

25th International Gravitational Physiology Meeting - Program Overview

	Sunday, June 6	Monday, June 7	Tuesday, June 8	Wednesday, June 9	Thursday, June 10	Friday, June 11		
9:00	Registration	Welcome Address	Gravity as a Continuum	Immune System Function: From Cells to Humans	Effects of Gravity on Interaction of Sensory Systems	Regional Tour		
9:30		Current Concepts in Gravitational Physiology					Break	Break
10:00								
10:30								
11:00								
11:30		Current Concepts (Cont.)	Gravity as a Continuum (Cont.)	Free Papers: Cells and Plants	Effects of Gravity on Interaction of Sensory Systems (Cont.)			
12:00		Free Papers: Cardiovascular	Free Papers: Gravitational Physiology				Free Papers: Neuro-Sensory	
12:30				Lunch	Lunch			Lunch
13:00								
13:30								
14:00		Free Papers: Cardiovascular (Cont.)	Free Papers: Skeletal - Calcium Balance	Free Papers: Muscle	Free Papers: Neuro-Sensory (Cont.)			
14:30								
15:00			Break	Break	Break			
15:30								
16:00	Free Papers: Cardiovascular (Cont.)	Free Papers: Skeletal - Calcium Balance (Cont.)	Free Papers: Muscle (Cont.)	Free Papers: Neuro-Sensory (Cont.)				
16:30								
17:00	Meeting Check-In and Registration	Poster Session I	Poster Session II	Poster Session III	Poster Session IV			
17:30								
18:00		Welcome Reception	Gala Dinner	Gala Dinner	Gala Dinner	Gala Dinner		
18:30								
19:00								
19:30	Welcome Reception	Gala Dinner	Gala Dinner	Gala Dinner	Gala Dinner			
20:00 -								

25th International Gravitational Physiology Meeting
6-11 June, 2004, Moscow, Russia

PROGRAM

SUNDAY, JUNE 6TH

15:00 – 17:00 Meeting check-in and Registration

19:00 Welcome Reception

MONDAY, JUNE 7TH

09:00 **WELCOMING ADDRESS**

CURRENT CONCEPTS IN GRAVITATIONAL PHYSIOLOGY
(Chairs, P. Norsk & C. Fuller)

09:30 Physiological Problems of Space Flight to Mars

A. Grigoriev

10:10 Decoupling of Sodium and Fluid Regulation in Space: Possible Mechanisms

M. Heer

10:30 Neural and Peripheral Control of Muscle Fiber Properties during Gravitational Unloading

B. Shenkman

10:50 Vestibular Function Revisited: Influence on Physiological Homeostasis

C. Fuller

11:10 – 11:25 MORNING BREAK

11:25 Vascular Health in Space

R. Hughson

11:45 Restoration of Central Blood Volume: Application of a Simple Concept and Simple Device to Counteract Cardiovascular Instability in Syncope and Hemorrhage

V. Convertino

FREE PAPERS: CARDIOVASCULAR

12:05 Brief Exposure to -2Gz Reduces Cerebral Blood Flow Velocity during Subsequent +2Gz Acceleration

C.C. Tran, G. Ossard, X. Etienne, A. Serra, M. Berthelot, J.-C. Jouanin, and C.Y. Guezennec

- 12:15 Effect of Centrifuge-Induced Artificial Gravity and Ergometric Exercise on Cardiovascular Deconditioning, Myatrophy, and Osteoporosis Induced by -6° Head-Down Bedrest for 20 Days
S. Iwase, H. Takada, Y. Watanabe, K. Ishida, H. Akima, K. Katayama, M. Iwase, K. Hirayanagi, T. Shiozawa, T. Hamaoka, Y. Masuo, and M.A. Custaud
- 12:25 Development of the Medical Control of Man in Conditions of +Gz Acceleration at Short Radius Centrifuge
I.F. Vil-Viliams, A.R. Kotovskaya, and Y.Yu. Lukjanuk
- 12:35 ECG Voltage Modifications as Response to Gravity Changes
M. Saltykova, A. Capderou, O. Atkov, V. Gusakov, O. Bailliart, G. Konovalov, Yu. Kataev, L. Voronin, R. Kaspranskiy, V. Morgun, and P. Vaida
- 12:45 Distributions of Lung Ventilation and Perfusion in Recumbent Humans during Hypergravity
M. Rohdin, J. Petersson, M. Mure, R.W. Glennly, S.G.E. Lindahl, and D. Linnarsson
- 12:55 Cardiovascular Responses in Subjects with High and Low Relaxed G-Tolerance
P. Sunblad

13:05 – 14:30 LUNCH

- 14:30 Cerebral Blood Flow during Microgravity Induced by Parabolic Flight
K. Tanaka, T.M. Gotoh, and H. Morita
- 14:40 Changes in Doppler Mitral Inflow Pattern during Parabolic Flight
E.G. Caiani, G. Asquer, M. Turiel, O. Bailliart, B. Cholley, A. Capderou, and P. Vaida
- 14:50 Feasibility of Real-Time 3D Echocardiography in Microgravity during Parabolic Flight
E.G. Caiani, L. Sugeng, L. Weinert, S. Husson, O. Bailliart, A. Capderou, R.M. Lang, and P. Vaida
- 15:00 Influence of Eye Closing and Unstable Posture on the Cardiovascular Response to Stand Test after a 7d HDT
Ph. Arbeille, S. Besnard, J. Roumy, A. Montoya, and P. Dupui
- 15:10 Assessment of the Calf Vein Cross Section Change during Stand-Test after a 90 Day Bed Rest by Echography
A. Capri, P. Kerbeci, L. Pascaud, and Ph. Arbeille
- 15:20 The Autonomous Regulation System Functional Reserves Evaluation in 7-Day head Down Bedrest
R.M. Baevsky, A.G. Chernikova, I.I. Funtova, A.V. Pashchenko, and J. Tank

15:30 – 15:45 AFTERNOON BREAK

- 15:45 Splanchnic and Peripheral Vascular Resistance during Lower Body Negative Pressure (LBNP) and Tilt
R.L. Hughson, J.K. Shoemaker, P. Arbeille, D. D. O'leary, K. S. Pizzolitto, and M. Hughes

- 15:55 Effect of Two-Week Tail Suspension on Forelimb and Hindlimb Small Arteries in Rats
O.S. Tarasova, V.U. Kalentchuk, D.V. Tsvirkoun, and O.L. Vinogradova
- 16:05 Norepinephrine Transporter Function in Autonomic Cardiovascular Regulation
N.R. Keller, A. Diedrich, M. Appalsamy, S. Lonze, C. Finney, S. Tuntrakool, M.G. Caron, and D. Robertson
- 16:15 Dietary Sodium Intake Affects the Initial Pressure Drop in a Tilt-Table Test
L. Beck, F. May, P. Gauger, G. Petrat, and M. Heer
- 16:25 Long-Term Hypoxic-Hypobaric Exposure - A Terrestrial Analog for space Missions: Haematological, Angiogenic, and Circulatory Adaptations in Humans (White Mountain Research Study 2001)
H.-C. Gunga, K.A. Kirsch, R. Kowoll, C.P. Alfrey, G. Bell, D. Blotner, R. Gossrau, M. Keck, E. Koralewski, L. Rocker, B. Johannes, C. Beatty, W. Frassl, M. Schlemmer, and P.W. Hochachka
- 16:35 Age-Related Effect of Bedrest on Postischemic Hyperemia in the Forearm
Y. Watanabe, H. Takada, and S. Iwase
- 16:45 Cardiovascular Responses to Isometric Muscle Action and Ischemia in Sustained Microgravity
L. Karlsson, S. Montmerle, M. Rohdin, and D. Linnarsson
- 16:55 The Activity of Nitric Oxide Synthase may be Altered by Hindlimb Unweighting in Abdominal Aorta of Rats
J. Ma, G.I. Kahwaji, X.-L. Ren, and R. Purdy
- 17:05 Role of Local Renin-Angiotensin System (RAS) in Vascular Adaptation to Microgravity
L.-F. Zhang, Z.-J. Fu, and J.-X. Bao

17:15 – 18:15 POSTER SESSION I

- 1 Impact of Spaceflight on Cardiovascular Autonomic Control
F. Beckers, B. Verheyden, B. Morukov, and A.E. Aubert
- 2 Head Out of Water Immersion: A Simulated Model of Microgravity?
B. Verheyden, F. Beckers, and A.E. Aubert
- 3 Extreme Challenges on Cardiovascular Control during Gravity Transitions
B. Verheyden, F. Beckers, and A.E. Aubert
- 4 Neuroendocrine Attitude in Orthostatic Intolerance after HD
G. Raimondi, F. Strollo, J.M. Legramante, S. Sacco, M. Pallante, A. Vespa and C. Saltini
- 5 Variability of the Respiratory Frequency in Simulated Microgravity
R. Balocchi, D. Menicucci, M. Varanini, S. Chillemi, J.M. Legramante, C. Saltini, and G. Raimondi
- 6 Neurogenic Constrictor Response of Isolated Renal Small Arteries in Rats after 2-Week Simulated Microgravity
V.U. Kalentchuk, O.S. Tarasova, D.V. Tsvirkoun, and O.L. Vinogradova

- 7 Decrease in Vascular Response to Noradrenergic Stimulation in the Peripheral Vessels due to the Lack of Shear Stress is Proposed as one of the Causes of Cardiovascular Deconditioning after Microgravity Exposure
H. Takada, S. Iwase, Y. Watanabe, K. Ishida, H. Akima, K. Katayama, M. Iwase, K. Hirayanagi, T. Shiozawa, T. Hamaoka, Y. Masuo, and M.A. Custaud
- 8 Effect of Centrifuge-Induced Artificial Gravity and Ergometric Exercise on Cystic Volume Induced by -60 Head-Down Bedrest for 20 Days
M. Takada, Y. Watanabe, S. Iwase, T. Shiozawa, K. Hirayanagi, and H. Takada
- 9 Some Special Findings of the Heart Bioelectric Activity at the Cosmonauts with the Poor Tolerance of Lower Body Negative Pressure Test (LBNP)
I.V. Alferova, Z.A. Golybychicova, and S.O. Shelepnevich
- 10 Brain Vessels in the Rats Exposed to Primary or Repeated Tail-Suspension. Minimization of Structural Changes after Repeated Exposure
T.S. Gulevskaya, V.A. Morgunov, I.B. Krasnov, V.I. Loginov, and N.A. Chelnaya
- 11 Counteracting Effect of Head-Up Tilt on Increased Femoral Venous Compliance after Simulated Weightlessness in Rabbits
X.-Q. Sun, H.-P. Sun, and Y.-J. Yao
- 12 Particularities of the Volumeregulating Function of Kidneys at Antiorthostasis of Patients with Ischemic Disease of the Heart
A.I. Gozhenko, S.V. Biletsky, S.I. Dolomatov, and A.N. Sluchenko
- 13 Hydromechanic Effects on Human Blood Vessels of Rotations on a Short-Radius Centrifuge
V.A. Akulov
- 14 Hemodynamic Changes in Post-Suspended Rats during Gradual Hemorrhage
E.Y. Bychkova, A.S. Borovik, O.S. Tarasova, and O.L. Vinogradova
- 15 Microgravity Effect on Testicular Function
G. Ricci, A. Catizone, R. Esposito, and M. Galdieri
- 16 Investigation of Erythrocyte Shape, Plasma Membrane Fluidity and Conformation of Haemoporphyrin under the Influence of Long-Term Space Flight
S.M. Ivanova, G.V. Maksimov, Yu.V. Yarlinskova, O.G. Luneva, and N.A. Ulyanova
- 17 Changes in Potassium Currents in Smooth Muscle Cells of Mesenteric Resistance Vessel from 1-Wk Simulated Weightless Rats
M.-J. Xie, L.-F. Zhang, Z.-J. Fu, and J. Ma
- 18 Gravitation in Pathogeny of Essential Hypertension
V. Dorogovtsev
- 19 The Mechanisms of Reduction of Human Postural Tolerance in Head-Down Tilt
V.I. Lobachik, S.A. Chupushtanov, and G.N. Pizhulina

TUESDAY, JUNE 8TH

GRAVITY AS A CONTINUUM (Chairs, G. Ilyin & C. Wade)

- 09:00 Association Between Gravitational Force and Tissue Metabolism in Periparturient Rats
E.I. Zakrzewska
- 09:20 Circadian Timing and Gravity
T. M. Hoban-Higgins
- 09:40 Gravity and Endocrine Mechanisms of Calcium Metabolism Regulation
S. Saveljev
- 10:00 Ontogenesis of Mammals and Gravity
L. Serova
- 10:20 Metabolic Shifts Across the Gravity Continuum
C. E. Wade
- 10:40 Comparison of Hypo- and Hypergravity Effects on Skeletal Muscle
T.L. Nemirovskaya

11:00 – 11:15 MORNING BREAK

- 11:15 Effects of Gravity, Hypergravity and Microgravity on Vestibular Neurones of the Crab
P.J. Fraser, R. Araujo, D. Alferez, M.J. Carneiro, and M. Pollard
- 11:35 Effect of Space Flight and Head-Down Bedrest on Neuroendocrine Response to Metabolic Stress in Physically Trained Subjects
R. Kvetnansky, L. Ksinantova, J. Koska, V. Noskov, M. Vigas, A. Grigoriev, and L. Macho

FREE PAPERS: GRAVITATIONAL PHYSIOLOGY

- 11:55 +G_x Tolerance at Women after Long Duration Simulated and Real Microgravity
M.I. Koloteva, Y.Yu. Lukjanuk, I.F. Vil Viliams, and A.R. Kotovskaya
- 12:05 Gravity-Induced Loss of Consciousness (G-Loc) during Human Centrifuge Training
R. Kowoll, B. Joscht, H. Welsch, and H.-C. Gunga
- 12:15 Hypergravity Exposure as a Model for Developmental Programming? 2G Centrifugation of Pregnant Rats Results in Reduced Body Mass and Leptin Levels in Neonatal Offspring
L.A. Baer, C.E. Wade, J. Eckardt, K. Plaut, and A.E. Ronca
- 12:25 Changes in Hemodynamic and Post-Flights Orthostatic Tolerance of Cosmonauts under Application of the Preventive Facility - Tight Cuffs "Bracelet" in Short-Term Flights
G. Fomina, A. Kotovskaya, Ph. Arbeille, V. Potchyev, A. Zhernavkov, and T. Ivanovskaya
- 12:35 International Long Term Bed Rest Study
P. Jost, G. Gauquelin-Koch, V. Schneider, N. Buckley, and D. Schmitt

- 12:45 Simulated Weightlessness Decreases the Oxydation of Saturated but not Monounsaturated Dietary Fat: Inferences for the Prevention of Obesity
S. Blanc, S. Normand, and C. Gharib
- 12:55 Forming of Training Program Algorithm in Accordance with Working Capacity Evaluated in Compulsory Running Test
V.D. Sonkin, V.V. Zaitseva, I.B. Kozlovskaya, A.D. Egorov, and V.V. Sonkin
- 13:05 Gravity Level and Ontogenesis of Mammals
L.V. Serova

13:15 – 14:45 LUNCH

FREE PAPERS: SKELETAL – CALCIUM BALANCE

- 14:45 Current NASA Research to Minimize Bone Loss during Space Fight
C.F. Sawin
- 14:55 Low Oxygen Tension May Defend the Bone Tissue from Unloading Simulated Osteopenia
V.A. Berezovskiy, I.G. Litovka, and A.S. Kostyuchenko
- 15:05 Modern Analysis of Bone Losses Mechanisms in Microgravity
V.S. Oganov
- 15:15 Study on the Behaviour of Osteoclastic Precursor Model Exposed to Simulated Hypogravity Conditions
M. Monici, F. Fusi, N. Marziliano, M. Paglierani, A. Cogoli, V. Basile, and P.A. Bernabei
- 15:25 Microgravity and Bone Cell Mechanosensitivity - Fluid Shear Stress-Induced Nitric Oxide Production by Bone Cells is Rate Dependent
R.G. Bacabac, T.H. Smit, S. Dijcks, J.J.W.A. Van Loon, and J. Klien-Nulend
- 15:35 Static Histomorphometry of the Iliac Crest after 360 Days of Antiorthostatic Bed Rest With and Without Countermeasures
J.S. Thomsen, B.V. Morukov, L. Vico, P.I. Saporin, and W. Gowin

15:45 – 16:00 AFTERNOON BREAK

- 16:00 The Proximal Tibia: A New Site for Bone Status Assessments
W. Gowin, P. Saporin, J.S. Thomsen, S. Prohaska, and H.-C. Hege
- 16:10 Bone Demineralization Mechanisms at Level of Free Radicals and Nanoscale Subsystems of Bone Tissue
A.B. Brik, V. Oganov, O. Atamanenko, A. Kalinichenko, N. Bagmut, and S. Alehina
- 16:20 Comparison of PQCT Image Analysis and Histomorphometry to Quantify Bone Structural Loss in the Proximal Tibia
P. Saporin, J.S. Thomsen, S. Beller, G. Beller, and W. Gowin
- 16:30 Ibandronate Effect on Osteopenia Process and Calcium Turnover in Tail-Suspended Rats
B.V. Morukov, I.M. Larina, G.N. Durnova, and A.S. Kaplansky

16:40 – 17:40 POSTER SESSION II

- 1 Blood Volume Determination: Repeatability of the Pulse Dye Densitometry Measurements (DDG*) Application to Space Physiology
E. Belin de Chantemele, M.A. Custaud, G. Gauquelin-Koch, and G. Gharib
- 2 Post-Embryonic Development of Chicks of the Japanese Quail in Conditions of the Limited Volume
V. Khekhneva, T.S. Gurieva, and O.A. Dadasheva
- 3 Effects of 2G Hypergravity Exposure (Bobwhite (*Colinus virginianus*) and Japanese (*Coturnix coturnix japonica*) quail embryos and hatchlings.
A.E. Ronca, L.A. Baer, E.M. Everett, R. Shaughnessey, and R.E. Foushee
- 4 Modeled Microgravity Alters Basal and Insulin-Mediated Metabolic Activity of Normal and Neoplastic Cells
R. Coinu, G. Galleri, P. Pippia, M.G. Tilocca, M.A. Meloni, B. covelli, A. Chiaviello, and G. Palumbo
- 5 Circadian Rhythm of Urinary Albumin Excretion during Head-Down Tilt
M. Cirillo, D. Stellato, L. Bellini, N.G. De Santo, L. Mourot, and C. Drummer
- 6 μ G Induced Alterations in Cultured Testicular Cells
F. Stollo, M.A. Masini, M. Pastorino, S. Vadrucchi, M. Cogoli-Greuter, P. Prato, R. Romano, M. Provinciali, and B.M. Uva
- 7 Changes in Composition and Passive Electrical Properties of Rats Compact Bone Tissue in Hypokinesia and Normobaric Hypoxic Simulation
V.A. Berezovskiy, O.M. Levashov, and S.L. Saphonoy
- 8 Interactions of Cells in Zones of Bone Resorption under Microgravity and Hypokinesia
N.V. Rodionova, O.V. Polkovenko, and V.S. Oganov
- 9 Testing Method of Plus and Minus G_z Tolerance at Czech Air Force Pilots
P. Dosek, J. Hanousek, J. Petricek, J. Cmiral, and L. Cettl

WEDNESDAY, JUNE 9TH

IMMUNE SYSTEM FUNCTION: FROM CELLS TO HUMANS

(Chairs, A. Cogoli & G. Sonnenfeld)

- 09:00 Human Natural Killer Cell Activity in Microgravity: *In vitro* Space Flight Experiments
L. Burakova
- 09:20 Lessons from Immune 1-3: What Did We Learn and What Do We Need To Do In The Future?
S.K. Chapes
- 09:40 Cellular Alterations Triggered in Normal and Malignant Thyroid Cells under Long Term Random Gravity Vector Conditions
M. Ifranger
- 10:00 The Adapative Response of Endothelial Cells to Gravitational Unloading
J.A.M. Maier
- 10:20 Effects of Radiation on the Differentiation and Maturation of Monocyte-Derived Dendritic Cells and their Function as Antigen Presenting Cells
J.M. Reuben
- 10:40 Signal Transduction in T Cells in Microgravity. An Overview
M. Cogoli

11:00 – 11:15 MORNING BREAK

FREE PAPERS: CELLS AND PLANTS

- 11:15 Alterations of Intranucleolar DNA Distribution Caused by Simulated Microgravity
M.A. Sobol, E.L. Kordyum
- 11:25 A NMR-Compatible and Reduced Gravity Simulation Based (NGR) Bioreactor for the On-Line Monitoring of Cell Culture Metabolism
S. Bradamante, L. Barengi, and A. Villa
- 11:35 The Primary Effects of Clinorotation on Cultured Human Mesenchymal Stem Cells
N.V. Merzlikina, L.B. Buravkova, and Yu.A. Romanov
- 11:45 Demonstrate On Line Cell Shape Changed Due to Gravity
J.J.W.A. van Loon, M.C. van Laar, J.P. Kortterik, F.B. Segerink, R.J. Wubbels, H.A.A. de Jong, and N.F. Van Hulst
- 11:55 Biological Membranes and Microgravity
K. Meissner, J.R. Castilho Piqueira, and W. Hanke
- 12:05 Hypergravity Signaling in Human Melanocytic Cells
K. Ivanova, N. Hamidi, C. Stieber, I. Block, R. Hemmersbach, P.K. Das and R. Gerzer
- 12:15 Lipid Peroxidation and the System of Antioxicant Defence in Humans after Hypergravitational Influence
A. Markin, O. Juravlyova, and V. Lukianuk

- 12:25 Characterization of H⁺-ATPase Activity in Plasma Membrane from Pea Seedlings under Altered Gravity
D. Klymchuk, I. Kurylenko, V. Baranenko, T. Borobyova, V. Dubovoy, O. Ghyzhykova, and T. Palladina
- 12:35 Plant Adaptation to the Altered Shoot Orientation Relative to the Gravity Vector
S.O. Smolianina, Yu.A. Berkovich, and V.B. Ivanov
- 12:45 Cell Interactions in Microgravity: Cytotoxic Effects of Natural Killer Cells *in vitro*
N.V. Merzlikina, L.B. Buravkova, and Yu.A. Romanov
- 12:55 Interaction of Masses and Dynamics of Gas at the Capillary Medium
Y. Cinar
- 13:05 The Hormonal Regulation of Bud Induction in *Physcomitrella Patens* Gravitropic Protonemata
O. Demkiv
- 13:15 Active Transport of *Chara* Statoliths: Studies with Magnetic Tweezers
O.A. Kuznetsov

13:25 – 15:00 LUNCH

FREE PAPERS: MUSCLE

- 15:00 Mechanical Unloading of Skeletal Muscle (SKM) during Space Flight Results in the Initiation of Myofiber Atrophy
M.S. Clarke, C.R. Vanderburg, M.P. Fresch, and D.L. Feedback
- 15:10 Potential of Vibration Training for the Maintenance of Muscle Performance during Spaceflight
A.-M. Liphardt, J.M. Wakeling, B.M. Nigg, and J. Mester
- 15:20 Energy Metabolism in Exercising Human Calf Muscle during Simulated Orthostasis
M. Beisteiner, K. Muller, N. Maassen, and J. Zange
- 15:30 Effects of 90 D Bed Rest with or without Resistance Exercise on Knee Extensor Muscle Fatigue
B.A. Alkner, L.S. Norrbrand, and P.A. Tesch
- 15:40 Influence Long-Term Spaceflights on Russia MIR Station on Evoked and Voluntary Properties on Human Triceps Surae (TS)
Yu. Koryak and I. Kozlovskaya
- 15:50 Electromechanical Changes during Electrically Induced Contractions after Long-Term “Dry” Immersion
Yu. Koryak

16:00 – 16:15 AFTERNOON BREAK

- 16:15 Physical Exercise (PE) Counteracts Motor Performance Losses of Prolonged Simulated Microgravity
Yu. Koryak, I. Kozlovskaya, and V. Stepantsov
- 16:25 Muscular Properties of the Rat Soleus Muscle after Labyrinthectomies
M. Falempin, M. Kasri, and F. Picquet

- 16:35 Human Collagen Synthesis a Tool to Measure Acute Effects of Microgravity on Bone Tendon and Muscle
J.A. Babraj, K. Smith, D.J.R. Cuthbertson, J. dorling, B. Miller, H. Langberg, M. Kjaer, and M.J. Rennie
- 16:45 Forming of Training Program Algorithm in Accordance with Working Capacity Evaluated in Compulsory Running Test
V.D. Sonkin, V.V. Zaitseva, I.B. Kozlovskaya, A.D. Egorov, and V.V. Sonkin
- 16:55 Simulated Weightlessness Decreases the Oxidation of Saturated but not Monounsaturated Dietary Fat: Inferences for the Prevention of Obesity
S. Blanc, S. Normand, and C. Gharib

17:05 – 18:05: POSTER SESSION III

- 1 Effect of Simulated Microgravity on the Production of Cytokines by PBMC's
A. Varkonyi, A. Bakos, J. Minarovits, L. Batkai
- 2 Mechanisms of the Gravitational Sensitivity of Cells
M.G. Tairbekov
- 3 Modeled Microgravity Affects Motility and Cytoskeletal Structures
M.A. Meloni, G. Galleri, M.G. Caraboni, P. Pippia, A. Cogoli, and M. Cogoli-Greuter
- 4 Vascular Endothelial Growth Factor (VEGF) Inhibits Programmed Cell Death of Endothelial Cells (EC) Induced by Clinorotation
M. Infanger, A. Cogoli, S. Faramarzi, M. Paul, and D. Grimm
- 5 Modeled Microgravity Disrupts Lipid Rafts and Abolishes LCK from Insoluble Membrane Fractions
L.A. Cubano, H. Maldonado, and A. Rivera
- 6 Effect of Microgravity Changes on Virus Infection in Mice
A. Fuse and L. Yoshida
- 7 Influence of Gravity Changes Induced by Parabolic Flight on Cytokine Production in Mouse Spleen
M. Kita, T. Yamamoto, J. Imanishi, and A. Fuse
- 8 Changes in Calcium Signalling, Gravitropism, and Statocyte Ultrastructure in Pea Roots Induced by Calcium Channel Blockers
N.A. Belyavskaya
- 9 A Role of Phosphorylase in the Potato Minituber Function under Altered Gravity
O. Nedukha, E. Kordyum, G. Martyn
- 10 Clinostating Effects on Apogee Wheat Resistance to Wheat Streak Mosaic Virus
L.T. Mishchenko, O.M. Filenko, L.I. Ostapchenko, I.A. Mishchenko, G.S. Yanishevskaya, and A.L. Boyko
- 11 Free Acid Content and Functional State of Pea Chloroplasts under Altered Gravity
V.V. Baranenko and E.L. Kordyum
- 12 Differentiation of Gravisensitive Root Sites in Simulated Microgravity
G. Shevchenko and E. Kordyum

- 13 Comparative Electrophoretic and Histochemical Analysis of Protein Accumulation in *Brassica Rapa L.* Embryos under Altered Gravity
N.A. Kozub, I.A. Sozinov, and A. Popova
- 14 Peculiarities of Lipid Accumulation in *Brassica Rapa L.* Embryos on Different Stage Development under Altered Gravity
A. Popova, A. Kononko, and G. Ivanenko
- 15 Clinorotation Effect on Thermodynamic Efficiency of Energy Transformation in Chloroplasts of Higher Plants
E.K. Zolortareva
- 16 Investigation of Adequate Structure and Functional Variability of Orchids in the Conditions of Simulated Microgravity
T. Cherevchenko, N. Zaimenko, and O. Martynenko
- 17 Ground Based Studies of Gene Expression in Arabidopsis Exposed to Gravity Stresses
A.-I. Kittang, J. van Loon, O. Vorst, R.D. Hall, K. Fossum, and T.-H. Iversen
- 18 Effect of Clinorotation on the Structure and Pigment Content of Barley Seedling Leaves
N.I. Adamchuk and O.O. Syvash
- 19 Weightlessness Modifies the Protein Kinase C Dependent Phosphorylation State of Skeletal Muscle Chloride Channel Conductance
S. Pierno, M.P. Didonna, J.-F. Desaphy, A. De Luca, A. Liantonio, and D. Conte Camerino
- 20 Resistance Band Training in Astronauts
G. Pearce and R. Matthews
- 21 Mechanic Stimulation of the Soles Support Zones as a Countermeasure of the Contractile Properties Decline under Microgravity Conditions
D.R. Khusnutdinova and A.I. Ntreba
- 22 Dynamics of Physical Performance during Long-Duration Space Flight (First Results of “Countermeasure” Experiment)
D.V. Popov, D.R. Khusnutdinova, O.L. Vinogradova, B.S. Shenkman, and I.B. Kozlovskaya
- 23 Effects of Exercise with Fly-Wheel on Body-Fluids Regulation during a 90-Day Head Down Bed Rest
M.-A. Custaud, E.B. de Chantemele, S. Blanc, G. Gauquelin-Koch, and C. Gharib
- 24 Hybrid Fibers under Slow-to-Fast Transformations: Myosin Heavy and Light Chain Expressions in Rat Soleus Muscle
Y. Mounier, B. Bastide, C. Bozzo, and L. Stevens

19:30 GALA DINNER

THURSDAY, JUNE 10TH

EFFECTS OF GRAVITY ON INTERACTION OF SENSORY SYSTEMS (Chairs, V.R. Edgerton & I. Kozlovskaya)

- 09:00 Support Afferentation in the Organization of Postural Muscle System
I. Kozlovskaya
- 09:20 Role of Loading in the Spinal Control of Posture and Locomotion
R. Edgerton
- 09:40 Gravity Related Organization of the Neural Control of Walking in Human and Nonhuman Primates
G. Courtine
- 10:00 The Influence of Microgravity on Memorized Arm Movements
F. Gerstenbrand
- 10:20 Load-Dependent Regulation of Neuromuscular System
Y. Ohira
- 10:40 Destabilization of Balance Control by Head Movements in Astronaut Testing
W.H. Paloski, N.J. Newby, and E.Y. Hwang

11:00 – 11:15 MORNING BREAK

- 11:15 The Critical Role of Gravity in Determining Adaptation of the Gain of the Yaw and Pitch Angular Vestibulo-Ocular Reflex
S.B. Yakushin, Y. Xiang, T. Raphan, and B. Cohen
- 11:35 Motor Control and Segmental Stiffness in the Lumbo-Pelvic Region: Ensuring Joint Protection Against Antigravity Forces
C.A. Richardson, J. Hides, and C.J. Snijders
- 11:55 Velocity of Head Movements and Sensory Motor Adaptations during and after Short Spaceflight
F. Hlavacka and L.N. Kornilova

FREE PAPERS: NEURO-SENSORY SYSTEMS

- 12:15 Effects of Vestibular and Support Afferentation Upon Characteristics of Visual Pursuit during Exposure to Microgravity
L.N. Kornilova, Ch. Mueller, V. Temnikova, M. Alekhina, and I. Kozlovskaya
- 12:25 Sensory Motor Reflex Development in Hypergravity
R. Wubbels, V. Bouet, A. Gramsbergen
- 12:35 Microgravity Reveals Invariant Temporal Relationships Between Focal and Equilibrium Components of Whole Body Reaching
J. Patron, P.J. Stapley, and T. Pozzo
- 12:45 Postponed Potentiation as a Facilitation Mechanism of Rat Adaptation to Repeated Hypergravity and Microgravity Effects
I.B. Krasnov

12:55 – 14:30 LUNCH

- 14:30 A Mathematical Model of the Response of Semicircular Canal and Otolith to Head Rotation under Gravity
V.V. Alexandrov, T.B. Alexandrova, T.G. Astakhova, N.V. Kulikovskaya, V.I. Kurilov, S.S. Migunov, and N.E. Shulenina
- 14:40 Locomotor System Development in Hypergravity
V. Bouet, J. Ijkema-Paassen, R. Wubbels, and A. Gramsbergen
- 14:50 GABA and Glutamate Exocytotic Release and Uptake by Rat Brain Synaptosomes under Extremal Conditions
T. Borisova N. Pozdnyakova, N. Krisanova, and N. Himmelreich
- 15:00 Sensitivity and Growth of Fish Otoliths
A.V. Kondrachuk
- 15:10 Activation of the Sensorimotor Cortex by Vibrotactile Stimulation of the Foot: An fMRI Study
S.M. Golaszewski, C.M. Siedentopf, F. Koppelstaetter, E. Gallasch, M. Verius, S.R. Felber, D. Zur Nedden, I. Koslovskaya, F. Gerstenbrand
- 15:20 Can Be Organized an Acoustical Vertical?
J.A. Altman, M.Yu. Agaeva, and I.Yu. Kirillova
- 15:30 The Mechanisms of Spatial Orientation in Conditions of G Stress
I.V. Bukhtiarov, O.A. Vorobjov, M.N. Khomenko, and I.B. Ushakov

15:40 – 15:55 AFTERNOON BREAK

- 15:55 Structurally-Functional Shifts in the Ventrolateral Nucleus of the Thalamus of Rats at the Prolonged Hypokinesia, as a Model of Gravitational Pathology
B.A. Nashbullin, A.I. Gozhenko, and S.I. Dolomatov
- 16:05 Learning with Simulation Only - Artificial Skills
B. Johannes, V.P. Salnitski, K.M. Goeters, P. Maschke, D. Stelling
- 16:15 Physiological Reactions of Primates to 9-D Immersion and Head-Down Immobilization
V.I. Korolkov, V.P. Krotov, Y.V. gordeev, A.O. OLazarev, V.I. Lobachik, T.E. Burkovskaya, M.A. Dotsenko, G.N. Durnova, A.D. Kaplansky, I.N. Chistyakov, and O.N. Vasilieva
- 16:25 The Robot and the Satellite for Tele-Operating Echographic Examination
Ph. Arbeille, J. Ayoub, P. Vieyres, M. Porcher, J.L. Boulay, V. Moreau, and G. Poisson
- 16:35 Contemporary Conception of Anti G Protection of Cosmonauts in Flights Aboard "SOYUZ" Space Vehicles
A.R. Kotovskaya, I.F. Vil Viliams, Y.Yu. Lukjanuk
- 16:45 Impact of Magnetic Storms and Other Helio-Geophysical Factors on Human's Health, Safety and Reliability of Functioning in Aeronautics and Other Systems of Extreme Risk
A.I. Mikhailov, G.V. Shilov, P.M. Shalimov, Y.I. Gurfinkel, and V.L. Voeikov

16:55 – 18:00 POSTER SESSION IV

- 1 Opiate Mechanisms of Pain Processing during Antiorthostasis
G.K. Tropnikova and G.P. Mironova
- 2 Neonatal Exposure to Hypergravity Affects Short-, Medium and Long-Term Neurobehavioural Response of the CD-1 Mouse
N. Francia, D. Santucci, M. Simeoni, and E. Alleva
- 3 Changes of Characteristics of Gaze Fixation Reaction during Initial State of Water Immersion in Rhesus Monkeys
J.N. Eron, N.V. Miller, and A.M. Badakva
- 4 EEG Spectral Power Dynamic Changes Related to Saccadic Eye Movements Before and After Dry Immersion
E.S. Tomilovskaya, V.Yu. Novototski-Vlasov, and A.V. Kirenskaya
- 5 Role of Neostriatal Transmitter Systems in Localization of Projection of the Mass Center onto Tensoplatforms
K.B. Shapovalova
- 6 Expression of the Immediate-Early Gene c-Fos in Brain of the Rats Exposed to Repeated 2 G Influence
O.V. Fidelina and I.B. Krasnov
- 7 Effects of the Inhibitors on Glutamate Uptake by Nerve Terminals after Exposure of Rats to Centrifuge-Induced Hypergravity
T. Borisova and N. Himmelreich
- 8 Whole Body Pointing Movements in Transient Microgravity
M. Tagliabue, A. Pedrocchi, V. Gower, G. Ferrigno, and T. Pozzo
- 9 Effect of Modeled Microgravity Conditions on PGE2-Induced Edema and Hyperalgesia in PAW Rat
A.T. Peana, F. Bennardini, L. Buttu, P. Pippia, M.A. Meloni, R. Giacominielli Stuffer, and M. Maccarrone
- 10 The G-Tolerance after Pharmacological Hypohydration
V.B. Noskov and V.Y. Lukyanuk
- 11 A Prototype International Flight Experiments Portal
R. Mains, S. Chidgey, and K. Souza
- 12 Alteration of Intermediary Metabolism in +G Animals: Hepatic Transcript Profiling by Microarray Analysis
P.M. Fuller, J.C. Fuller, and C.A. Fuller
- 13 Effect of Dry Immersion in Combination with Artificial Stimulation of Foot Support Zones upon Muscle Force-Velocity Characteristics
A.I. Netreba, D.R. Khusnutdinova, O.L. Vinogradova and I.B. Kozlovskaya
- 14 Effects of Artificial support Stimulation on Soleus Fiber Characteristics in Men Exposed to 7-Day “Dry” Immersion
K.S. Litvinova, I.M. Vikhlyantsev, I.B. Kozlovskaya, B.S. Shenkman, and Z.A. Podlubnaya

- 15 Serum Creatine Kinase Levels and the Number of Sarcolemmal Dystrophin Disruptions in Human Skeletal Muscle Fibers under Conditions to 7-Day “Dry” Immersion
N.M. Gasnikova, A.A. Markin, I.B. Kozlovskaya, I.M. Larina, and B.S. Shenkman
- 16 Effect of Mechanic Stimulation of the Support Zones of Soles on the Muscle Stiffness and Electromyographic Activities in 7-Days Dry Immersion
T.F. Miller, I.V. Saenko, and D.V. Popov
- 17 Effects of Support Stimulation on Human Soleus Fiber Characteristics during Exposure to “Dry” Immersion
B. Shenkman, D. Blottner, T. Nemirovskaya, A. Moukhina, Y. Lemesheva, B. Puttmann, and I. Kozlovskaya
- 18 Some Biochemical Mechanisms of Human adaptation to Prolonged-Rotation
L.G. Elkina, R.R. Galle, L.A. Kitaev-Smyk, and S.N. Filipenkov
- 19 Effects of Exposure to Virtual Reality on Postural Control: Potential Analog for Space Flight
D.L. Harm and L.C. Taylor

FRIDAY, JUNE 11TH

09:00 – 18:00 REGIONAL TOUR