracting astronaut post-flight orthostatic intolerance
Prof. Ferdinando Iellamo, Dr. Giuseppe Caminiti, Dr. Vincenzo Manzi, Miss Serena Selli, Dr. Maurizio Voltterrani
1S.raffaele Irccs, , 2University of Tor Vergata

29 Proteomics of Microparticles derived from Endothelial Cells after modelled Microgravity conditions
Mrs Daria Kashirina, Mr Andrey Ratushny, Mrs Olga Zhidkova, Dr Alexey Kononikhin, Prof Irina Larina, Prof Lyudmila Buravkova
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 Cazzaniga, Laura Laura Locatelli, Dr Roberta Scrimieri, Dr Sara Castiglioni
1University Of Milan

31 Vascular Echo: Faster central and peripheral pulse wave velocity in astronauts while on International Space Station
Mrs Danielle Greaves, Dr. Richard Hughson, Dr. Philippe Arbeille
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 Rabineau, Dr Irina Funtova, Dr Elena Luchitskaya, Pr Philippe van de Borne, Pr Jens Tank, Dr Pierre-François Migeotte
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. Seibert, Fabian Bernhard, Dr. Ulrik Stervbo, Sinthuya Vairavanathan, Dr. Frederic Bauer, Dr. Benjamin Rohn, Dr. Nikolaos Pagonas, Prof. Nina Babel, Prof. Joachim Jankowski, Prof. Timm H. Westhoff
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 Hossein, MSci Farhana Pinky, PhD Applicant Damien Gorlier, PhD Applicant Jérémy Rabineau, Prof Philippe Van De Borne, Prof Antoine Nonclercq, PhD Pierre-François Migeotte
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 Gorlier, Ms Federica Landreani, Prof Philippe van de Borne, Mrs Irina Funtova, Prof Jens Tank, Dr Enrico Caiani, Dr Pierre-François Migeotte
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 Westhoff⁵, Dr. Felix S. Seibert⁶, Prof. Nina Babel⁶
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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 Mulin², Mr. Sergey Kalinik³, Mr. Kirill Morozov³, Mr. Nikolay Balugin³, Dr. Vladimir Yushkov⁴
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38 Altered Anandamide Metabolism in Microgravity: the “RESLEM” experiment
Prof. Mauro Maccarrone¹, Dr. Monia Di Tommaso², Mr. Gianluca Neri³, Mr. Alessandro Donati³, Dr. Natalia Battista⁴, Dr. Monica Bari⁵
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39 Radiation-induced DNA damage in plasmid DNA model
Dr. Katerina Pachnerova Brabcova¹, Prof. Lembit Sihver², Dr. Egor Ukraitsev³, Dr. Marie Davidkova³, 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
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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 Nedukha⁴, Prof Elizabeth Kordyum, assist Tamara Vorob’eva, Dr Vladimir Grakhov
¹Institute Of Botany

43 The somatogravic illusion during centrifugation: sex differences
Prof. Rainer Herpers¹,², Prof. Laurence R. Harris¹, Ms Meaghan McManus², Mr. Thomas Hofhammer², Ms Alexandra Noppe⁶, Mr Timo Frett⁴, Prof. Michael Jenkin⁷
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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 Berdlev², Prof. Sergey Saveliev²
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45 Unraveling non-cancer effects of spaceflight: How are the brain and skin affected in astronauts?
Miss Greta Lamers¹,², Dr. Marjan Moreels¹, Dr. Mieke Verslegers¹, Prof. Dr. Sarah Baatout¹,²
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46 Age Peculiarities in the Disease Structure of Cosmonauts after Finishing Their Flight Activity
Mr Serguei Zakharov¹, Mrs. Ekaterina Rudenko¹, Mrs. Oksana Novikova¹
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47 Next generation of life science hardware for Space research
Dr. Michele Balsamo¹, Dr. Eng. Gianluca Neri¹, Dr. Alessandro Donati¹, Dr. Eng. Valfredo Zolesi²
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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
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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
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