

**NASA Contractor Report 3922(25)**

# **USSR Space Life Sciences Digest**

*Index to Issues 15-20*

*Edited by*

**Lydia Razran Hooke**

*Lockheed Engineering and Sciences Company*

*Washington, D.C.*

**Prepared for**

**NASA Office of Space Science and Applications**

**under Contract NASW-4292**

**NASA**

National Aeronautics and  
Space Administration

Office of Management

Scientific and Technical  
Information Division

**1989**

**USSR SPACE LIFE SCIENCES DIGEST  
TABLE OF CONTENTS**

**INDEX ISSUES 15-20**

<b>LISTING OF ABSTRACTS</b>	<b>1</b>
Adaptation	1
Biological Rhythms	5
Bionics	8
Biospherics	9
Body Fluids	11
Botany	15
Cardiovascular and Respiratory Systems	18
Cytology	32
Developmental Biology	33
Endocrinology	36
Enzymology	40
Exobiology	41
Gastrointestinal System	43
Genetics	45
Gravitational Biology	48
Group Dynamics	49
Habitability and Environment Effects	51
Hematology	55
Human Performance	59
Immunology	64
Life Support Systems	68
Man-Machine Systems	71
Mathematical Modeling	72
Metabolism	73
Microbiology	78
Musculoskeletal System	80
Neurophysiology	91
Nutrition	101
Operational Medicine	104
Perception	110
Personnel Selection	111
Psychology	112
Radiobiology	116
Reproductive Biology	122
Space Biology and Medicine	123
Space Industrialization	126
<b>KEY WORD INDEX</b>	<b>127</b>

## HOW TO USE THIS DOCUMENT

The first section of this document provides bibliographic citations and key words for all abstracts published in issues 15-20 of the USSR Space Life Sciences Digest. Abstracts are grouped according to the topic area categories under which they were originally included and within categories by issue number. Issue numbers are provided as headings and, in addition, the first number in parentheses after abstract number refers to appropriate Digest issue. As always, topic area categories are presented in alphabetical order.

The second section of this document, starting on page 127, is a key word index. Numbers following each entry refer to page numbers in the first section of the present document. Number of listings on a single page in the first section has been limited deliberately to facilitate visual search for a particular reference. Within the key word list, topic area names are highlighted in bold, as are the pages for the primary topic area listing. Numbers not in bold following topic area names refer the reader to relevant abstracts originally included under other category names.

# ADAPTATION

## ISSUE 15

### PAPER:

P683(15/88)\* Polyakov BI.

***Discrete adaptation to [conditions of] sensory conflict.***

***Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.***

21(5): 82-82; 1987.

[50 references; 11 in English]

*Adaptation; Neurophysiology, Space Motion Sickness, Electric Sleep  
Humans, Cosmonauts, Theoretical Article  
Perception, Sensory Conflict*

## ISSUE 16

### PAPER:

P699(16/88)\* Aydaraliyev AA, Maksimov AL, Chernook TB.

***Capacity of polar personnel to adapt to high altitudes in the Antarctic.]***

***Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.***

21(6): 62-66; 1987.

[31 references; 3 in English]

*Adaptation, High Altitudes, Antarctic, Polar Day and Night  
Humans, Polar Personnel  
Biological Rhythms, Functional State*

## ISSUE 18

### PAPERS:

P822(18/88) Komolova GS, Yegorov IA.

***Biosynthesis of nucleic acids in the lymphocytes of rat spleen during chronic exposure to extreme conditions.***

In: Gazenko OG (editor).

*Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].*

Moscow: Nauka; 1986.

Pages: 276.

*Hematology, Lymphocytes; Metabolism, Nucleic Acids, Synthesis, Spleen  
Rats, Reproductive Biology, Pregnant  
Adaptation, Hypoxia, Hypokinesia, Space Flight Factors, COSMOS-1514*

## ADAPTATION

P824(18/88) Farber YuV.

***The effects of the adaptation process on tolerance of extreme factors.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 324

*Radiobiology, Human Performance*

*Rats*

*Adaptation, Tolerance, Nonspecific, Extreme Factors, Hypoxia, High Altitude*

P857(18/88)\* Gazenko OG, Grigor'yev AI, Yegorov AD.

***Taxonomy and time course of adaptive responses in humans on long-term space flights.***

In: Furduy FI, Kaydarliu SKh, Shrirby Yel, Nadvodnyuk AI, Mamalyga LM.

Mekhanizmy razvitiya stressa: Stress, adaptsiya i funktsional'nyye narusheniya [Mechanisms underlying the development of stress: Stress, Adaptation and Functional Disorders.]

[30 references; 13 in English]

Authors' Affiliation: Institute of Biomedical Problems, USSR Ministry of Health

*Adaptation, Time Course, Cardiovascular and Respiratory Systems, Endocrinology, Hematology, Immunology, Metabolism, Microbiology, Musculoskeletal System, Neurophysiology*

*Humans, Cosmonauts*

*Space Flight, Long-term, Salyut-6, -7, Soyuz, Soyuz-2*

### ISSUE 19

#### PAPER:

P901(19/88) Meyerson FZ, Tverdokhlib VP, Lobanova GT, Golubeva LYu, Nikonorov AA.

***Preventing stress-induced dyslipidemia by means of adaptation to short periods of stress.***

Fiziologicheskii Zhurnal.

33(6): 3-8; 1987.

[19 references; 8 in English]

Authors' Affiliation: Institute of General Pathology and Physiopathology, USSR Academy of Medicine, Moscow.

*Psychology, Stress*

*Rats*

*Adaptation, Stress; Pharmacological Countermeasures*

# ADAPTATION

## MONOGRAPHS:

M133(19/88) Braun AD, Mozhenok TP.  
Nespetsificheski Adaptatsionnyy Sindrom Kletochnoy Sistemy [***Nonspecific adaptive syndrome of the cell system***]  
Leningrad: Nauka; 1987.  
[232 pages; 16 tables; 49 figures; 983 references]  
Affiliation: Institute of Cytology, USSR Academy of Sciences.

**KEY WORDS:** *Adaptation, Cytology, Extreme Factors, Musculoskeletal System*

M136(19/88) Aydaraliyev AA, Maksimov AL.  
Adaptatsiya Cheloveka k Ekstremal'nym Usloviyam: Opyt Prognozirovaniya [***Human Adaptation to Extreme Conditions: A Case Study in Prediction***]  
Leningrad: Nauka; 1988.  
[120 pages; 31 Tables; 19 Figures 315 references]  
Affiliation: Division of Physiology, USSR Academy of Sciences

**KEY WORDS:** *Adaptation, Hypoxia, Tolerance, High Altitude, Antarctic, Human Performance, Work Capacity, Individual Differences, Personnel Selection*

## CONFERENCE REPORT:

CR10(19/88) Beloshitskiy PV, Lanovenko II.  
**Report on conference on Adaptation and Resistance at High Altitudes**  
5-8 August, 1986; Terskol, Kabardino-Balkarsk Autonomous SSR.  
In: Fiziologicheskiy Zhurnal.  
33(6): 107-109; 1987.

**KEY WORDS:** *Adaptation, High Altitudes, Hypoxia; Neurophysiology, Cardiovascular and Respiratory System; Hematology, Hemopoiesis; Immunology, Resistance; Radiobiology; Enzymology; Physical Exercise; Operational Medicine; Endocrinology; Human Performance; Biological Rhythms*

## ISSUE 20

### MONOGRAPH:

M141(20/88) Platonov VN.  
Adaptsiya v sporte [***Adaptation in Sports***].  
Kiev: Zdorov'ya; 1988.  
[216 pages; 25 tables; 116 figures; 279 references; 101 in English]

**KEY WORDS:** *Adaptation, Musculoskeletal System, Athletes, Individual Differences, Exercise, Sports, Fatigue, Energy, Human Performance*

# AVIATION MEDICINE

## ISSUE 18

### PAPER:

P832(18/88)\* Strongin GL, Skvortzov SA.

***Individual differences and individual norms revealed in automated preflight medical monitoring.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(2): 10-16; 1987.

(4 references; none in English)

*Aviation Medicine, Operational Medicine, Preflight Exams; Equipment and Instrumentation, Automated Monitoring Devices; Human Performance*

*Humans, Pilots*

*individual Differences*

### BOOK REVIEW:

BR13(18/88)\* Peshkov YeM.

Review of: Rudnyy NM, Vasil'yeva PV, Gozylova SA (editors). *Aviatsiyonnaya meditsina: Rukovodstvo [Aviation medicine: Handbook]* Moscow: Meditsina; 1986. 579 pages, 6000 copies.

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(2): 95-97; 1988.

**KEY WORDS:** *Aviation Medicine, Human Performance, Personnel Selection, Habitability and Environment Effects, Man-Machine Systems, Nutrition, Operational Medicine, Pharmacological Countermeasures, Perception*

# BIOLOGICAL RHYTHMS

## ISSUE 15

### PAPER:

P661(15/88)\* Klimovitskiy VYa, Alpatov AM (USSR), Sulzman FM, Fuller CA, Moore-Ede M (USA).  
***Circadian rhythms and temperature hemostasis in monkeys inflight on Cosmos- 1514 biosatellite.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

21(5): 14-18.

[22 references; 11 in English]

*Biological Rhythms, Circadian Rhythms, Skin and Body Temperature*

*Primates, Macaca mulatta*

*Space Flight, Short-term, Cosmos-1514*

### MONOGRAPH:

M119(15/88) Emel'yanov IP.

Struktura Biologicheskikh Ritmov Cheloveka v Protsesse Adaptatsii Statisticheskiy Analiz i Modelirovaniye [***Structure of Human Biological Rhythms in the Process of Adaptation. Statistical Analysis and Modeling***]

Novosibirsk: Nauka; 1986.

[180 pages]

Affiliation: USSR Academy of Sciences (Siberian Division), Yakustsk Affiliate of the Division of Applied Math and Computer Technology (book).

**KEY WORDS:** *Biological Rhythms, Adaptation, Far North, Mathematical Modeling*

## ISSUE 17

### PAPERS:

P767(17/88)\* Vaysburd [Weisburd] IF.

***A technique for evaluating change in the biological rhythms of human physiological functions.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(1): 71-73; 1988.

[7 references; 3 in English]

*Biological Rhythms; Adaptation; Inverted Diurnal Schedule*

*Humans*

*Mathematical Modeling*



## BIOLOGICAL RHYTHMS

P803(17/88) Stepanova SI.

***Biorhythmic aspects of occult motion sickness.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 128-130.

*Biological Rhythms, Stress Resistance  
Humans, Pilots, Theoretical Article  
Neurophysiology, Motion Sickness, Occult*

### ISSUE 18

#### PAPERS:

P819(18/88) Shukin AI.

***The phenomenon of group synchronization of biological rhythms in single and double shift work.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

See: Abstract M117 (Space Biology and Medicine) Digest Issue 14.

Pages: 212-213.

*Biological Rhythms  
Humans, Males, Workers  
Human Performance, Shift Work, Group Coordination; Psychology, Stress*

### ISSUE 19

#### PAPERS:

P875(19/88)\* Koreshkov AA, Makarov VI, Abramov IR, Kots AR.

***The circadian rhythm of psychomotor response in humans exposed to the combined effects of 18-hour days and elevated concentration of carbon dioxide.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(3): 88-91; 1988.

(1 reference; none in English)

*Biological Rhythms, Circadian Rhythms, Work-Rest Schedules, Human Performance, Psychomotor Performance  
Humans  
Hermetically Sealed Environment, Desynchronization, Elevated Carbon Dioxide*

## BIOLOGICAL RHYTHMS

P899(19/88) Maksimov AL, Sachanska T, Chernook TB.

***Stability of biological rhythms in excretion of salts under exposure to extreme conditions.***

Izvestiya Akademii Nauk Kirgizskoy SSR.

1988(1): 50 - 56.

[14 references; 2 in English]

Authors' Affiliations: Institute of Physiology and Experimental Pathology of High Altitudes of the Kirgiz Academy of Sciences; Institute of Industrial Hygiene and Occupational Disease, Bulgarian Academy of Medicine

*Biological Rhythms, Body Fluids, Salt Excretion*

*Humans*

*Extreme Conditions, Isolation, Stress, Motion Sickness, Hypokinesia*

### ISSUE 20

#### MONOGRAPH:

M142(20/88) Gudkova SYa.

Mekhanizmy zimney spyachki [***The mechanisms of hibernation.***]

Pushchino: USSR Academy of Sciences; 1987.

[206 pages]

Affiliation: Scientific Center for Biological Research; Institute of Biophysics

**KEY WORDS:** *Biological Rhythms, Hibernation, Sleep, Metabolism, Cold, Neurophysiology, Body Fluids, Endocrinology, Enzymology, Hematology, Gastrointestinal System*

# BIONICS

ISSUE 16

*MONOGRAPH:*

M121(16/88) Seleznev VP, Selezneva NV.  
Navigatsionnaya Bionika [*Navigational Bionics*].  
Moscow: Mashinostroyeniye; 1987.  
[255 pages; 100 figures; 54 references; none in English]

*KEY WORDS: Bionics, Mathematical Models, Spatial Orientation, Navigation, Man-Machine Systems, Perception, Neurophysiology, Insects*

# BIOSPHERICS

## ISSUE 16

### PAPER:

P619(16/88) Ivanov NR, Gasparyan SA, Guzeyev VV, Milovanova TN, Mishina NYa.  
***Cosmic and biospheric aspects of medical/ecological monitoring with regard to respiratory illnesses.***

In: Gizenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 60-61.

*Biospherics, Atmospheric Factors, Solar Radiation  
Humans, Patients, Cardiovascular Systems, Respiratory Disease  
Public Health; Mathematical Modeling, Correlations*

## ISSUE 18

### MONOGRAPH:

M129(18/88) Agadzhanian NA.  
Chelovek i biosfera [***Man and the biosphere.***]  
Moscow: Znaniye; 1987.  
[96 pages]

**KEY WORDS:** *Biospherics, Biological Rhythms*

## ISSUE 19

### PAPER:

P894(19/88) Shilov IA.  
***Biological problems of biospheric homeostasis.***

Zhurnal Obshchey Biologii.

XLIX(2): 166-173; 1988.

[10 references; none in English]

Author's Affiliation: Moscow State University; Department of Biology

*Biospherics  
Theoretical Article  
Homeostasis*

## BIOSPHERICS

### *CONFERENCE REVIEW:*

CR9(19/88)Buznikov AA, Vedeshin LA.

*Review of : "Space and Ecology Round Table," at an international forum marking the 30th anniversary of the launch of the first manmade satellite.*

*Issledovaniye Zemli iz Kosmosa.*

*1988(2): 119-121.*

*KEY WORDS: Biospherics, Biological Rhythms*

## BODY FLUIDS

### ISSUE 15

#### PAPERS:

P662(15/88)\* Zhidkov VV, Abrosimov SV, Endeka DK, Borisov GI, Lobachik VI, Korol'kov VV, Il'in YeA.  
***The effects of space flight factors on hydration homeostasis in monkeys.***

Kosmicheskaya Biologiya i Aviaskosmicheskaya Meditsina.

21(5): 19-22; 1987.

[6 references; 3 in English]

*Body Fluids, Extracellular, Intracellular, Interstitial Fluid, Blood*

*Primates, Monkeys*

*Space Flight, Short-term, COSMOS-1617*

P675(15/88)\* Lobachik VI, Korsunskiy VN, Popov VI, Abrosimov SV, Zhidkov VV, Andretsov VA.

***Isotope methods for assessing blood redistribution in the body.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

21(5): 65-67; 1987.

[8 references; 1 in English]

*Body Fluids, Fluid Redistribution*

*Equipment and Instrumentation, Radiotracer System*

*Weightlessness Simulations, Hypokinesia with Head-Down Tilt, Immersion*

### ISSUE 16

#### PAPERS:

P687(16/88)\* Kotovskaya AR, Baran'ski S, Gembitska D, Voytkovyak M, Vil'- Vil'yams IF, Kokova NI  
(USSR, Poland).

***Increasing human tolerance of +Gz acceleration by increasing hydration level.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

21(6): 14-; 1987.

[8 references; 4 in English]

*Cardiovascular and Respiratory Systems, Tolerance, Acceleration, Gz*

*Humans*

*Body Fluids, Hydration, Salt; Immersion*

## BODY FLUIDS

P743 (16/88) Noskov VB, Afonin BV, Lebedev VI, Boyko PA, Sukhanov YuV, Kravchenko VV, Kvetyanski R (Czech).

***Fluid-electrolyte metabolism and its hormonal regulation under conditions of long-term space flight.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 354-355.

*Body Fluids, Metabolism, Fluid-Electrolyte; Endocrinology, Hormonal Regulation, Adrenal Gland, Corticosteroids*

*Humans, Cosmonauts*

*Space Flight, Salyut-7, 237-day Flight*

### ISSUE 17

#### PAPERS:

P789(17/88) Lavrova YeA, Shakhmatova YeI, Serova LV, Natochin YuV, Denisova LA.

***The effect of weightlessness on fluid electrolyte homeostasis in pregnant rats and their offspring.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 282-283.

*Body Fluids, Fluid-Electrolyte Homeostasis*

*Rats, Reproductive Biology, Female, Pregnant; .i.Developmental Biology, Fetuses, Neonates*

*Space Flight, COSMOS-1514*

P792(17/88) Voronin LI, Kravchenko VV, Zhernavkov AF, Bystrov VV.

***Parameters of fluid-electrolyte metabolism in humans during LBNP,***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 337-338.

*Body Fluids, Fluid Electrolyte Metabolism*

*Humans, Males*

*LBNP*

## BODY FLUIDS

P793(17/88) Chaika AM, Dzhenzhera LYu, Panchenko VS.

***Dynamics of blood volume, extracellular fluid and weight of serum proteins in humans undergoing hypokinesia and immersion.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 368-369.

*Body Fluids, Blood Volume, Extracellular Fluid; Metabolism, Serum Proteins*

*Humans, Males*

*Hypokinesia With Head-Down Tilt, Immersion; Countermeasures, Antiacceleration Suit, Occlusion Cuffs, Physical Exercise*

P794(17/88) Baran'ski S, Voytkovyak M, Gembitska D (Warsaw), Kotovskaya AR, Vil'-Vil'yams IF, Kokova NI, Luk'yanyuk VYu.

***Artificially increased hydration as a technique for improving human tolerance of +Gz acceleration.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 17-18

*Body Fluids, Artificially Increased Hydration*

*Humans*

*Tolerance, Acceleration*

### ISSUE 18

#### PAPERS:

P836(18/88)\* Denisova LA, Lavrova YeA, Natochin YuV, Serova LV.

***Concentrations of fluid and electrolytes in organs and tissues of male rats after flight on the COSMOS-1667 biosatellite.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(2): 33-37; 1988.

(17 references; 3 in English)

*Body Fluids, Fluid-Electrolyte Concentration*

*Rats, Males; Reproductive Biology, Female, Pregnant; Sex Differences*

*Space Flight, COSMOS-1667, COSMOS-1514*



## BODY FLUIDS

P854(18/88)\* Kondratyuk VA, Gnatyuk MS, Volkov KS.  
**Structural reorganization of the liver in response to exposure to reclaimed drinking water with varying concentrations of sodium and potassium ions.**  
Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.  
22(2): 87-90 ; 1988.  
(9 references; none in English)

*Body Fluids, Liver Structure*  
*Rats, Male*  
*Life Support Systems, Reclaimed Water, Sodium, Potassium*

### ISSUE 20

#### PAPER:

P932(20/88)\* Zhidkov VV, Lobachik VI, Borisov GI, Zaychik VYe, Fedorov YuV, Biryukov YeG.  
**A micromethod for measuring volume of extracellular fluid.**  
Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.  
22(4): 86-89; 1988.  
[15 references; 3 in English]

*Body Fluids, Extracellular Fluid*  
*Humans*  
*Equipment and Instrumentation, Micromethod*

#### CONFERENCE REPORT:

CR11(20/88) Ivanovna LN.  
**Report on: Conference on Problems of Physiology and Pathology of Calcium Metabolism and Its Regulation," Riga, November, 1987.**  
Fiziologicheskii Zhurnal.  
LXXIV(6): 903-905

*Body Fluids, Renal Physiology, Fluid-Electrolyte Metabolism, Calcium, Nutrition, Vitamin D, Vitamin K, Space Flight, Hypokinesia, Exercise*  
**KEY WORDS:.**

# BOTANY

## ISSUE 15

### PAPERS:

P643(15/88) Zhvalikovskaya VP.

***Use of higher plants for genetic monitoring of space flights.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 271-273.

*Genetics, Genetic Monitoring, Chromosome Aberrations  
Botany, Higher Plants  
Space Flight, Radiobiology, Galactic Radiation, Temperature*

P651 (15/88) Kostina LN, Balayeva AV, Anikeyeva ID, Rusin SV.

***Study of mutability of plants exposed to the effects of HZE particles in experiments on board Salyut-6 and with an accelerator.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga 25-27 June 1986].

Moscow: Nauka; 1986.

Pages:317-318.

*Genetics, Mutations, Mitosis  
Botany, Air-dried Seeds, Arabidopsis, Crepis capillaris  
Space Flight, Salyut-6; Radiobiology, HZE*

P649(15/88) Akatov YuA, Maksimova YeN, Marennyy AM, Nevsgodina LV.

***Study of the effects of radiation factors on biological subjects in flight experiments on Salyut-6 and Salyut-7 space stations.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 305-306.

*Radiobiology, HZE, Biological Effects, Genetics, Aberrant Cells  
Botany, Lettuce  
Space Flight, Long-term, Salyut-6, Salyut-7*

## BOTANY

P685(15/88)\* Aliyev AA, Nechitaylo GS, Novruzova ZA, Ragimova GK, Aleksperov UK.  
**Modification of cytogenetic, anatomical, and physiological changes in cells and organs of sprouts by biologically active compounds after long-term space flight.**  
Zhurnal Obshchey Biologii.  
XLVIII (6): 723-727; 1987.  
[18 references; 6 in English]  
Authors' Affiliation: Botanical Institute, Azerbaijan Academy of Sciences, Baku

*Botany, Cytogenetic, Anatomical, Physiological Changes; Germination Rate, Growth Rate, Mitotic Activity*  
*Botany, Welsh Onion, Air-Dried Seeds*  
*Space Flight, Long-Term, Salyut-7; Natural Aging; Biologically Active Compounds, Auxin, Alpha-tocopherol*

### ISSUE 16

#### PAPERS:

P728(16/88) Abilov ZK, Aliyev AA, Novruzova ZA, Mashinskiy AL, Ragimova GK, Alekperov UK, Fadeyeva SN.  
**Functional, morphological and anatomical changes in sprouts of orchids cultivated during a 110-day space flight.**  
In: Gazenko OG (editor).  
Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].  
Moscow: Nauka; 1986.  
Pages: 263

*Botany, Functional, Morphological, and Anatomical Changes*  
*Orchids*  
*Space Flight, 110-day, Salyut-7*

P737(16/88) Sychev VN, Galkina TB.  
**Investigation of the developmental dynamics of a Chlorella population and its age structure after exposure to weightlessness.**  
In: Gazenko OG (editor).  
Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].  
Moscow: Nauka; 1986.  
Pages: 297-299.

*Botany, Microbiology, Population Dynamics, Age Structure*  
*Chlorella*  
*Space Flight, Salyut-6, Short-term*

## BOTANY

### ISSUE 17

#### PAPERS:

P787(17/88) Kostina LN, Anikeyeva IL, Vaulina EN.

***The effect of space flight factors on developing plants.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986]. Moscow: Nauka; 1986. Page: 277.

*Genetics, Chromosome Restructuring, Mutability; Developmental Biology, Plant Development; Life Support Systems*

*Botany, Crepis capillaris, Arabidopsis thaliana*

*Space Flight, Soyuz-16, Salyut-5, -6, -7; Radiobiology, Heavy Ions, Galactic Radiation*

P790(17/88) Abramova VM, Marennyy AM.

***The effect of multicharged ions of galactic radiation on Arabidopsis seeds.***

In: Gazenko OG (editor). Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986]. Moscow: Nauka; 1986. Page: 305.

*Genetics, Mutation; Developmental Biology, Growth and Fertility*

*Botany, Arabidopsis, Seeds*

*Space Flight, COSMOS-936, -1129, 1514; Radiobiology, Multicharged Ions*

### ISSUE 19

#### PAPER:

P903(19/88) Merkis AI, Laurenavichyus RS, Shvyagzhdene DV.

***Study of the growth, development and embryogenesis of plants on board the Salyut-7 space station.***

In: Malinin VB, Kosmolinskiy FP, Kuznets Yel (editors). Perspektivy Razvitiya Kosmicheskoy Biomeditsiny v Svete Idey K.E. Tsiolkovskogo [Prospects for the Development of Space Biomedicine in Light of the Ideas of K.E. Tsiolkovskiy] Proceedings of the XXth and XXIst Lecture Series dedicated to the scientific legacy and development of the ideas of K.E. Tsiolkovskiy., Kaluga 1985, 1988. Section on Problems of Space Medicine and Biology.

Moscow: USSR Academy of Sciences: 1987.

Pages 56-62. [11 references; 6 in English]

*Developmental Biology, Development, Embryogenesis*

*Botany, Lettuce*

*Space Flight, Salyut-7*

# CARDIOVASCULAR AND RESPIRATORY SYSTEMS

## ISSUE 15

### PAPERS:

P623(15/88) At'kov OYu, Fomina GA.

***Results of echocardiographic measurements during a graded exercise test on a 237-day space flight.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 10-11.

*Cardiovascular and Respiratory Systems, Echocardiographic Parameters*

*Humans, Cosmonauts*

*Space Flight, Long-Term, Salyut-7; Physical Exercise Tests*

P624(15/88) At'kov OYu, Fomina GA.

***Hemodynamic status of members of the third Salyut-7 prime crew in response to an LBNP test.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages 11-12.

*Cardiovascular and Respiratory Systems, Hemodynamics, Echocardiography, Myocardium*

*Humans, Cosmonauts*

*Space Flight, Long-Term, Salyut-7, LBNP*

P625(15/88) Bayevskiy RM, Barsukova ZhV, Semenova TD, Tazetdinov IG.

***Use of mathematical analysis of cardiac rhythm to evaluate the functional state of cosmonauts performing EVAs.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages 12-13.

*Cardiovascular and Respiratory Systems, Cardiac Rhythm, Mathematical Modeling, Adaptation*

*Humans, Cosmonauts*

*Space Flight, EVA, Salyut-7*

## CARDIOVASCULAR AND RESPIRATORY SYSTEMS

P627(15/88) Itsekhovskiy OG, Alferova IV, Turchaninova VF, Polyakova AP, Golubchikova ZA, Domracheva MV, Volgin VA, Talavrinov VA, Kulev AP.  
**Study of circulatory system response to a provocative two-stage test using a bicycle ergometer in cosmonauts on a 237-day flight.**

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 66-67.

*Cardiovascular and Respiratory Systems, Circulation; Physical Work Capacity  
Humans, Cosmonauts  
Space Flight, Long-Term, Physical Exercise, Provocative Test*

P628(15/88) Kotovskaya AR, Lyamin VR, Turbasov VD, Vil'-Vil'yams IF, Andreyeva VG, Antonenko LV, Vlasova NF, Galle NN.

**A study of cardiac bioelectric activity (EKG-DS) in members of Salyut-7 prime and visiting crews during launch and reentry.**

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 78-79.

*Cardiovascular and Respiratory Systems, Circulation; Physical Work Capacity  
Humans, Cosmonauts  
Space Flight, Long-Term, Physical Exercise, Provocative Test*

P629(15/88) Nikulina GA, Bogomolov VA, Zhernakov AV, Shigoleva TV.

**Principles for analyzing the results of dynamic electrocardiograms in the readaptation period following space flight.**

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 101-102.

*Cardiovascular and Respiratory Systems, Dynamic Electrocardiograms  
Humans, Cosmonauts, Individual Differences  
Space Flight, Short-Term, Long-Term; Adaptation, Postflight Readaptation*

## CARDIOVASCULAR AND RESPIRATORY SYSTEMS

P631(15/88) Turbasov VD, Golubchikova ZA, Lyamin VR, Romanov YeM.

**Results of electrocardiographic examinations of Salyut-7--Soyuz prime crews.**

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Page: 143.

*Cardiovascular and Respiratory Systems, Electrocardiography  
Humans, Cosmonauts  
Space Flight, Long-Term, Salyut-7*

P641(15/88) Badakva AM, Bazunova YeG, Kulayev BS, Chamurliyev GG.

**Dynamics of central circulation and external respiration parameters in a monkey during space flight.**

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 263.

*Cardiovascular and Respiratory Systems, Central Circulation, External Respiration  
Primates, Monkey  
Space Flight*

P660(15/88)\* Abrosimov SV, Zhidkov VV, Endeka DK, Lobachik VI, Korol'kov VI, Il'in YeA.

**The effects of space flight factors on blood circulation in primates.**

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

21(5): 10-13; 1987.

[8 references; 1 in English]

*Cardiovascular and Respiratory Systems, Circulation  
Primates, Rhesus Monkeys  
Space Flight, COSMOS-1667*

P673(15/88)\* Strongin GL, Turetskaya AS, Gel'man BL, Rodionov ON.

**Predicting complications of cardiovascular disease in flight crews.**

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

21(5): 57-62; 1987.

[14 references; 4 in English]

*Cardiovascular and Respiratory Systems, Complications, Prognosis  
Humans, Flight Crews  
Operational Medicine, Diagnostic Prediction*

## CARDIOVASCULAR AND RESPIRATORY SYSTEMS

P678(15/88)\* Krasnov IB, Nosova YeA.

**Activity of Ca<sup>2+</sup>, Mg<sup>2+</sup>-ATPase myosin in the myocardia of rats after 30-days of exposure to 1.1 and 2-g.**

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

21(5): 72-73; 1987. [17 references; 7 in English]

*Cardiovascular and Respiratory Systems, Myocardia, Ca<sup>2+</sup>, Mg<sup>2+</sup>-ATPase myosin*

*Rats*

*Hypergravity, Centrifugation; Adaptation*

P680(15/88)\* Modin AYu.

**Comparison of orthostatic intolerance after immersion in horizontal and vertical positions.**

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

21(5): 77-79; 1987.

*Cardiovascular and Respiratory Systems, Orthostatic Intolerance, Deconditioning*

*Humans, Males*

*Immersion, Horizontal and Vertical Positions, Tilt Test*

### ISSUE 16

#### PAPERS:

P686(16/88)\* Romanov YeM, Artamonova NP, Golubchikova ZA, Zavadovskiy AF, Korotayev MM, Lyamin, VR, Turbasov VD.

**Results of longitudinal electrocardiographic observation of cosmonauts.**

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

21(6): 10-14; 1987.[14 references; 3 in English]

*Cardiovascular and Respiratory Systems, Electrocardiograms*

*Humans, Cosmonauts, Longitudinal Study*

*Spaceflight, Long- and Short-term Flights, Multiple Flights*

P695(16/88)\* Kayfadzhyan MA, Tikunov BA.

**The effects of cardioactive compounds on myocardial actomyosin in rats undergoing acceleration.**

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

21(6): 47-49; 1987.

[16 references; 8 in English]

*Cardiovascular and Respiratory Systems, Myocardial Actomyosin*

*Rats*

*Acceleration, +Gx, Cardioactive Compounds*



## CARDIOVASCULAR AND RESPIRATORY SYSTEMS

P697(16/88)\* Yarullin KhKh, Vasil'yeva TD, Neumyvakin IP.

***Effect of exogenous contrapulsation synchronized with heart rhythm on regional and central hemodynamics in humans.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

21(6):54-58; 1987.

[16 references; 6 in English]

*Cardiovascular and Respiratory Systems, Hemodynamics, Central and Regional Humans, Males*

*Exogenous Contrapulsation*

P698(16/88)\* Breslav IS, Isayev GG, Rymzhanov KS.

***The effect of oxygen inhalation on the respiratory function during exercise and additional resistance to respiration.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

21(6):59-62; 1987.

[21 references; 9 in English]

*Cardiovascular and Respiratory Systems, Respiratory Function Humans, Males*

*Oxygen Inhalation, Physical Exercise, Resistance to Respiration*

P703(16/88)\* Nekhayev AS, Vlasov VD, Stepanov VK, Andriyenko Yul.

***The effect of a hypercapnic-hypoxic test on the cardiorespiratory parameters of individuals with neurocirculatory dystonia.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

21(6): 83-86; 1987.

[12 references; 1 in English]

*Cardiovascular and Respiratory Systems, Cardiovascular Parameters Humans, Pilots, Patients, Neurocirculatory Dystonia*

*Hypercapnic-Hyperoxic Test*

P705(16/88)\* Belkaniya GS, Galustyan MV, Dartsmeliya VA, Demin AN.

***Hemodynamic effects of beta-adrenoblockade by obzidan in horizontal and upright positions.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

21(6): 90-94; 1987.

[15 references; 5 in English]

*Cardiovascular and Respiratory Systems, Hemodynamics Humans, Males, Typology*

*Beta-Adrenoblockade, Drugs, Obzidan, Horizontal and Vertical Positions*

## CARDIOVASCULAR AND RESPIRATORY SYSTEMS

P715(16/88)Lapayev EV, Bednenko VS, Vorob'yev OA, Artamonov IN, Zaritskiy VV.  
**The effect of vestibuloautonomic stimulation and hypokinesia on regional hemodynamics.**

Izvestiya Akademii Nauk SSSR. Seriya Biologicheskaya.

1987(6): 805-813.

[31 references; 5 in English]

*Cardiovascular and Respiratory Systems, Hemodynamics, Regional Humans*

*Neurophysiology, Vestibuloautonomic Stimulation, Coriolis Acceleration, Hypokinesia with Head-Down Tilt, Motion Sickness*

### ISSUE 17

#### PAPERS:

P749(17/88)\* Yegorov AD, Anashkin OD, Itsekhovskiy OG, Alferova IV, Golubchikova ZA, Lyamin VR, Pokyakova AP, Turchaninova VF, Talavrinov VA, Turbasov VD.

**Results of medical research performed in 1985 during long-term space flights.**

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(1): 4-7; 1988.

(no references)

*Cardiovascular and Respiratory Systems, Operational Medicine*

*Humans, Cosmonauts*

*Space Flight, Salyut-7, Soyuz-T-13, Soyuz-T-14; Provocative Tests, LBNP, Physical Exercise*

P750(17/88)\* Genin AM, Modin AYu, Shashkov VS.

**State of hemodynamics in humans under conditions of immersion in different positions.**

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(1): 7-10; 1988.

(3 references; none in English)

*Cardiovascular and Respiratory Systems, Hemodynamics*

*Humans, Male*

*Immersion, Positions*

## CARDIOVASCULAR AND RESPIRATORY SYSTEMS

P774(17/88) Balldin U (Stockholm).

***Positive pressure breathing and physical conditioning to decrease cardiovascular deconditioning in cosmonauts.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 15-16.

*Cardiovascular and Respiratory Systems, Deconditioning  
Humans, Cosmonauts, Pilots; Theoretical Article  
Positive Pressure Breathing, Physical Exercise*

P775(17/88) Glod GS, Migachev SD, Plakhotnyuk LS, Khomenko MN.

***Reactions of the cardiovascular system in individuals with different levels of tolerance for gravitation.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 34-35.

*Cardiovascular and Respiratory Systems, Hemodynamics  
Humans, Individual Differences  
Acceleration, Tolerance, Gravitation*

P777(17/88) Domashuk Yu (Warsaw).

***The use of excess pressure in increasing pilots' tolerance of +Gz acceleration.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 53-54.

*Acceleration Tolerance  
Humans, Pilots  
Cardiovascular and Respiratory Systems, Excess Pressure Breathing*

## CARDIOVASCULAR AND RESPIRATORY SYSTEMS

P778(17/88) Kotovskaya AR, Vil'-Vil'yams IF, Luk'yanyuk VYu, Andreyeva VG, Gordov AM, Artamonova NP.

**Acceleration tolerance in older individuals with health problems before and after simulated weightlessness.**

In: Gazenko OG (editor)

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 79-80.

*Cardiovascular and Respiratory Systems, Acceleration Tolerance  
Human, Older Individuals, Patients  
Hypokinesia*

P788(17/88) Krotov VP, Sandler N, Badakva AM, Hines J., Hazin AN, Halprin B (Moscow, Moffett Field)  
**Changes in blood pressure and rate of blood flow in a monkey exposed to space flight.**

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 281-282.

*Cardiovascular and Respiratory Systems, Blood Pressure, Blood Flow Rate  
Monkey  
Space Flight, COSMOS-1514*

P759(17/88)\* Vil'-Vil'yams IF, Korol'kov VI, Krotov VP, Shipov AA, Andreyeva VG, Tabakova LA, Kholin SF, Truzhennikov AN, Gordeyev YuV.

**+Gz acceleration tolerance in rhesus macaque monkeys.**

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(1): 40-45; 1988.

(2 references; 1 in English)

*Cardiovascular and Respiratory System, EKG Parameters  
Primates, Rhesus Macaques; Individual Differences, Selection  
Tolerance, Acceleration, +Gz*

## CARDIOVASCULAR AND RESPIRATORY SYSTEMS

P796(17/88) Starikov LI.

***Cerebral hemodynamics in pilots during tilt tests.***

Voyenno-Meditsinskiy Zhurnal.

1987(12): 44-47.

[12 references; none in English]

Author's affiliation: Military Medical Corps

*Cardiovascular and Respiratory Systems, Hemodynamics, Cerebral  
Humans, Pilots; Individual Differences  
Tilt Tests, Orthostatic Tolerance*

P798(17/88) Tagiyeva SA, Azizov VA, Babayev AA.

***Changes in hemodynamics in patients suffering from ischemic heart disease in response to isometric exercise combined with head-down tilt.***

Kardiologiya.

XXVII(12): 66-68; 1987.

[15 references; 3 in English]

Authors' affiliation: Azerbaijan Medical Institute, Baku

*Cardiovascular and Respiratory Systems, Hemodynamics  
Humans, Patients, Ischemic Heart Disease  
Physical Exercise, Isometric; Head-Down Tilt*

### ISSUE 18

#### PAPERS:

P833(18/88)\* Iseyev LR, Mednykh AYa, Vorob'yev VYe, Abdrakhmanov VR.

***CO<sub>2</sub> sensitivity of the respiration regulation system under conditions simulating space flight***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(2): 16-20 ; 1988.

(13 references; 2 in English)

*Cardiovascular and Respiratory Systems, Respiration Regulation  
Humans, Males*

*Space Flight Simulation, Isolation, Hypokinesia with Head-Down Tilt, Hypercapnia*

## CARDIOVASCULAR AND RESPIRATORY SYSTEMS

P839(18/88)\* Stazhadze LL, Borob'yev VYe, Repenkova LG, Kovachevich IV, Ivchenko VF, Kal'yanova VN.

***Clinical and physiological aspects of oxygen supply to tissues in the human body under conditions of hypokinesia with head-down tilt.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(2): 45-49 ; 1988.

(20 references; 3 in English)

*Cardiovascular and Respiratory Systems, Tissue Oxygenation*

*Humans, Male*

*Hypokinesia with Head-Down Tilt*

P846(18/88)\* Lobanok LM, Kiriyyenko AYe.

***Effects of hypoxia and reoxygenation on the contractility of the isolated heart of rats varying in age.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(2): 70-72 ; 1988.

(10 references; 2 in English)

*Cardiovascular and Respiratory Systems, Cardiac Contractility*

*Rats, Age Differences*

*Hypoxia, Reoxygenation*

### ISSUE 19

#### PAPERS:

P861(19/88)\* Artamanova NP, Turbasov VD, Georgiyevskiy VS, Golubchikova ZA, Lyamin VR, Potapova MG, Tolmacheva MYa, Nechayeva EI, Zakharova TS.

***The effect of long-term hypokinesia on bioelectric cardiac activity in healthy men.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(3): 31-37; 1988.

(38 references; 4 in English)

*Cardiovascular and Respiratory Systems, Cardiac Bioelectric Activity*

*Humans, Men*

*Hypokinesia, Long-Term, Physical Exercise, Pharmacological Countermeasures, Metabolism, Mineral, Lipid; Nutrition, Vitamin D*

## CARDIOVASCULAR AND RESPIRATORY SYSTEMS

P864(19/88)\* Fatenkov VN.

***New information on cardiac biomechanics.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(3): 45-55 ; 1988.

(21 references; 10 in English)

*Cardiovascular and Respiratory Systems, Cardiac Biomechanics*

*Dogs*

*Contraction, Myocardial Layers, Interactions*

P866(19/88)\* Barinyan SB, Oganessian SS, Eloyan MA.

***The effect of neutral muscle proteases on contractile parameters of isolated strips of the myocardia of white rats during exposure to acceleration and a subsequent recovery period.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(3): 58-60 ; 1988.

(19 references; 14 in English)

*Cardiovascular and Respiratory Systems, Contractile Parameters*

*Rats*

*Acceleration, Enzymology, Musculoskeletal System, Muscle, Protease*

P868(19/88)\* Goncharov IB, Ivanov AP, Savina VP, Repenkova LG, Yakovleva, MYe, Nikitin Yel.

***Evaluation of the effects of enterosorption in humans exposed to an altered gas medium.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(3): 64-66; 1988.

(10 references; 9 in English)

*Cardiovascular and Respiratory Systems, Central Circulation*

*Humans*

*Habitability and Environment Effects, Hermetically Sealed Environment, CO<sub>2</sub>, CO;*

*Operational Medicine, Prophylactic Detoxification, Enterosorbent*

## CARDIOVASCULAR AND RESPIRATORY SYSTEMS

P885(19/88) Kovalev OA, Parfenova MA.

***Regional vascular effects of decreasing adrenergic activity in animals at rest and immobilized.***

Fiziologicheskii Zhurnal SSSR im I.M. Sechenova.

74(4): 510-516; 1988.

[8 references; 2 in English]

Authors' affiliations: Central Scientific Research Laboratory; S.M. Kirov State Institute for Physician Training, Leningrad

*Cardiovascular and Respiratory Systems, Regional Vascular Effects*

*Rats*

*Endocrinology, Adrenergic Effects; Immobilization*

P889(19/88) Korzh SV, Polonskiy VV, Morozov LA, Nosov VN.

***Evaluating physical work capacity under conditions of hypokinesia.'***

Voyenno-meditsinskiy Zhurnal.

1988(4): 50-51.

[No references.]

Authors' Affiliations: Military Medical Corps

*Cardiovascular and Respiratory Systems, Orthostatic Reflex, Deconditioning*

*Human Performance, Work Capacity*

*Humans, Men*

*Hypokinesia, Limited Living Environment, Exercise*

P895(19/88) Kovalev OA, Korovin KF, Radchenko YeR, Parfenova MA.

***Characteristics of changes in circulation and adrenergic activation in rats confined in immobilization cages or restrained on a board***

Patologicheskaya Fiziologiya i Eksperimental'naya Terapiya.

1988(1): 29-32.

[11 references; 1 in English]

*Cardiovascular and Respiratory Systems, Circulation; Endocrinology, Adrenergic Activity*

*Rats, Male*

*Immobilization, Cages, Restraint*



## CARDIOVASCULAR AND RESPIRATORY SYSTEMS

P896(19/88)\* Muravov IB.

***The effects of therapeutic exercise on patients undergoing long periods of hypokinesia (bed rest).***

Voprosy Kurortologii Fizioterapii i Lechebnoy Fizicheskoy Kultury.

1988(2): 25-29.

[11 references; 1 in English]

Author's Affiliation: Institute of Physical Culture, Kiev

*Cardiovascular and Respiratory Systems, Heart Rate, Blood Pressure  
Humans, Patients, Heart Disease; Healthy  
Hypokinesia, Bed Rest; Exercise*

### ISSUE 20:

#### PAPERS:

P912(20/88) Galichiy VA.

***Characteristics of biological rhythms in parameters of human external respiration during tilt tests.***

Fiziologiya Cheloveka.

14(4): 577-585; 1988.

[14 references; 3 in English]

*Cardiovascular and Respiratory Systems, External Respiration; Biological Rhythms  
Humans  
Tilt Tests*

P916(20/88)\* Yegorov AD, Alferova IV, Polyakova AP.

***State of cardiodynamics under conditions of long-term weightlessness.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(4): 19-26; 1988.

[26 references; 10 in English]

*Cardiovascular and Respiratory Systems, Cardiac Cycle  
Humans, Cosmonauts  
Space Flight, Salyut-6, Salyut-7, Long-Term. LBNP, Physical Exercise*

## CARDIOVASCULAR AND RESPIRATORY SYSTEMS

P917(20/88)\* Suvorov PM, Ivanchikov AP, Kondakov AV, Sidorova KA.

***Investigation of hemodynamic response to a modified tilt test in individuals varying in their tolerance of +Gz acceleration.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(4): 27-30; 1988.

[15 references; 4 in English]

*Cardiovascular and Respiratory Systems, Hemodynamic Response  
Humans, Individual Differences, Acceleration Tolerance  
Tilt Test*

P921(20/88)\* Vilkov VG, Shamarin VM. Shal'nova SA, Dmitriyeva VS.

***The effect of exercise on changes in blood pressure, heart rate and electrocardiogram measured in upright position.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(4): 43-47; 1988.

[23 references; 9 in English]

*Cardiovascular and Respiratory Systems, Blood Pressure, Heart Rate, EKG  
Humans, Males and Females, Patients, Hypertension, Ischemic Heart Disease  
Exercise, Upright Position*

P934(20/88)\* Vorob'yev VYe, Goncharov IB, Abdrakhmanov VR, Voronina SG.

***Characteristics of changes in cardiac output and blood gases in humans exposed to simulated weightlessness.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(4): 94-96; 1988.

[6 references; 3 in English]

*Cardiovascular and Respiratory Systems, Cardiac Output, Blood Gases  
Humans, Males  
Hypokinesia with Head-Down Tilt, Long-Term*

### MONOGRAPH:

M140(20/88) Yu. Vedru (editor).

***Klinicheskiye, matematicheskiye i inzhenernyye problemy sportivnoy meditsiny [Clinical, mathematical and engineering issues in sports medicine.]***

Tartu [Estonia]: Tartu State University [Press]: 1988.

Affiliation: Tartu State University

**KEY WORDS:** *Cardiovascular and Respiratory Systems, Cardiac Volume, External Respiration, Operational Medicine, Exercise, Sports, Mathematical Modeling, Equipment and Instrumentation*

## CYTOLOGY

ISSUE 18

PAPER:

P823(18/88) Butey M. (Paris)

***Preliminary results and prospects in the study of the effects of microgravity on cell biology.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986]. Moscow: Nauka; 1986.

Pages: 309.

*Cytology, Cell Biology; Neurophysiology, Cerebellar Neurons  
Rats, Developmental Biology, Embryos; Hybridoma  
Space Flight, COSMOS-1514; Clinostatting*

## DEVELOPMENTAL BIOLOGY

### ISSUE 15

#### PAPERS:

P644(15/88) Makeyeva VF, Yegorov IA.

***Concentration of nucleic acids and protein in the mother-fetus system of rats after space flight.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 285-286.

*Developmental Biology, Mother-Fetus System, Metabolism, Nucleic Acids and Protein; Reproductive Biology*

*Rats, Female, Pregnant*

*Space Flight, COSMOS-1514*

P663(15/88)\* Cherdantseva YeM.

***Embryonic development of guppies in weightlessness.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

21(5): 22-25; 1987.

[10 references; 8 in English]

*Developmental Biology, Embryonic Development; Reproductive Biology*

*Fish, Guppies, Female, Pregnant*

*Space Flight, COSMOS-1514*

P684(15/88) Olenev SN, Danilov AR, Kryuchkova TA, Sorokina LM, Krasnov IB.

***The effects of weightlessness on some brain development parameters (results of exposure of pregnant rats on the COSMOS-1514 biosatellite and study of the subsequent development of their offspring on Earth).***

Arkhiv Anatomii, Gistologii i Embriologii.

XCIII(9): 20-25; 1987.

[13 references; 2 in English]

Authors' Affiliation: Leningrad Pediatric Medical Institute

*Developmental Biology, Neurophysiology, Brain Development*

*Rats, Female*

*Space Flight, COSMOS-1514*

## DEVELOPMENTAL BIOLOGY

### ISSUE 16

#### PAPERS:

P689(16/88)\* Benova DK. (Hungary).

***Study of the genetic structures of sex cells of rats after flight on the COSMOS-1514 biosatellite during prenatal development.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

21(6): 24-27; 1987.

[15 references; 5 in English]

*Developmental Biology; Genetics; Reproductive Biology, Spermatocytes  
Rats, Female, Pregnant; .Male  
Space Flight, COSMOS-1514*

P734(16/88) Oygenblink ZA.

***Growth and development of larva of Rana temporaria after exposure to increased gravity.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 288-289.

*Developmental Biology, Growth and Development  
Larva, Amphibians, Frogs, Rana temporaria  
Gravitational Biology, Increased Gravity, Centrifugation*

### ISSUE 17

#### PAPERS:

P755(17/88)\* Viktorov IV, Shashkova NA, Privat A, Drian M-J. (USSR, France) Growth and ***differentiation of cells in [organo]typical cultures of the cerebellum of rat embryos developing in weightlessness.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(1): 25-29; 1988.

(9 references; 5 in English)

*Developmental Biology, Cytology, Cell Growth and Differentiation; Neurophysiology, Cerebellum  
Rats, Embryos  
Space Flight, COSMOS-1514*

## DEVELOPMENTAL BIOLOGY

P786(17/88) Denisova LA, Pustynnikova AM.

***The effects of weightlessness and hypergravity on skeletal development in white rats during prenatal ontogenesis.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 269-270.

*Developmental Biology; .i.Musculoskeletal System, Skeletal Development Rats, Prenatal Ontogenesis; Reproductive Biology, Females, Pregnant Space Flight, COSMOS-1514; Hypergravity, Centrifugation*

P766(17/88)\* Kurochkin YuN, Belkaniya GS.

***Developmental patterns during postnatal ontogenesis of lower primates.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(1): 66-70; 1988.

(14 references; 2 in English)

*Developmental Biology, Growth Patterns Primates, Rhesus Macaques, Males Postnatal Development*

### ISSUE 19

#### PAPERS:

P886(19/88)\* Parfenov GP, Oygenblik EA.

***The effects of hypergravity on embryonic development and survival in amphibians.***

Izvestiya Akademii Nauk SSR: Seriya Biologicheskaya.

1988(3): 346-351.

[20 references; 10 in English]

Authors' affiliation: Institute of Biomedical Problems; USSR Ministry of Health, Moscow.

*Developmental Biology, Embryonic Development, Survival Amphibian, Grass Frog Gravitational Biology, Hypergravity, Centrifugation*

## ENDOCRINOLOGY

P893(19/88)Serova LV, Kvetnyanski R, Vigash M, Knopp Ya, Makho L.

***The effects of weightlessness on the development of the endocrine system in mammals.***

In: Polenov AL, editor.

Endokrinnaya Sistema Organizma i Vrednyye Faktory Vneshney Sredy: III Vsecoyuznaya Konferentsia (8-10 Sentyabrya 1987) [The Endocrine System and Adverse Environmental Factors: IIIrd All-Union Conferences (8-10 September 1987) [Paper Abstracts].

Leningrad: 1987. Page 205

Affiliation (book): USSR Academy of Sciences, Scientific Council on Visceral Systems, I.P. Pavlov Institute of Physiology, I.M. Sechenov Institute of Evolutionary Physiology and Biochemistry, Leningrad Research Institute on Industrial Hygiene and Occupational Diseases, Samarkand Medical Institute

Author's Affiliation: Institute of Biomedical Problems (first author); Institute of Experimental Endocrinology, Czech Academy of Sciences, Bratislava, Czechoslovakia

*Developmental Biology, Endocrinology*

*Rats, Female, Pregnant*

*Space Flight, COSMOS-1514*

### ISSUE 16

#### PAPERS:

P690(16/88)\* Alekseyev Yel.

***Morphofunctional state of the hypothalamus-pituitary neurosecretory system in rats exposed to space on the COSMOS-1667 biosatellite.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

21(6):27-31; 1987.

[7 references; 7 in English]

*Endocrinology, Hypothalamus-Pituitary System; Morphology; Body Fluids*

*Rats, Males*

*Space Flight, Short-term, COSMOS-1667, Gravitational Biology, Centrifugation, Hypokinesia*

P700(16/88)\* Artsruni GG, Zil'fyan AV, Azgaldyan NR, Dovlatyan RA.

***The effect of an external electric field on catecholamine secretion of the adrenal glands of rats.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

21(6):67-70; 1987.

[10 references; 2 in English]

*Endocrinology, Adrenal Glands, Catecholamines*

*Rats*

*Electric Field, External*

## ENDOCRINOLOGY

P733(16/88) Kvetnyanski R, Torda T, Blazhichek P, Chulman Yu, Makho L, (Czechoslovakia).  
***Study of the levels of catecholamines and adrenergic receptors in rats after flights on COSMOS biosatellites.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 275-276.

*Endocrinology, Sympathetic-Adrenal System, Catecholamines, Adrenergic Receptors; Enzymology Rats, Males; .i.Reproductive Biology, Females  
Space Flight, Short-term, COSMOS-1129, -1667, Psychology, Immobilization Stress*

### ISSUE 18

#### PAPERS:

P834(18/88)\* Shubnikova YeA, Dobryakova AV.

***Ultrastructure of the submandibular glands of rats in weightlessness.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(2): 20-26 ; 1988.

(9 references; 2 in English)

*Endocrinology, Salivary, Submandibular Glands*

*Rats*

*Space Flight, COSMOS-1667*

P835(18/88)\* Plakhuta-Plakutina GI, Dmitriyeva NP, Amirkhanyan YeA.

***The thyroid C-cell system in rats after space flight on the COSMOS-1667 biosatellite.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(2): 26-32 ; 1988.

(15 references; 5 in English)

*Endocrinology, Thyroid, C-Cell Systems*

*Rats, Male*

*Space Flight, COSMOS-1667*



# ENDOCRINOLOGY

## ISSUE 19

### PAPER:

P867(19/88)\* Mamalyga LM.

***Neurochemical and morphological studies of hypothalamic structures in stress.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(3): 61-64 ; 1988.

(20 references; 3 in English)

*Endocrinology, Hypothalamus; Neurophysiology, Neurochemicals  
Rats, Male  
Psychology, Stress*

P890(19/88) Zagorskaya YeA.

***Functional state of the adrenal cortex of rats exposed to hypokinesia: Results of morphological and biochemical analysis.***

In: Polenov AL, editor.

Endokrinnaya Sistema Organizma i Vrednyye Faktory Vneshney Credy: III Vsecoyuznaya Konferentsia (8-10 Sentyabrya 1987) [The Endocrine System and Adverse Environmental Factors: IIIrd All-Union Conferences (8-10 September 1987) [Paper Abstracts].

Leningrad: 1987. Page 78.

Affiliation (book): USSR Academy of Sciences, Scientific Council on Visceral Systems, I.P. Pavlov Institute of Physiology, I.M. Sechenov Institute of Evolutionary Physiology and Biochemistry, Leningrad Research Institute on Industrial Hygiene and Occupational Diseases, Samarkand Medical Institute  
Author's Affiliation: Institute of Biomedical Problems

*Endocrinology, Adrenal Cortex  
Rats, Male  
Hypokinesia, Immobilization Cages, Psychology, Immobilization Stress, Restraint*

P891(19/88) Prodan NG.

***Investigation of the medullary substance of the adrenal glands of rats in an experiment on the "COSMOS-1667" biosatellite.***

In: Polenov AL, editor.

Endokrinnaya Sistema Organizma i Vrednyye Faktory Vneshney Credy: III Vsecoyuznaya Konferentsia (8-10 Sentyabrya 1987) [The Endocrine System and Adverse Environmental Factors: IIIrd All-Union Conferences (8-10 September 1987) [Paper Abstracts].

Leningrad: 1987. Page 190.

Affiliation (book): USSR Academy of Sciences, Scientific Council on Visceral Systems, I.P. Pavlov Institute of Physiology, I.M. Sechenov Institute of Evolutionary Physiology and Biochemistry, Leningrad Research Institute on Industrial Hygiene and Occupational Diseases, Samarkand Medical Institute  
Author's Affiliation: Institute of Biomedical Problems

*Endocrinology, Adrenal Glands, Medullary Substance  
Rats  
Space Flight, COSMOS-1667*

# ENDOCRINOLOGY

## ISSUE 20

### PAPERS:

P928(20/88)\* Kirillov OI, Kurilenko LA.

***The effect of long-term hypokinesia on the androgen system of rats.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(4): 74-76; 1988.

[20 references; 11 in English]

# ENZYMOLOGY

## ISSUE 16

### PAPERS:

P704(16/88)\* Vetrova YeG. Popova IA.

***Activity of oxidative enzymes in response to graded physical exercise in healthy individuals and patients with neurocirculatory dystonia.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

21(6): 86-89; 1987.

[9 references; 4 in English]

*Enzymology, Oxidative Enzymes; Metabolism  
Humans, Patients, Neurocirculatory Dystonia  
Physical Exercise*

## ISSUE 18

### PAPERS:

P809(18/88) Kukhta VK, Morozkina TS, Listsyna LP, Zakharenko IV, Mal'kovets IG, Karpova IN.

***The enzymatic system for initiating and providing protection from [i.e., inhibiting] lipid peroxidation in liver tissue and blood of rats undergoing hypokinesia.***

Voprosy Meditsinskoy Khimii.

34(1): 19-22; 1988.

[13 references; 4 in English]

Authors' Affiliation: Minsk Medical School

*Enzymology, Metabolism, Lipid Peroxidation, Liver, Blood  
Rats  
Hypokinesia*

## ISSUE 20

### PAPERS:

P927(20/88)\* Vetrova YeG, Drozdova TYe, Popova IA.

***The effect of horizontal hypokinesia and hypokinesia with head-down tilt on activity of serum enzymes.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(4): 70--73; 1988.

[16 references; 2 in English]

*Enzymology, Hematology, Serum Enzymes  
Humans, Males  
Hypokinesia, Bed Rest, Horizontal, Head-Down Tilt*

# EXO BIOLOGY

## ISSUE 15

### PAPER:

P652(15/88) Yurov SS, Akoyev IG.

***The possible role of the local radiation factor in space in the creation of the prerequisites for prebiological evolution.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Page: 329.

*Exobiology, Prebiotic Evolution; Biospherics*

*Theoretical Article*

*Space, Radiobiology, Local Radiation*

## ISSUE 17

### PAPER:

P795(17/88)\* Strigunkova TF, Lavrent'yev GA, Yegorov IA.

***Polycondensation of adenosine cyclic phosphate on the surface of clay minerals under exposure to humidity and temperature fluctuation.***

Zhurnal Evolyutsionnoy Biokhimii i Fiziologii.

XXIII(5): 569-574; 1987.

[8 references; 8 in English]

Authors' Affiliation: Institute of Biochemistry, USSR Academy of Sciences.

*Exobiology, Abiogenic Synthesis*

*Nucleotides*

*Cyclic AMP, Clay, Temperature and Humidity Fluctuations*

## ISSUE 18

### PAPERS:

P857(18/88)\* Telegina TA, Pavlovskaya TYe.

***Melanin-melanoidin catalysts in the abiogenic synthesis of peptides.***

Izvestiya Akademii Nauk SSSR: Seriya Biologicheskaya.

1988(1): 112-116.

[25 references; 15 in English]

Authors' affiliation: A.N. Bakh Institute of Biochemistry, USSR Academy of Sciences, Moscow.

*Exobiology, Abiogenic Synthesis*

*Peptides, Protein Precursors*

*Melanin-Melanoidin Catalysts, Ultraviolet Radiation*

## EXO BIOLOGY

### ISSUE 19

#### PAPER:

P883(19/88) Kuzicheva YeA, Tsupkina NV, Potapova NG.

***The effects of individual flight factors on the abiogenic synthesis of nucleotides.***

Zhurnal Evolutsionnoy Biokhimii i Fiziologii.

24(1): 3-7; 1988.

[15 references; 5 in English]

Authors' affiliation: Institute of Cytology, USSR Academy of Sciences, Leningrad

*Exobiology, Abiogenic Synthesis*

*Nucleotides*

*Space Flight. Salyut-7; Thermal Energy*

### ISSUE 20

#### PAPER:

P941(20/88) Chetkauskayte AV, Grinyus LL, Mukhin LM.

***The stimulating effects of polyphosphates on the formation of peptides from glycine and phenylalanine amine under abiogenic conditions.***

Zhurnal Evolyutsionnoy Biokhimii i Fiziologii.

XXIV(4): 465-470; 1988.

[17 references; 14 in English]

*Exobiology, Abiogenic Synthesis*

*Nucleotides*

*Space Flight. Salyut-7; Thermal Energy*

# GASTROINTESTINAL SYSTEM

## ISSUE 17

### PAPERS:

P776(17/88) Groza P, Bordeyanu A (Bucharest).

***The effectiveness of hypokinesia as a model for simulating space flight.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 48-49.

*Gastrointestinal System, Digestive Function*

*Rats*

*Space Flight, COSMOS-936, -1129, 1514, 1667; Immobilization Stress*

P784(17/88) Lentsner AA, Lentsner KhP, Mikel'saar ME, Tyuri ME, Toom MA, (Tartu), Liz'ko NN, Kegen'kov VI.

***Quantitative characteristics of digestive lactoflora of "Salyut-7" crews preflight.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 237-238.

*Gastrointestinal System; Microbiology, Digestive Lactoflora*

*Humans, Cosmonauts*

*Space Flight, Salyut-7, Preflight; Psychology, Stress*

## ISSUE 18

### PAPERS:

P830(18/88) Smirnov KV, Goland-Ruvina LG, Medkova IL, Goncharova NP, Zhiznevskaya OV, Pechenikina RA, Dobrokvashina Yel.

***Analysis of secretory processes in the gastrointestinal tract during long-term hypokinesia.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 363-364.

*Gastrointestinal System, Hypersecretion; Metabolism; Enzymology*

*Humans*

*Hypokinesia, Head-Down Tilt, Long-Term*

# GASTROINTESTINAL SYSTEM

ISSUE 19

PAPER:

P878(19/88)\* Bernkhardt Kh, Knopke M (GDR).

***The effect of stress on gastrointestinal microflora.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(3) ; 1988.

(No references)

*Gastrointestinal System, Dysbacteriosis*

*Microbiology, Intestinal Microflora: Humans*

*Endocrinology, Endocrine Stress*

# GENETICS

## ISSUE 15

### PAPERS:

P655(15/88) Filatova LP, Vaulina EN, Grozdova TYa, Lyapteva NSh.  
***Genetic effects of exposure to space flight in Drosophila.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 299-300.

*Genetics, Chromosome Nondisjunction, Reproductive Biology, Gametes  
Insects, Drosophila, Male, Female  
Space Flight, Salyut-6*

P665(15/88)\* Komolova GS, Zakaznov AV, Makeyeva VF.

***The effect of weightlessness on the replicative function of DNA in hepatocytes of rats.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

21(5): 31-34; 1987.

[8 references; none in English]

*Genetics, DNA, Replication, Hepatocytes  
Rats*

*Space Flight, COSMOS-782, -1129, -1667; Immobilization, Stress*

P666(15/88)\* Makeyeva VF, Komolova GS.

***RNA-synthesizing activity in the liver of rats after flight on the COSMOS- 1667 biosatellite.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

21(5): 34-36.

[9 references; 2 in English]

*Genetics, RNA-Synthesis, Enzymology, Liver  
Rats, Male*

*Space Flight, COSMOS-1667*



## GENETICS

### ISSUE 16

#### PAPER:

P736(16/88) Smirnova AV.

***Frequency of nondisjunction of sex chromosomes under conditions of altered gravitational force.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 295-296.

*Genetics, Nondisjunction of Sex Chromosomes*

*Insects, Drosophila, Female*

*Gravitational Biology, Altered Gravity, Clinostatting, Acceleration; Radiobiology, Gamma-Irradiation*

### ISSUE 18

#### PAPER:

P850(18/88)\* Mishurova Ye, Kropachova K (Czechoslovakia).

***Changes in chromatin and nucleic acids in rat tissues after short-term space flight.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(2): 78-80 ; 1988.

(16 references; 4 in English)

*Genetics, Chromatin, Nucleic Acids, Lymphatic Organs*

*Rats, Males, Females, Sex Differences; Reproductive Biology, Pregnancy*

*Space Flight, COSMOS-1514, COSMOS-1667*

### ISSUE 19

#### PAPERS:

P873(19/88)\* Delone NL, Antipov VV.

***Genetic amplification as a model for the study of the biological effects of weightlessness.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(3): 84-86 ; 1988.

(6 references; 1 in English)

*Genetics, Amplification, RNA, rDNA*

*Tortoises*

*Space Flight, COSMOS-690*

## GENETICS

P879(19/88)\* Delone NL, Antipov VV.  
***Problems of variability in weightlessness.***  
Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.  
22(3): 4-15; 1988.  
(58 references; 15 in English)

*Genetics, Variability, Mutation*  
*Theoretical Articles, Research Program*  
*Space Flight*

# GRAVITATIONAL BIOLOGY

## ISSUE 16

### PAPERS:

P718(16/88) Yegorov AD.

***Mechanisms underlying changes in major physiological functions in humans exposed to weightlessness for long periods of time.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 58 - 60.

*Gravitational Biology; Musculoskeletal System; Neurophysiology; Body Fluids  
Humans, Theoretical Article  
Weightlessness, Long-term*

P735(16/88) Parfenov GP.

***The effect of the force of gravity on animal cells and organisms.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 289-290.

*Gravitational Biology, Animal Cells and Organisms  
Theoretical Article, Microbiology, Eukaryotes, Prokaryotes; Multicellular Animals  
Force of Gravity*

## ISSUE 18

### PAPER:

P856(18/88)\* Bryanov II, Yeremin AV, Stepantsov VI.

***On the significance of the gravitational factor in the final stage of space flight.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(2): 93-95 ; 1988.

(17 references; none in English)

**KEY WORDS:** *Gravitational Biology, Space Flight, Reentry, Operational Medicine, Adaptation, Neurophysiology, Motion Sickness, Orthostatic Intolerance, Body Fluids, Fluid Redistribution, Cardiovascular and Respiratory Systems, Endocrinology, Musculoskeletal System, Provocative Tests, Deceleration, Impact, Psychology, Stress*

NOTE: This article is located at the back of Issue 18 as a special feature.

## GRAVITATIONAL BIOLOGY

### MONOGRAPH:

M130(18/88) Gershuni GV. (editor)

Systemy organov chuvstv: Morfofunktsional'nyye aspekty evolyutsii [**Systems of sensory organs: Morphofunctional aspects of their evolution.**]

Leningrad: Nauka; 1988.

[189 pages]

*KEY WORD: Gravitational Biology, Evolution, Sensory Physiology, Vision, Olfaction, Hearing, Chemoreception, Information Processing*

# GROUP DYNAMICS

ISSUE 16

PAPER:

P730(16/88) Miroshkina MB, Sled' AD.

***Cooperative activity and dynamics of intergroup interactions of an isolated small group.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 189-190.

*Group Dynamics, Small Group, Isolated, Group Performance  
Humans*

*Intergroup Interactions, Interaction Style*

# HABITABILITY AND ENVIRONMENT EFFECTS

## ISSUE 15

### PAPERS:

P636(15/88) Bizin YuP, Bogatova RI.

***Hygienic approaches to evaluating safety during the performance of technological experiments in space.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages 219-220.

*Habitability and Environment Effects, Safety*

*Humans, Cosmonauts*

*Equipment and Instrumentation, Technological Flight Experiments*

P672(15/88)\* Berlin AA, Chekanova SL.

***Investigation of the composition of wash water of men and women.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

21(5): 53-57; 1987.

[4 references; none in English]

*Habitability and Environment Effects, Water Reclamation Systems*

*Humans, Men and Women*

*Wash Water, Composition*

P679(15/88)\* Pashin SS, Ushakov VF, Gorshunova AI, Ostasheva NYe,

Stadukhin YeB, Chukhno EI.

***Toxicokinetic aspects of use of sulphur hexafluoride in a hermetically sealed environment.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

21(5): 74-77; 1987.

[15 references; 4 in English]

*Habitability and Environment Effects, Toxicology, Hermetically Sealed Environment*

*Rats, Male*

*Sulphur Hexafluoride*

# HABITABILITY AND ENVIRONMENT EFFECTS

## ISSUE 17

### PAPERS:

P763(17/88)\* Savina VP, Anisimov BV.

***The effect of prolonged inhalation of acetic acid vapor on certain physiological functions in humans.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(1): 57-60; 1988.

(17 references; 2 in English)

*Habitability and Environment Effects, Physiological Effects  
Humans*

*Hermetically Sealed Living Quarters, Acetic Acid, Polymers, Heat*

P764(17/88)\* Kondratyuk VA, Gnatyuk MS.

***Cardiac rhythm in animals consuming reclaimed water varying in concentration of sodium and potassium ions.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(1): 61-63; 1988.

(9 references; 1 in English)

*Cardiovascular and Respiratory Systems, Cardiac Rhythm; Neurophysiology, Autonomic Nervous System*

*Rats*

*Habitability and Environment Effects, Life Support Systems, Reclaimed Water, Potassium, Sodium*

P765(17/88)\* Mironets NV, Savina RV, Kucherov IS, Solntseva VV, Matyshchenko NV.

***Determining maximum acceptable level of urea in reclaimed drinking water and its biological effects.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(1): 63-66; 1988.

(10 references; none in English)

*Habitability and Environment Effects, Biological Effects, Standard Setting*

*Rats, Guinea Pigs, Mice, Rabbits, Humans*

*Reclaimed Drinking Water, Urea*

## HABITABILITY AND ENVIRONMENT EFFECTS

P773(17/88)\* Zvershkanovskiy FA, Simoyan MA, Pilipenko YuA.

***Experimental investigation of the protective effects of the enzymatic antioxidants, superoxide dismutase and catalase, in Intermittent toxic exposure to hyperbaric oxygenation.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(1): 84-86; 1988.

(15 references; 3 in English)

*Habitability and Environment Effects, Toxic Effects*

*Rats*

*Hyperbaric Oxygen, Countermeasures, Enzymology, Enzymatic Antioxidants*

### ISSUE 18

#### PAPERS:

P813(18/88) Markevich L (Warsaw).

***Physiological changes evoked by long-term occupational exposure to vibration under industrial conditions.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages:94-95.

*Habitability and Environment Effects, Physiological Effects*

*Humans, Pilots*

*Vibration, Occupational Exposure*

P820(18/88) Drobyshev VI, Stepanova TP.

***Response of neurocytes of the cerebral cortex to vibration.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 270-271.

*Neurophysiology, Cerebral Cortex, Neurocytes*

*Rats*

*Habitability and Environment Effects, Vibration*



# HABITABILITY AND ENVIRONMENT EFFECTS

ISSUE 19

*PAPERS:*

P869(19/88)\* Nefedov YuG, Novikova ND, Surovezhin IN.

***Products of biodegradation of polymers as a factor in the possible pollution of the air of hermetically sealed environments with toxic substances.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(3): 67-71 ; 1988.

(10 references; 3 in English)

*Habitability and Environment Effects, Air Pollution, Toxic Effects*

*Microbiology*

*Hermetically Sealed Environments, Polymers, Biodegradation*

P870(19/88)\* Mikos KN, Polovnikov AA, Savina VP.

***Interaction of chemicals polluting the air of hermetically sealed environments.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(3): 72-75; 1988.

(17 references; 6 in English)

*Habitability and Environment Effects, Chemical Interactions, Air Pollution*

*Ammonia, Carbon Dioxide*

*Hermetically Sealed Environments*

## HEMATOLOGY

### ISSUE 16

#### PAPERS:

P694(16/88)\* Pak GD, Sverchkova VS.

***The role of carbon dioxide in correction of coagulation hemostasis under exposure to hypoxia.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

21(6):43-47; 1987.

[13 references; 2 in English]

*Hematology, Coagulation Hemostasis, Fibrinolysis*

*Dogs*

*Hypoxia, Hypercapnia*

P741(16/88) Kalandarova MP, Ushakov AS, Kravchenko VV.

***Reactions of the blood system during adaptation to space flight conditions.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 344-345.

*Hematology, Hemopoiesis, Erythrocytes*

*Theoretical Article*

*Adaptation, Space Flight; Iron*

### ISSUE 17

#### PAPERS:

P751(17/88)\* Kirichenko LL, Masenko VP, Raskurazhev AB, Yevdokimova AG.

***Hemostatic parameters in individuals with neurocirculatory dystonia under conditions of "dry" immersion.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(1): 10-13; 1988.

(9 references; 5 in English)

*Hematology, Hemostasis Parameters*

*Humans, Males, Patients, Neurocirculatory Dystonia*

*Immersion*

## HEMATOLOGY

P761(17/88)\* Pak GD, Sverchkov VS, Danilevskaya TN, Trandafilova TP.  
**Blood coagulation and fibrinolysis when adrenalin is administered under conditions of hypoxia and hypercapnia.**

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(1): 49-53; 1988.

(14 references; none in English)

*Hematology, Coagulation, Fibrinolysis*  
*Dogs,*  
*Endocrinology, Adrenalin; Hypoxia, Hypercapnia*

P771(17/88)\* Vorob'yev VYe, Ivchenko VF, Stazhadze LL.  
**Erythrocyte metabolism in humans exposed to hyperoxygenation under conditions of hypokinesia with head-down tilt.**

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(1): 81-82; 1988.

(4 references; 1 in English)

*Hematology; Erythrocytes; Metabolism*  
*Humans*  
*Hypokinesia With Head-Down Tilt; Hyperoxygenation*

### ISSUE 18

#### PAPERS:

P827(18/88) Naydina VP, Zharkovskaya YeYe, Ivanovna SM.  
**Investigation of the effects of hypokinesia and stress on the fatty acid composition of erythrocytes.**

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 353-354.

*Hematology, Erythrocytes, Fatty Acids*  
*Rats*  
*Hypokinesia, Psychology, Immobilization Stress, Exercise*

## HEMATOLOGY

P845(18/88)\* Sominskiy VN, Okun' KV, Anshelevich YuV.

***Quantitative analysis of the interaction of propanol and erythrocyte membrane by measuring propanol's antihemolytic effect.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(2): 67-69; 1988.

(21 references; 7 in English)

*Hematology, Erythrocyte Membrane*

*Humans, Personnel Selection*

*Propanol, Antihemolytic Effect*

P852(18/88)\* Ivchenko VF, Stazhadze LL, Romanov AN, Omanidze DO.

***Changes in bioenergetic parameters of erythrocytes in response to regional hypothermia under conditions of hypokinesia with head-down tilt(-80).***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(2): 83-85; 1988.

(14 references; none in English)

*Hematology, Erythrocytes, Bioenergetic Parameters; Metabolism*

*Humans, Males*

*Hypokinesia With Head-Down Tilt, Regional Hypothermia*

### ISSUE 19

#### PAPERS:

P862(19/88)\* Vorob'yev VYe, Ivchenko VF, Stazhadze LL.

***Catabolic metabolism in human erythrocytes under conditions of hypokinesia with head-down tilt.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(3): 39-41 ; 1988.

(11 references; 3 in English)

*Hematology, Erythrocytes; Metabolism, Catabolic*

*Humans, Males*

*Hypokinesia With Head-Down Tilt; Oxygen Breathing*

## HEMATOLOGY

P874(19/88)\* Sominskiy VN, Sokovnik VM, Okun' KV.

***Kinetic parameters of the interaction of propranolol with the erythrocyte membrane in individuals varying in their antihemolytic response to this drug.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(3): 86-88; 1988.

(6 references; 1 in English)

*Hematology, Erythrocyte Membrane, Anithemolytic Response*

*Humans, Individual Differences*

*Propranolol*

P880(19/88)\* Fedulova GA.

***Characteristics of the hemostasis system in aviation personnel.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(3): 15-21 ; 1988.

(62 references; 13 in English)

*Hematology, Hemostasis*

*Humans, Pilots*

*light Conditions, Psychology, Stress*

### ISSUE 20

#### PAPER:

P943(20/88) Gol'dberg YeD, Zakharova OYu, Dygay AM.

***Modulating effect of opioid peptides on hemopoiesis in stress.***

Byulleten' Eksperimental'noy Biologii i Meditsiny.

CVI(7): 23-26; 1988

*Hematology, Hemopoiesis*

*Mice, Males*

*Immobilization Stress, Opioid Peptides, Leu-Enkephalin*

# HUMAN PERFORMANCE

## ISSUE 15

### PAPERS:

P632(15/88) Nechayev AP, Ponomareva IP, Khideg Ya, Bognar L, Remesh P.  
(last three are Hungarian).

***On the additional capacities of the methodology for studying human psychological work capacity (based on Salyut-7 results).***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

See: Abstract M117 (Space Biology and Medicine) Digest Issue 14.

Pages: 191-193.

*Human Performance, Psychological Work Capacity  
Humans, Cosmonauts  
Space Flight, Salyut-7*

P634(15/88) Khachatur'yants LS, Ivanov YeA, Yepishkin, AK.

***The effect of space flight on the characteristics of pursuit tracking.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 208-209.

*Human Performance, Tracking, Pursuit  
Humans, Cosmonauts  
Space Flight, Voskhod, Soyuz-5, Soyuz-7, Soyuz-T*

P669(15/88)\* Yastrebov VYe, Kustov VV, Razinkin SM.

***Investigation of short-term effects of high concentrations of carbon monoxide on certain psychophysiological functions of a human operator.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

*Human Performance, Compensatory Tracking  
Humans, Males  
Habitability and Environment Effects, Carbon Monoxide*

# HUMAN PERFORMANCE

## ISSUE 16

### PAPERS:

P708(16/88) Kamenskiy YuN.

***The significance of critical flicker fusion frequency for assessing the state of an individual undergoing whole-body vibration.***

Gigiyena Truda i Professional'nyye Zabolevaniya.

1987(7): 54-56. [6 references; none in English]

*Human Performance, Functional State; Perception, Critical Flicker Fusion Frequency*

*Humans, Males*

*Habitability and Environmental Effects, Vibration, Whole-Body*

P709(16/88) Ponomarenko VA, Kostritsa VG, Yegorov SV, Oboznov AA.

***A study of the reliability of pilot performance during long-term flights on automatic pilot.***

Voyenno-Meditsinskiy Zhurnal.

1987(5): 43-45.

[no references] Authors' Affiliation: [Military] Medical Corps

*Human Performance, Flight Performance, Vigilance*

*Humans, Pilots*

*Long-term Flights, Monotony*

## ISSUE 17

### PAPERS:

P779(17/88)\* Petrova EB.

***The effect of psychotropic drugs on orthostatic tolerance.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986. Pages: 106-107.

*Human Performance, Functional State, Orthostatic Tolerance; Cardiovascular and Respiratory Systems; Operational Medicine*

*Humans, Operators*

*Psychology, Psychotropic Drugs; Tilt Test, Isolation, Hypokinesia With Head- Down Tilt, Short-Term*

## HUMAN PERFORMANCE

P780(17/88) Tardov VM, Chernikov AYe, Yashin YuP.

***Study of the effects of high +Gz acceleration on operator performance.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages:133-134.

*Human Performance, Operator Performance; Man-Machine System, Tracking  
Humans*

*Acceleration, High +Gz; Antiacceleration Suit*

P781(17/88) Zhukova OP, Ponomareva IP.

***The effect of a 36-hour period of continuous performance on human sleep under conditions of isolation.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 168-169.

*Neurophysiology, Sleep Parameters*

*Humans, Males*

*Human Performance, Work-Rest Schedule, Sleep Deprivation, Isolation*

P782(17/88)\* Kalosha VI.

***The effect of nootropic drugs on functional state during adaptation to stressful operator performance.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 173-174.

*Human Performance, Operator Performance, Adaptation, Stress, Biological Rhythms*

*Humans, Operators*

*Psychology, Nootropic Drugs*



# HUMAN PERFORMANCE

## ISSUE 18

### PAPERS:

P837(18/88)\* Asyamolov BF, Voronin LI, Panchenko VS, Ulyatovsiy NV, Bondarenko RA, Kaliberdin AV, Elizarov SYu, Plokhova VG, Yarov AS.

***Effectiveness of antigravity devices of the chamberless type after 7 days of hypokinesia with head-down tilt.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(2): 37-40 ; 1988

(11 references; 1 in English)

*Human Performance, Operator Task, Acceleration Tolerance*

*Humans*

*Hypokinesia With Head-Down Tilt, Acceleration, Countermeasures, Antigravity Clothing*

## ISSUE 19

### PAPERS:

P863(19/88)\* Pavlov AS, Moloshtan VS.

***The role of increased body temperature in increasing work capacity.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(3): 42-45; 1988.

(9 references; 3 in English)

*Human Performance, Work Capacity, Physical and Mental; Cardiovascular and Respiratory Systems*

*Humans, Athletes, Pilot Trainees*

*Physical Exercise, Hyperthermia*

P881(19/88) Tsibulevskiy IYe.

***Engineering psychological problems related to the effectiveness of displays depicting the spatial position of an aircraft. (Review of research)***

Vestnik Moskovskogo Universiteta. Seriya 14. Psikhologiya.

1988(1): 3-23.

[21 references; 18 in English]

*Human Performance, Display Effectiveness*

*Pilots*

*Aircraft Position*

## HUMAN PERFORMANCE

P888(19/88) Shenderova IS.

***Local heat removal as a means for improving alertness of a human operator performing monotonous work.***

Fiziologiya Cheloveka.

14(3): 428-433; 1988.

[20 references; none in English]

Author's affiliation: Institute of Industrial Hygiene and Occupational Disease

*Human Performance, Alertness*

*Humans, Operators, Drivers*

*Monotony, Chilling, Local*

P902(19/88) Leonova AB.

***Psychological self-regulation and prevention of adverse functional states.***

Psikhologicheskiy Zhurnal.

9(2): 43-52; 1988.

[22 references; 4 in English]

Author's affiliation: Lomonosov State University of Moscow

*Human Performance, Work Capacity, Well-Being*

*Humans, Women, Workers*

*Psychology, Fatigue, Self-Regulation, Autogenic Training, Relaxation*

### MONOGRAPH:

M132(19/88)\* Dikaya LG, Zankovkiy AN, Sukhodoyev VV.

Metodiki Issledovaniya i Diagnostiki FS i Rabotosposobnosti Cheloveka-

Operatora v Ekstremal'nykh Usloviyakh: Sbornik Nauchnykh Trudov ***[Methodology for Studying and Diagnosing Functional State and Work Capacity of a Human Operator Under Extreme Conditions]***.

Moscow: Psychological Institute USSR Academy of Sciences; 1987.

[290 pages]

Affiliation: Psychological Institute, USSR Academy of Sciences

**KEY WORDS:** *Human Performance, Functional State, Work Capacity, Human Operators, Extreme Conditions, Group Dynamics, Sleep Deprivation, Tracking, Signal Detection*

## IMMUNOLOGY

### ISSUE 15

#### PAPERS:

P640(15/88) Teplinskaya GP.

***The effects of space flight factors on the functional activity of T- lymphocytes responsible for delayed hypersensitivity.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 259

*Immunology, T-lymphocytes, Allergy, Delayed Hypersensitivity*

*Humans, Cosmonauts*

*Space Flight, Long-term, Short-term, Salyut-7; Hypokinesia with Head-Down Tilt*

### ISSUE 16

#### PAPERS:

P706(16/88) Klusha VYe, Mutseniyentse RK, Svirskis ShV, Zalitis GM, Liyepa IR, Kukayn EM, Andermanis AV, Sile VYa.

***Neuroimmune regulating properties of short protein fragments under exposure to immobilization stress.***

Byulleten' Eksperimental'noy Biologii i Meditsina.

1987(\*): 186-187.

[11 references; 8 in English]

Authors' affiliation: Institute of Organic Synthesis, Latvian Academy of Sciences

*Immunology, Humoral Immunity, Endocrinology, Adrenal Gland, Hypothalamus, Striatum*  
*Rats, Male*

*Short Protein Fragments; Psychology, Immobilization Stress*

P707(16/88) Pershin BB, Yemel'yanov BA, Sokolov YaA, Kuz'min SN.

***Study of the mechanism underlying the phenomenon of disappearance of immunoglobulins under exposure to experimentally induced stress.***

Patologicheskaya Fiziologiya i Eksperimental'naya Terapiya.

1987(5): 41-44. [9 references; 2 in English]

*Immunology, Immunoglobulins, Excretion*

*Mice*

*Psychology, Stress, Forced Exercise*

## IMMUNOLOGY

P742(16/88) Konstantinova IV.

***Problems of space immunology.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].  
Moscow: Nauka; 1986. Pages: 348-349.

*Immunology*

*Humans, Theoretical Article*

*Space Flight Factors, Countermeasures*

### ISSUE 17

#### PAPERS:

P807(17/88) Bozhikov NV, Rykova MP, Antropova YeN, Lesnyak AT.

***Quantitative and functional parameters of T-lymphocytes and activity of normal killer cells in patients suffering from systemic osteoporosis and subjects undergoing 120 days of hypokinesia with head-down tilt.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].  
Moscow: Nauka; 1986.

Pages: 333-334.

*Immunology, T-Lymphocytes, Normal Killer Cells*

*Humans, Patients*

*Musculoskeletal System, Osteoporosis, Hypokinesia With Head-Down Tilt, Long-Term*

### ISSUE 18

#### PAPERS:

P843(18/88)\* Kirillova YeN, Muksinova KN, Skykovskaya TL.

***The effect of long term continuous irradiation on humoral immunity parameters in mice.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(2): 62-65; 1988.

(14 references; 8 in English)

*Immunology, Humoral Immunity*

*Mice*

*Radiobiology, Gamma-Radiation, Long-Term Irradiation*

## IMMUNOLOGY

P849(18/88)\* Durnova GN, Borotnikova YeV.

***Histological study of lymphoid organs of rats after a 7-day space flight on the COSMOS-1667 biosatellite.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(2): 75-77; 1988.

(11 references; 3 in English)

*Immunology, Thymus, Spleen*

*Rat*

*Space Flight, COSMOS-1667*

### ISSUE 20:

#### PAPERS:

P908(20/88) Kuznets Yel, Kut'kova ON, Yakovleva EV, Shal'nova GA, Malkiman II, Yastrebov PT.

***Selection of parameters indicative of human immune status under conditions simulating space flight factors.***

In: Malinin VB, Kosmolinskiy FP, Kuznets Yel (editors).

Perspektivy Razvitiya Kosmicheskoy Biomeditsiny v Svete Idey K.E.

Tsiolkovskogo [Prospects for the Development of Space Biomedicine in Light of the Ideas of K.E. Tsiolkovskiy] Proceedings of the XXth and XX1st Lecture Series dedicated to the scientific legacy and development of the ideas of K.E. Tsiolkovskiy., Kaluga 1985, 1988.

Section on Problems of Space Medicine and Biology.

Moscow: USSR Academy of Sciences: 1987.

Pages 101-105.

[7 references; none in English]

*Immunology, Immune Status*

*Humans*

*Heat, Hypokinesia With Head-Down Tilt, Hermetically Sealed Living Quarters*

P913(20/88) Priyatkin SA, Morozov VI, Rogozkin VA.

***The effect of physical exercise on nonspecific resistance factors and concentration of steroid hormones in human blood.***

Fiziologiya Cheloveka.

14(4): 606-613; 1988.

[35 references; 10 in English]

Authors' Affiliation: Scientific Research Institute of Physical Culture, Leningrad

*Immunology, Nonspecific Resistance; Endocrinology, Steroids*

*Humans, Males, Athletes*

*Exercise*

## IMMUNOLOGY

### MONOGRAPH:

M139(20/88) Petrov RV, Lozovoy VP.

Problemy i perspektivy sovremennoy immunologii. Metodologicheskii Analiz [***Problems and prospects of modern immunology. A methodological analysis***].

Novosibirsk: Nauka; 1988.

[256 pages]

Affiliation (book): Siberian Division USSR Academy of Sciences; Institute of Clinical Immunology, Siberian Division, USSR Academy of Medicine.

**KEY WORDS:** *Immunology, Neurophysiology, Endocrinology, Aging, Immune Surveillance, Genetics*

# LIFE SUPPORT SYSTEMS

## ISSUE 15

### PAPER:

P635(15/88) Abakumova IA, Gur'yeva TS, Dadasheva OA, Lebedeva ZN, Tresvyatskaya NA.  
***Future prospects for using nontraditional food sources in human biological life support systems.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].  
Moscow: Nauka; 1986. Pages:214-25.

*Nutrition, Nontraditional Food Sources, Plants, Fly Larva  
Rats  
Life Support Systems, CELSS*

## ISSUE 16

### PAPERS:

P725(16/88) Fofanov VI.

***Prospects and developmental trends in space biology.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].  
Moscow: Nauka; 1986.  
Pages: 151-152.

*Life Support Systems, CELSS  
Humans  
Theoretical Article, Future Research Trends*

P731(16/88) Savina VP, Vytchikova LN, Mukhamediyeva LN, Rokhlenko KD.

***Microclimate conditions during the flight of Salyut-7.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].  
Moscow: Nauka; 1986. Pages: 254-255.

*Life Support Systems, Microclimate; Human Performance, Work Capacity  
Humans  
Space Flight, Salyut-7*

# LIFE SUPPORT SYSTEMS

ISSUE 17

PAPERS:

P785(17/88) Shaydarov Yul, Simonov VM, Alekhina TA, Sidorova LM,  
Geodakin RO, Kryuchkova IV.

***Utilization by plants of liquid products of processing of wastes from human biological life support systems.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages:260-261.

*Life Support Systems, Human, CELSS*

*Plants, Lettuce*

*Waste Utilization; .i.Microbiology, Microbial Processing*

P804(17/88) Berkovich YuA, Ivanovna IYe, Alekhina TP, Derendyayeva TA.

***Experimental demonstration of the potential increase in the closure of material recycling in the higher plant components of artificial ecological systems.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 217-218.

*Life Support Systems, Closure, Human CELSS*

*Botany, Higher Plants, Wheat, Beets, Lettuce*

*Transpiration Water, Carbon Dioxide*

P895(17/88) Berlin AA, Popov IG, Chizhov SV.

***Sanitary and hygienic skin care of cosmonauts using reclaimed water.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 218-219.

*Life Support Systems, Spacecraft, Personal Hygiene, Operational Medicine*

*Humans, Cosmonauts*

*Water Reclamation*



## LIFE SUPPORT SYSTEMS

### ISSUE 18

#### PAPERS:

P841(18/88)\* Shikina MI, Vinogradova LA, Kolesina NB.

***Microflora in drinking water reclaimed from condensate of atmospheric moisture of a hermetically sealed living space.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(2): 53-55 ; 1988.

(6 references; none in English)

*Life Support Systems, Reclaimed Drinking Water*

*Microbiology, Microflora*

*Hermetically Sealed Environment*

### ISSUE 20

#### PAPER:

P907(20/88) Gitel'son II, Terakov IA, Lisovskiy GM, Kovrov BG, Sid'ko FYa, Okladnikov YuN, Gribovskaya IV, Trubachev IN, Pilenko MI.

***Complete regeneration of the atmosphere, water, and vegetable nutrients in a "man -- higher plant" system,***

In: Malinin VB, Kosmolinskiy FP, Kuznets Yel (editors).

Perspektivy Razvitiya Kosmicheskoy Biomeditsiny v Svete Idey K.E. Tsiolkovskiogo [Prospects for the Development of Space Biomedicine in Light of the Ideas of K.E. Tsiolkovsiy] Proceedings of the XXth and XXIst Lecture Series dedicated to the scientific legacy and development of the ideas of K.E. Tsiolkovskiy., Kaluga 1985, 1988. Section on Problems of Space Medicine and Biology.

Moscow: USSR Academy of Sciences: 1987.

Pages 63-67.

[5 references; none in English]

Authors' Affiliation: Institute of Biophysics, Siberian Division, USSR Academy of Sciences

*Life Support Systems, Nutrition*

*Man -- Higher Plant System*

*Closure, Regeneration*

# MAN-MACHINE SYSTEMS

## ISSUE 16

### MONOGRAPH:

M120(16/88) Akhutin VM, Nefedov VP, Sakharov MP, et al.  
Inzhenarnaya fiziologiya i modelirovaniye sistem organizma [*Engineering physiology and modeling physiological systems*].  
Novosibirsk: Nauka; 1987.  
Affiliation: USSR Academy of Sciences, Siberian Division, Institute of Biophysics; Institute for Problems of Control

*KEY WORDS: Man-Machine Systems, Engineering Physiology, Operational Medicine, Mathematical Modeling, Cardiovascular and Respiratory Systems, Metabolism, Habitability and Environmental Effects*

## ISSUE 17

### MONOGRAPH:

M123(17/88) Dement'yev GP, Zakharov AG, Kazarov YuK.  
Fiziko-tekhnicheskiye osnovy sozdaniya i premeniya kosmicheskikh apparatov [*Physical and technological principles in the design and utilization of spacecraft.*]  
Moscow: Mashinostroyeniye; 1987.  
[264 pages; 37 figures; 40 tables; 217 references]

*KEY WORDS: Man-Machine Systems, Human Performance, Human Engineering, Spacecraft Design, Biospherics*

## ISSUE 19

### MONOGRAPH:

M135(19/88)\* Fedosov YeA.  
Voprosy Kibernetiki: Modelirovaniye Protsessov Upravleniya v Cheloveko- Mashinnykh Sistemakh [*Issues in Cybernetics: Modeling in Man-Machine Systems*]  
Moscow: 1988.  
[130 pages]  
Affiliation: Scientific Council of the USSR Academy of Sciences on the Multidisciplinary Problem of Cybernetics

*KEY WORDS: Man-Machine Systems, Human Performance, Human Engineering, Spacecraft Design, Biospherics*

# MATHEMATICAL MODELING

## ISSUE 16

### PAPERS:

P701(16/88)\* Kondrachuk AV, Sirenko SP.  
***A two-dimensional statistical model of the otolith.***  
Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.  
21(6):70-76; 1987.  
[14 references; 9 in English]  
See: Abstract P668 (Neurophysiology) in Digest Issue 15.

*Mathematical Modeling, Statistical  
Humans  
Neurophysiology, Otolith Membrane, Centripetal Force, Gravity*

P739(16/88) Sakovich VA.  
***Mathematical modeling in developing standards for the radiation safety of space flights.***  
In: Gzenko OG (editor).  
Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].  
Moscow: Nauka; 1986.  
Pages: 322.

*Mathematical Modeling, Probability; Hematology, Hemopoiesis  
Humans, Cosmonauts  
Radiobiology, Radiation Safety Standards, Space Flight, Long-Term*

## ISSUE 17

### MONOGRAPH:

M124(17/88) Beregovoy GT, Yakovlev AI, Vasilets VM, et al.  
***Modeling semiautomatic spacecraft control systems.***  
Moscow: Mashinostroyeniye; 1986.  
[280 pages; 90 figures; 22 tables; 92 references; none in English]

**KEY WORDS:** *Mathematical Modeling, Spacecraft Control Systems, Man-Machine Systems, Human Performance, Cosmonaut Performance, Cosmonaut Training, Adaptation, Environmental Factors*

# METABOLISM

## ISSUE 15

### PAPERS:

P654(15/88) Popov IG, Latskevich AA.

***Sulphur-containing amino acids in blood plasma of cosmonauts.***

In: Gizenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 357-358.

*Metabolism, Amino Acids, Cystine, Methionine  
Humans, Cosmonauts  
Space Flight, Long-term; Nutrition, Cosmonaut Rations*

P670(15/88)\* Savina VP, Vlasova TF, Miroshnikova YeB.

***Glutaminic acid in blood of humans exposed to an atmosphere with elevated ammonia content.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

21(5): 50-52; 1987.

[20 references; 5 in English]

*Metabolism, Glutaminic Acid  
Humans  
Habitability and Environment Effects, Ammonia, Hermetically Sealed Environment*

## ISSUE 16

### PAPERS:

P693(16/88)\* Zezerov AYe, Ivanovna SM, Ushakov AS.

***Lipid peroxidation in tissues of rats exposed to hypokinesia with head-down tilt, physical exercise, and immobilization stress.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

21(6):39-43; 1987.

[33 references; 8 in English]

*Metabolism, Lipid Peroxidation, Musculoskeletal System  
Rats  
Hypokinesia with Head-Down Tilt, Physical Exercise, Psychology, Immobilization Stress*

# METABOLISM

## BOOK REVIEW:

BR12(16/88)\* Demin NN.

Review of: Tigranyan RA. [Metabolicheskiy aspekt problemy stresse v kosmicheskom polete [**Metabolic aspects of the problem of stress in space flight**], Moscow: Nauka, 1985, 224 pages.

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.  
21(6):95; 1987.

**KEY WORDS:** *Metabolism, Psychology, Stress, Immobilization, Biochemical Processes, Space Flight, COSMOS-1129, Adaptation, Neurophysiology, Rats, Hypokinesia, Endocrinology, Sympathetic-Adrenal System, Pharmacological Countermeasures, Radiobiology, Artificial Gravity, Centrifugation*

## ISSUE 17

### PAPER:

P801(17/88) Grigor'yev AI, Kovalenko YeA.

**The problem of homeostasis in space anthropoecology.**

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 42-43.

*Biospherics, Adaptation, Homeostasis*

*Theoretical Article*

*Metabolism, Extreme Factors*

P808(17/88) Popova IA, Nosova YeA, Vetrova YeG, Delenyan NV, Drozdova TYe, Zaytseva LB.  
**Protein and products of protein metabolism in blood under conditions of long term hypokinesia.**

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 356-357.

*Metabolism, Protein, Hematology, Blood*

*Humans, Males*

*Hypokinesia With Head-Down Tilt, Long-Term, Adaptation*

# METABOLISM

## ISSUE 18

### PAPERS:

P825(18/88) Artamanova NP, Zakharova TS, Morukov BV, Arzamazov GS, Semenov VYu.  
***Dynamics of EKG-parameters and blood electrolytes in apparently healthy humans during long-term hypokinesia.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986. Pages: 331-332.

*Metabolism, Body Fluids, Electrolyte Metabolism, Cardiovascular and Respiratory Systems, EKG Parameters*

*Humans, Males*

*Hypokinesia, Head-Down Tilt, Long-Term*

P829(18/88) Prilipko LV.

***Adaptation and normalization of calcium metabolism under conditions simulating weightlessness.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 360-361.

*Metabolism, Calcium; Adaptation; Musculoskeletal System; Endocrinology, Pituitary-Adrenal System*

*Humans*

*Hypokinesia, Horizontal, Head-Down Tilt; Nutrition, Vitamin D*

P831(18/88)\* Potapov PP, Fedorov IV.

***Metabolic aspects of readaptation after hypokinesia (results of animal experimentation.)***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(2): 4-10; 1988.

(47 references; 8 in English)

*Metabolism, Protein, Collagen Synthesis; Adaptation, Readaptation*

*Animals*

*Hypokinesia*

## METABOLISM

P838(18/88)\* Popova IA, Morukov BV, Arzamanov GS, Vetrova YeG, Delen'yan NV, Drozdova TYe, Zaytseva LB, Rustam'yan LA.

***Characteristics of metabolism in response to 120 days of hypokinesia with head-down tilt.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(2): 40-45; 1988.

(14 references; 3 in English)

*Metabolism, Mineral Balance; Enzymology*

*Humans, Males*

*Hypokinesia With Head-Down Tilt, Long-Term, Nutrition*

P851(18/88)\* Vorob'yev VYe, Stazhadze LL, Kal'yanova VN, Repenkova LG, Ivchenko VF, Vetrova YeG, Lenskiy VV, Kovachevich IV.

***Tissue metabolism in humans in response to hyperoxygenation during hypokinesia with head-down tilt.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(2): 80-83; 1988.

(8 references; 4 in English)

*Metabolism, Tissue; Enzymology*

*Humans, Males*

*Hypokinesia With Head-Down Tilt, Hyperoxygenation*

### ISSUE 19

#### PAPER:

P860(19/88)\* Olferyev AM, Kudinova AO, Zaykin YeV, Dvorkin VI, Gel'man BL, Perova NV.

***Blood lipoprotein spectra in pilots in civil aviation.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(3): 27-31 ; 1988.

(26 references; 8 in English)

*Metabolism, Lipoproteins*

*Humans, Pilots*

*Flight Conditions; Psychology, Stress*

## METABOLISM

ISSUE 20:

PAPERS:

P922(20/88)\* Savina VP, Mikos KN, Ryzhkova VYe.

***The effect of space flights on the concentration of volatile metabolites in the expired gas of cosmonauts.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(4): 47-50; 1988.

[7 references; 2 in English]

*Metabolism, Volatile Metabolites, Expired Air*

*Humans, Cosmonauts*

*Space Flights*



# MICROBIOLOGY

## ISSUE 15

### PAPERS:

P638(15/88) Zaloguyev SN, Viktorov AN, Shilov VM, Bragina MP, Il'in VK, Kuprin YuN.

***Ecological aspects of microflora formation in spacecraft cabins.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 233.

*Operational Medicine, Human Automicroflora*

*Microbiology*

*Life Support Systems, Ecological Systems, Hermetically Sealed Environment, Spacecraft Cabins*

P639(15/88) Il'in VK, Moroz AF, Bragina MP, Antsiferova NG, Glatman LI, Semeykin LA.

***Certain aspects of changes in drug sensitivity of human automicroflora during space flight.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Page: 234.

*Microbiology, Drug Sensitivity*

*Human Automicroflora, Conditionally Pathogenic Microorganisms*

*Space Flight*

# MICROBIOLOGY

ISSUE 18

PAPERS:

P821(18/88) Deshevaya YeA, Novikova A.

***Characteristics of the formation of microflora in hermetically sealed living quarters with altered composition of the atmosphere.***

In: Gzenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 230.

*Life Support Systems, Hermetically Sealed Environments  
Microbiology, Microflora, Mold, Pathogenic  
Atmosphere, Acetic Acid*

## MUSCULOSKELETAL SYSTEM

ISSUE 15

### PAPERS:

P626(15/88) Grigor'yeva LS, Chekirda IF, Stepanov VI, Kozlovskaya IB.  
***(Evaluating the) effects of weightlessness on the work capacity of the muscles of the arms.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 45-46.

*Musculoskeletal System, Work Capacity, Arms  
Humans, Cosmonauts  
Space Flight, Salyut-7*

P642(15/88) Bakulin AV, Il'in YeA, Rezayeva LT, Khodskovich YuN, Artamasova YeM.  
***The state of bone tissue in pregnant rats after a 5-day space flight on the COSMOS-1514 biosatellite.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 265-266.

*Musculoskeletal System, Bone Tissue, Mineral Component Rats, Female; Reproductive Biology,  
Pregnancy  
Space Flight, COSMOS-1514*

P645(15/88) Oganov VS, Skuratova SA, Rakhmanov AS, Magedov VS, Shirvinskaya MA, Shlyk GG.  
***Evaluation of the state of the skeletal muscles in monkeys under conditions of real and simulated weightlessness.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 287-288.

*Musculoskeletal System, Skeletal Muscles, Electromagnetic Efficiency  
Monkeys, Macaque-Rhesus  
Space Flight, COSMOS-1514; Hypokinesia, Head-Down Tilt, Immobilization*

## MUSCULOSKELETAL SYSTEM

P646(15/88) Pospishilova I, Pospishil M. (Czechoslovakia).

***The effect of space flight on organic components of connective tissue.***

In: Gazenko OG (editor).

*micheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].*

Moscow: Nauka; 1986.

Pages: 290-291.

*Musculoskeletal System, Connective Tissue, Collagen  
Rats, Female; Reproductive Biology, Pregnancy; Developmental Biology  
Space Flight, COSMOS-1514, -1667*

P647(15/88) Savina YeA, Kaplanskiy AS, Durnova GN, Sakharova ZF, Plakhuta- Plakutina GI, Il'ina-Kakuyeva Yel, Prodan NG, Vorotnikova YeV, Alekseyev Yel.

***Morphological manifestations of adaptive responses in rats exposed to tail suspension as a simulation of weightlessness.***

In: Gazenko OG (editor).

*Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].*

Moscow: Nauka; 1986.

Pages: 292-293.

*Musculoskeletal System, Bone, Muscle; Endocrinology; Neurophysiology; Morphology  
Rats, Male  
Head-Down Tilt, Tail-Suspension; Immobilization; Adaptation; Psychology, Stress*

P650(15/88) Skuratov SA, Oganov VS, Shirvinskaya MA, Murashko LM, Silatsi T, Ser A, Papchak M.

***The effect of short-term weightlessness on skeletal muscle functions in pregnant rats and their offspring.***

In: Gazenko OG (editor).

*Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].*

Moscow: Nauka; 1986.

Pages: 294-295.

*Musculoskeletal System, Skeletal Muscle Functions  
Rats, Female, Reproductive Biology, Pregnancy; Developmental Biology, Neonate  
Space Flight, Short-term, COSMOS-1514*

## MUSCULOSKELETAL SYSTEM

P656(15/88) Stupakov GP, Kazeykin VS, Morozova NP.

***Predicting the occurrence of osteodystrophy in response to long-term weightlessness.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 364-366.

*Musculoskeletal System, Osteodystrophy, Prediction, Personnel Selection; Mineral Saturation; Metabolism, Rate*

*Rats; Dogs; Humans, Cosmonauts*

*Space Flight, Long-Term, COSMOS-610, -782, -936, -1129, Salyut-6, -7, Weightlessness Simulations*

P664(15/88)\* Kaplanskiy AS, Durnova GN, Sakharova ZF, Il'ina-Kakuyeva Yel.

***Histomorphological analysis of the bones of rats flown on the COSMOS-1667 biosatellite.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

21(5): 25-31; 1987.

[23 references; 11 in English]

*Musculoskeletal System, Bone, Tibia, Iliac, Lumbar Vertebrae; Morphology, Histomorphological Analysis Rats*

*Space Flight, Short-Term, COSMOS-1667*

P676(15/88)\* Mailyan ES, Burakova LB.

***Preservation of muscles in the study of bioenergetic effects of hypokinesia.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

21(5): 67-70; 1987.

[9 references; 2 in English]

*Musculoskeletal System, Muscle Tissue, Preservation*

*Rats*

*Hypokinesia, Laboratory Technique, Low Temperature*

## MUSCULOSKELETAL SYSTEM

### ISSUE 16

#### PAPERS:

P691(16/88)\* Il'ina-Kakuyeva Yel.

**[Study of] skeletal muscles of rats after a short-term space flight on the COSMOS-1667 biosatellite.**

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

21(6):31-35; 1987.

[13 references; 8 in English]

*Musculoskeletal System, Skeletal Muscles, Soleus, Biceps, Quadriceps, Gastrocnemius  
Rats, Males  
Space Flight, COSMOS-1667*

P692(16/88)\* Kaplanskiy AS, Sakharova ZF, Il'ina-Kakuyeva Yel, Durnova GN.

**Morphological study of early changes in the bones of rats exposed to simulations of weightlessness.**

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

21(6):36-39; 1987.

[13 references; 5 in English]

Note: See abstract P647 (Musculoskeletal System) in Digest issue 15.

*Musculoskeletal System, Bones, Tibia, Lumbar Vertebrae  
Rats, Male  
Weightlessness Simulation, Immobilization; Psychology, Stress; Tail Suspension*

P696(16/88)\* Belkaniya GS, Kurochkin YuN, Rakhmanov AS, Simavonyan KV, Dartsmeliya VA, Demin AN, Filenko VYe.

**Morphological concomitants of adaptation to an upright posture and walking erect in monkeys.**

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

21(6):50-54; 1987.

[15 references; 4 in English]

*Musculoskeletal System, Morphological Changes, Bone Minerals; Adaptation, Postural  
Monkeys, Rhesus Macaques  
Gravitational Biology, Upright Posture, Walking Erect*

## MUSCULOSKELETAL SYSTEM

P714(16/88) Glushko TA, Gusakova VA, Malova NG.

***Changes in intervertebral disk tissue in response to hypokinesia in rats varying in age***

Arkhiv Anatomii, Gistologii, i Embriologii.

XCIII(12): 50-55; 1987.

[7 references; 2 in English]

Authors' affiliation: Central Scientific Research Laboratory, Ukrainian Institute of Physician Training

*Musculoskeletal System, Intervertebral Disc  
Rats, Developmental Biology, Age Differences  
Hypokinesia, Immobilization, Short- and Long-Term*

### ISSUE 17

P756(17/88)\* Oganov VS, Rakhmanov AS, Morukov BV, Yanson KhA, Tatarinov AM, Zaychik VYe, Ternovoy SK, Cann C. (USSR, USA).

***Use of noninvasive methods to study the state of bone tissue under conditions of long-term hypokinesia.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(1): 30-33; 1988.

(24 references; 12 in English)

*Musculoskeletal System, Bone Tissue, Computer Tomography, Minerals  
Humans  
Hypokinesia With Head-Down Tilt, Physical Exercise, Pharmacological Countermeasures*

P757(17/88)\* Shvets VN.

***The effects of varying doses of alpha-hydroxymethyl-gamma-aminopropylidene biphosphonate on bone tissue of rats.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(1): 34-37; 1988.

(11 references; 9 in English)

*Musculoskeletal System, Bone Tissue, Osteotropic Effects  
Rats  
Alpha-Hydroxymethyl-Gamma-Aminopropylidene Biphosphonate, Osteoclasts*

## MUSCULOSKELETAL SYSTEM

P802(17/88) Lesnyak AT, Morukov BV, Bozhikov NV, Konstantinova IV.

***Function of immunocompetent cells which produce the osteoclast activating factor in subjects exposed to long-term hypokinesia and patients with local osteoporosis.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 87-88.

*Musculoskeletal System, Bone Tissues, Osteoclast Activating Factor; Immunology, Immunocompetent Cells, Hematology*

*Humans, Patients, Osteoporosis*

*Hypokinesia*

P806(17/88) Pankova AS, Zhvets VN, Kabitskaya OYe.

***The role of in preventing osteoporosis in rats exposed to hypokinesia.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 355.

*Musculoskeletal System, Osteoporosis*

*Rats*

*Hypokinesia, Immobilization, Countermeasures, Diphosphonate, Ethane-1-Hydroxy-1,1 Diphosphonic Acid*

### ISSUE 18

#### PAPERS:

P810(18/88) Volozhin AI, Stupakov GP, Druzhinina RA, Rogacheva IV, Polyakov AN.

***Pharmacological prevention of bone changes in hypokinesia and hypodynamia.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 31-32.

*Musculoskeletal System, Osteoporosis; Metabolism, Phosphorus, Calcium, Protein*

*Rats, Rabbits*

*Hypokinesia, Hypodynamia, Immobilization, Amputation, Pharmacological Countermeasures, Calcitonin, Retabolil*



## MUSCULOSKELETAL SYSTEM

P815(18/88) Triftanidi LA.

***The effect of hypokinesia on bone tissue.***

In: Gzenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 141-142.

*Musculoskeletal System, Histology, Bone Tissue, Restructuring, Osteoporosis*

*Rats*

*Hypokinesia, Immobilization*

P826(18/88) Gol'dovskaya MD, Shvets VN.

***Study of the association between changes in bone mass and number of hemopoietic stem cells.***

In: Gzenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 338-339.

*Musculoskeletal System, Bone Mass; .i.Hematology, Stem Cells*

*Mice*

*Osteoporosis, Disuse, Amputation; .i.Osteopetrosis, EHDA*

P855(18/88)\* Gol'dovskaya MD, Shvets VN.

***Relationships between changes in bone mass and number of hemopoietic stem cells.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(2): 91-93; 1988.

(14 references;8 in English)

[Note: Essentially same as preceding experiment]

*Musculoskeletal System, Spongiosa*

*Mice*

*Disuse Osteoporosis, Amputation; Osteosclerosis, EHDA*

## MUSCULOSKELETAL SYSTEM

P840 (18/88)\* Shvets VN, Pankova AS, Kabitskaya OYe.

***Osteotrophic effect of xydifon administered subcutaneously to rats during immobilization.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(2): 49-53; 1988.

(14 references; 6 in English)

*Musculoskeletal System, Osteotrophic Effects; Metabolism, Calcium Rats*

*Immobilization, Pharmacological Countermeasures, Xydiphon (Ksidifon)*

### MONOGRAPH:

M126(18/88) Stupakov GP, Kozlovskiy AP, Kazeykin VS.

Biomekhanika pozvonochnika pri udarnykh peregruzka v praktike aviatsionnykh i kozmicheskikh poletov.

Problemy kosmicheskoy biologii. Tom 56. [***Biomechanics of the spine in response to impact G-load in aircraft and space flight. Problems of space biology. Volume 56.***]

Moscow: Nauka; 1987.

[240 pages; 70 tables; 92 figures; 236 references]

**KEY WORDS:** *Musculoskeletal System, Spine, Impact G-Load, Space Flight, Biomechanics, Weightlessness, Osteoporosis, Mathematical Modeling*

### ISSUE 19

#### PAPERS:

P865(19/88)\* Maylyan ES, Chabdarova RN, Korzun Yel.

***Energy reactions in the skeletal muscles of rats after a short-term space flight on the COSMOS-1514 biosatellite.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(3): 55-58; 1988.

(6 references; 1 in English)

*Musculoskeletal System, Muscle Bioenergetics; Enzymology; Metabolism Rats, Female, Pregnant*

*Space Flight, COSMOS-1514, Short-term; Psychology, Stress*

## MUSCULOSKELETAL SYSTEM

### ISSUE 20

#### PAPERS:

P915(20/88) Buravkova LB, Mailyan ES.

***Dehydrogenase activity in skeletal muscles of rats after long-term exposure to weightlessness.***

Byulleten' Eksperimental'noy Biologii i Meditsiny.

CV(5): 538-540; 1988.

[11 references; 5 in English]

Authors' Affiliation: Institute of Biomedical Problems, USSR Ministry of Health

*Musculoskeletal System, Skeletal Muscles, Dehydrogenases*

*Rats*

*Space Flight, Long-Term, COSMOS-1129, Hypokinesia*

P919(20/88)\* Khristova LG, Gidikov AA, Aslanova IF, Belyayeva MG, Kirenskaya AB, Kozlova VG, Kozlovskaya IB. (Bulgaria, USSR)

***The effect of water immersion on motor unit potentials in human muscles.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(4): 39-43; 1988.

[25 references; 19 in English]

*Musculoskeletal System, Motor Unit Potentials*

*Humans*

*Water Immersion*

P923(20/88)\* Oganov VS, Skuratova SA, Murashko LM, Guba F, Takach O, Siladi T, Ser A, Rapchak M (USSR, Hungary).

***The effect of short-term space flights on physiological properties and composition of myofibrillar proteins of the skeletal muscles of rats.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(4): 50-54; 1988.

[17 references; 4 in English]

*Musculoskeletal System, Physiological Properties, Myofibrillar Proteins*

*Rats, Males, Females, Pregnant*

*Space Flight, Short-Term, COSMOS-1514, -1667*

## MUSCULOSKELETAL SYSTEM

P925(20/88)\* Burkovskaya TYe, Vorozhtsova SV.

***The effect of hypokinesia on the osteogenic and hemopoietic function of bone marrow in mice: Studied in ectopic bone.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(4): 61-65; 1988.

[15 references; 2 in English]

*Musculoskeletal System, Hematology, Bone Marrow, Osteogenic and Hemopoietic Functions, Ectopic Bone*

*Mice*

*Hypokinesia*

P926(20/88)\* Shvets VN, Pankova AS, Kabitskaya OYe.

***Prevention of osteoporosis by injecting rats with xydifon before or during hypokinesia.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(4): 65-70; 1988.

[13 references; 9 in English]

*Musculoskeletal System, Osteoporosis, Prevention*

*Rats*

*Hypokinesia, Pharmacological Countermeasures, Xydifon*

P935(20/88)\* Volozhin AI, Stupakov GP, Kazeykin VS.

***Microgravity induced changes in bones.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(4): 4-13; 1988.

[79 references; 45 in English]

*Musculoskeletal System, Bone Changes, Mineralization, Strength*

*Humans and Animals*

*Microgravity, Space Flight*

## MUSCULOSKELETAL SYSTEM

P944(20/88) Oganov VS.

***Neurotrophic influences in the adaptation of skeletal muscles and motor functions to weightlessness.***

In Nasledov GA (editor).

Mekhanizmy neyronal'noy regulyatsii myshechnoy funktsii [Mechanisms of neuronal regulation of muscle function.]

Leningrad: Nauka; 107-137; 1988

Author's Affiliation: Institute of Biomedical Problems; USSR Ministry of Health

*Musculoskeletal System, Skeletal Muscles, Fast- and Slow-Twitch, Motor Function, Neurophysiology, Neurological Control, Adaptation, Protein Turnover*  
*Rats, Dogs, Humans*

*Space Flight, Short-Term, Soyuz-9, COSMOS-605, -690, -936, -1129, Immobilization, Hypokinesia, Hypodynamia, Tail-Suspension, Amputation, Motor Patterns*

### MONOGRAPH

M137(20/88) Nasledov GA (editor).

Mekhanizmy neyronal'noy regulyatsii myshechnoy funktsii [***Mechanisms of neuronal regulation of muscle function.***]

Leningrad: Nauka; 1988.

[137 pages; 1 table; 21 figures; 501 references; 52 in English]

Affiliation [book]: Scientific Council on Problems of Biological Physics; I.M. Sechenov Institute of Evolutionary Physics, USSR Academy of Sciences

**KEY WORDS:** *Musculoskeletal System, Skeletal Muscles, Fast- and Slow-Twitch, Motor Function, Neurophysiology, Neurological Control, Adaptation, Protein Turnover, Rats, Dogs, Humans, Space Flight, Short-Term, Soyuz-9, COSMOS-605, -690, -936, -1129, Immobilization, Hypokinesia, Hypodynamia, Tail-Suspension, Amputation, Motor Patterns*

# NEUROPHYSIOLOGY

## ISSUE 15

### PAPERS:

P630(15/88) Solodovnik FA.

***Predicting Incidence of motion sickness in cosmonauts during space flight.***

In: Gzenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 123-125.

*Neurophysiology, Space Motion Sickness, Prediction  
Humans, Cosmonauts, Individual Differences  
Space Flight, Parabolic Flight*

P653(15/88) Kovalev VYu, Enes AE.

***Investigation of the postflight concentration of L-cystathionine in various areas of the brains of rats in an experiment on the COSMOS-1129 biosatellite.***

In: Gzenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 345-346.

*Neurophysiology, Brain, L-Cystathionine, GABA  
Rats  
Space Flight, COSMOS-1129*

P667(15/88)\* Krylov YuV, Ivanov VV, Podshivalov AA, Zaritskiy VV.

***On the role of optokinetic stimulation in vestibulospinal reflexes.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

21(5): 36-41; 1987.

[14 references; 3 in English]

*Neurophysiology, Vestibulospinal Reflexes  
Humans  
Optokinetic Stimulation, Step Test*

## NEUROPHYSIOLOGY

P668(15/88)\* Kondrachuk AV, Shipov AA, Sirenko SP.

**Membrane model of the cupula of the semicircular canals of the vestibular system.**

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

21(5): 41-47.

[24 references; 20 in English]

*Neurophysiology, Cupula*

*Mathematical Modeling*

*Membrane Model*

P674(15/88)\* Simonov LG, Tsaturyan AK, Saribekyan AS, Shmidt LG.

**Assessing "reserve spaces" in the cerebrospinal system using noninvasive measures.**

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

21(5): 62-65; 1987.

[10 references; 3 in English]

*Neurophysiology, Cerebrospinal System*

*Humans, Patients*

*Reserve Spaces, Noninvasive Measures, Ultrasound*

### ISSUE 16

#### PAPERS:

P702(16/88)\* Davydov BI, Ushakov IB, Fedorov VP.

**The combined effects of ionizing radiation and altered gas medium on the central nervous system.**

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

21(6):76-83; 1987.

[14 references; 9 in English]

*Neurophysiology, Central Nervous System*

*Dogs*

*Radiobiology, Gamma Irradiation, Hypoxia, Oxygen Breathing*

## NEUROPHYSIOLOGY

P720(16/88) Kornilova LN, Kasparanskiy RR, Bodo G, Antal P (Last two are Hungarian.)  
***The effects of weightlessness on vestibular and vestibulo-eye movement responses.***  
In: Gazenko OG (editor).  
Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy  
Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers  
delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].  
Moscow: Nauka; 1986.  
Pages: 76-77.

*Neurophysiology, Vestibular and Eye Movement Responses, Saccadic Movement, Nystagmus,  
Perception, Visual  
Humans, Cosmonauts  
Space Flight, Adaptation*

P721(16/88) Lapayev EV, Vorob'yev OA.  
***The problem of vestibular physiology in aerospace medicine and prospects for its  
solution.***  
In: Gazenko OG (editor).  
Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy  
Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers  
delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].  
Moscow: Nauka; 1986.  
Pages: 85-86.

*Neurophysiology, Vestibular Physiology, Motion Sickness; Perception, Spatial Disorientation, Sensory  
Conflicts; Personnel Selection; Body Fluids  
Humans, Cosmonauts, Pilots, Theoretical Article  
Operational Medicine, Aerospace Medicine, Acceleration, Countermeasures*

### ISSUE 17

P744(17/88) Krikun IS.  
***The role of the visual system in vestibular reactions.***  
In: Gazenko OG (editor).  
Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy  
Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers  
delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].  
Moscow: Nauka; 1986.  
Pages: 80-81

*Neurophysiology, Vestibular Reactions, Experimental Motion Sickness, Tolerance  
Humans  
Acceleration, Perception, Optokinetic Stimulation, Visual System*



## NEUROPHYSIOLOGY

P745 (17/88) Matsnev EI, Kuz'min MP, Zakharova LN.

***Evaluating the efficacy of vestibular, optokinetic, and optovestibular stimulation in the development of experimental motion sickness.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 95-96.

*Neurophysiology, Experimental Motion Sickness*

*Humans, Males, Individual Differences, Vestibular Tolerance, Personnel Selection, Vestibular, Optovestibular and Optokinetic Stimulation, Perception*

P746(17/88) Repin AA.

***Characteristics of vestibulo-eye movement interactions under conditions of unilateral monopolar stimulation of the labyrinths with galvanic current.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages:112-113.

*Neurophysiology, Head and Eye Movement Coordination, Perception, Gaze Fixation*

*Humans*

*Labyrinths, Galvanic Current*

P747(17/88) Krasnov IB, D'yachkova LN, Babichenko II, Anders VN.

***The ultrastructure of the cerebellar cortex in rats exposed to altered gravitational force.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 279-280.

*Neurophysiology, Brain, Cerebellar Cortex, Ultrastructure*

*Rats*

*Space Flight, COSMOS-1514, COSMOS-936; Artificial Gravity, Centrifugation;Hypergravity*

## NEUROPHYSIOLOGY

P754(17/88)\* Petrenko YeT.

**Changes in electroencephalograms during balance tests and exposure to rhythmic light flashes.**

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(1): 21-25; 1988.

(9 references; none in English)

*Neurophysiology, Electroencephalograms, Motor System*

*Humans, Individual Differences*

*Balance Tests, Perception, Visual Interference, Light Flashes*

P758(17/88)\* Shashkov VS, Drozd YuV, Yasnetsov VV, Galkina YeYu.

**On the role of opioid peptides in the pathogenesis of vestibulo-autonomic disorders.**

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(1): 37-40; 1988.

(17 references; 9 in English)

*Neurophysiology, Opioid Peptides*

*Cats, Rats*

*Vestibular Stimulation, Motion Sickness Induction, Pharmacological Countermeasures*

P760(17/88)\* Dmitriyev AS, Tropnikova GK.

**The effects of low frequency whole-body vertical vibration on the serotonergic system of the brain and spinal cord.**

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(1): 45-49; 1988.

(27 references; 13 in English)

*Neurophysiology, Brain, Spinal Cord, Serotonergic System*

*Rats, Female*

*Habitability and Environment Effects, Vibration, Whole-Body; Psychology, Immobilization Stress*

P773(17/88)\* Gora YeP.

**The effect of various schedules of voluntary control of respiration on electroencephalograms of humans exposed to acute hypoxic hypoxia.**

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(1): 82-84; 1988.

(7 references; 3 in English)

*Neurophysiology, Electroencephalograms*

*Humans*

*Hypoxia, Acute; Cardiovascular and Respiratory System, Respiration, Voluntary Control*

# NEUROPHYSIOLOGY

## ISSUE 18

### PAPERS:

P814(18/88) Tkachev VV, Relushkina GD.

***Study of parameters of ultraslow activity of the human brain during emotional stress from the point of view of space medicine.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 138.

*Neurophysiology, Ultraslow Activity, Brain  
Humans, Reaction Types  
Psychology, Stress*

P817(18/88) Yasnetsov VV, Shashkov VS.

***Participation of the endogenous opioid system in the genesis of vestibular and autonomic disturbances in motion sickness.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 159-160.

*Neurophysiology, Motion Sickness, Vestibular System, Endogenous Opioid Peptides  
Humans, Individual Differences, Endurance; Cats  
Acceleration, Pharmacological Countermeasures, Naloxon, Scopolamine*

P842(18/88)\* Davydov BI, Drobyshev VI, Ushakov IB, Fedorov VP.

***Morphological analysis of the reactions of the brains of animals to short term hyperoxia.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(2): 56-62 ; 1988.

(19 references; 2 in English)

*Neurophysiology, Brain Morphology  
Rats, Dogs  
Hyperoxia, Short-Term*

## NEUROPHYSIOLOGY

P844(18/88)\* Vasil'yev AA, Diyev AV, Grigorenko AB.  
***An automated vestibulometric device.***  
Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.  
22(2): 66-67 ; 1988.  
(5 references; none in English)

*Neurophysiology, Vestibular System  
Equipment and Instrumentation, Vestibulometric Device  
Acceleration*

P847(18/88)\* Yasnetsov VV, Drozd YuV, Shashkov VS, Bragin YeO, Popkova YeV, Vabishchevich AV.  
***Protective effects of certain peptides with respect to motion sickness in animals.***  
Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.  
22(2): 72-73 ; 1988.  
(1 reference; none in English)

*Neurophysiology, Motion Sickness  
Cats  
Protective Effects, Peptides*

### ISSUE 19

#### PAPERS:

P876(19/88)\* Bodo G, Elkan K, Bentse G. (Hungary)  
***The effect of sound on certain vestibular/autonomic reactions during motion sickness.***  
Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.  
22(3): 91-92; 1988.  
(4 references; 2 in English)

*Neurophysiology, Motion Sickness, Vestibular, Autonomic Responses  
Humans, Males; Individual Differences, Tolerance  
Sound*

## NEUROPHYSIOLOGY

P887(19/88)\* Orlova EKh, Pshennikova MG, Dmitriyev AD, Meyerson FZ.

***Increased concentration of immunoreactive opioid peptides in the brain and adrenals of rats adapted to physical exercise.***

Byulleten' Eksperimental'nyy Biologii i Meditsiny.

CV(2): 145-148; 1988.

[16 references; 7 in English]

Authors' affiliation: Scientific Research Institute for Pathological Physiology, Moscow All-Union Research Center for Mental Health, USSR Academy of Medicine

*Neurophysiology, Brain; Endocrinology, Adrenal; Opioid Peptides*

*Rats*

*Adaptation, Physical Exercise*

P892(19/88) Vavakin YuN, Zhekov IP, Zavadovskiy AF.

***The effects of various schedules of special tolerance-building exercises on increasing tolerance of head-down tilt.***

Teoriya i Praktika Fizicheskoy Kultury.

1988(3): 20-23.

[13 references; none in English]

Authors Affiliation: Institute of Biomedical Problems

*Neurophysiology, Tolerance, Head-Down Tilt*

*Humans, Males*

*Physical Exercise, Special*

P897(19/88) Mantsev EI, Gavrilin VK, Yakovleva IYa.

***Use of parallel swings to evaluate paired activity of the otolith system in healthy humans.***

Vestnik Otolaringologii.

1988(2): 28-33.

[17 references; 5 in English]

Authors' Affiliation: Institute of Biomedical Problems, USSR Ministry of Health

*Neurophysiology, Otolith, Paired Activity, Asymmetry*

*Humans, Males*

*Parallel Swings*

## NEUROPHYSIOLOGY

P898(19/88) Bronshteyn YuL, Raytses VS.

***Dynamics of vestibular nystagmus in neurogenic stress.***

Fiziologicheskiy Zhurnal.

34(3): 59-63; 1988.

[15 references; 1 in English]

Authors' Affiliation: Ivano-Frankovsk Medical Institute, Ukrainian Ministry of Health

*Neurophysiology, Nystagmus*

*Rabbits*

*Psychology, Stress*

### ISSUE 20

#### PAPERS:

P914(20/88) Trinus KF.

***Individual differences in variability of vestibular sensitivity as measured by subjective sensations and long-latency vestibular evoked potentials.***

Fiziologiya Cheloveka.

14(4): 562-568; 1988.

[21 references; 9 in English]

Author's Affiliation: Kiev Scientific Research Institute of Industrial Hygiene and Occupational Disease

*Neurophysiology, Vestibular Sensitivity, Evoked Potentials*

*Humans, Individual Differences*

*Acceleration, Threshold*

P919(20/88)\* Smirnov SA, Ayzikov GS, Kozlovskaya IB.

***The effect of adaptive biofeedback control on the severity of vestibular and autonomic symptoms in experimentally induced motion sickness.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(4): 35-39; 1988.

[14 references; 12 in English]

*Neurophysiology, Motion Sickness, Induced*

*Humans*

*Psychology, Biofeedback*

## NEUROPHYSIOLOGY

P924(20/88)\* Antipov VV, Tikhonchuk IB, Ushakov IB, Fedorov VP.

**State of synapses of rat telencephalons under exposure to space flight factors.**

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(4): 54-61; 1988.

[33 references; 3 in English]

*Neurophysiology, Telencephalon, Synapses*

*Rats*

*Space Flight Factors, Radiobiology, Irradiation, Head, Acceleration, Vibration, Microwaves, Hypoxia, Hyperoxia*

P933(20/88)\* Galle RR, Gusakova GA, Sabayev VV, Galle NN.

**Evaluation of the effectiveness of pharmacological countermeasures in preventing motion sickness.**

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(4): 90-93; 1988.

[16 references; 9 in English]

*Neurophysiology, Motion Sickness*

*Humans, Males*

*Pharmacological Countermeasures, Evaluation*

P936(20/88)\* Lychakov DV.

**Structural tolerance of vestibular receptors to exposure to space flight factors.**

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(4): 13-19; 1988.

[40 references; 15 in English]

*Neurophysiology, Vestibular Receptors, Damage Resistance*

*Fish, Amphibians, Larvae, Developmental Biology, Rats*

*Space Flight, COSMOS-782, -936, -1514, -1667*

P939(20/88) Belichenko PV.

**Quantitative analysis of dendritic thorns of pyramidal neurons in layer V of the sensorimotor cortex of rats flown on COSMOS-1667.**

Byulleten' Eksperimental'noy Biologii i Meditsiny.

CV(6): 736-738; 1988.

[11 references; 5 in English]

Author's affiliation: Brain Research Institute, USSR Academy of Medicine.

*Neurophysiology, Sensorimotor Cortex, Neurons, Dendritic Thorns*

*Rats*

*Space Flight, COSMOS-1667*

## NEUROPHYSIOLOGY

P940(20/88) Pozdnyakov OM, Babakova LL, Demorzhi MS, Il'ina-Kakuyeva Yel.

***Changes in the ultrastructure of motoneuron synapses in rats exposed to space flight factors.***

Byulleten' Eksperimental'noy Biologii i Meditsiny.

CV(6); 752-755; 1988.

[5 references; 2 in English]

Authors' affiliation: Institute of General Pathology and Pathological Physiology, USSR Academy of Medicine; Institute of Biomedical Problems, USSR Ministry of Health.

*Neurophysiology, Musculoskeletal System, Motoneuron Synapses, Ultrastructure  
Rats  
Space Flight, COSMOS-1667*

P942(20/88) Drozd YuV, Yasnetsov VV, Shashkov VS.

***On the vestibuloprotective characteristics of certain regulatory peptides.***

Byulleten' Eksperimental'noy Biologii i Meditsiny.

CVI(7): 50-52.

[15 references; 7 in English]

Authors' Affiliation: Institute of Biomedical Problems, USSR Ministry of Health

*Neurophysiology, Vestibular System, Motion Sickness  
Cats  
Pharmacological Countermeasures, Enzymology, Regulatory Peptides*



## NUTRITION

### ISSUE 15

#### PAPER:

P637(15/88) Bychkov VP, Kalandarov S, Kochetkova AN, Sedova YeA, Ushakov AS, Frumkin ML.  
***Diet of cosmonauts of the three Salyut-7 prime crews.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy докладov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages 220-221.

*Nutrition, Cosmonaut Rations*

*Humans, Cosmonauts*

*Space Flight, Salyut-7, Life Support Systems*

### ISSUE 16

#### PAPER:

P740(16/88) Balakovskiy MS, Ushakov AS, Pastushkova LKh, Spitsina NYe, Yuzhanskaya MG, Bogdanov NG, Gvozdova LG, Smirnova AN, Pyatnitskaya IN.

***Vitamin status of humans undergoing a 120-day period of hypokinesia with head-down tilt.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy докладov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 332-333.

*Nutrition, Vitamin Status; Metabolism, Adaptation; Enzymology*

*Humans*

*Hypokinesia with Head-Down Tilt; Countermeasures, Exercise*

## NUTRITION

### ISSUE 17

P752(17/88)\* Bychkov VP, Mosyakina LI, Khokhlova OS.

***The significance of nutrition in changes in carbohydrate and lipid metabolism in humans under nervous/emotional stress.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(1): 13-17; 1988.

(3 references; none in English)

*Metabolism, Carbohydrate, Lipid*

*Humans*

*Nutrition, Balanced Diet, Psychology, Stress, Hermetically Sealed Environment, Neurophysiology, Motion Sickness Induction; Hypokinesia With Head-Down Tilt, Physical Exercise, Pharmacological Countermeasures*

P797(17/88) Pletsityy KD, Davydova TV, Fomina VG, Sukhikh GT, Askerov MA, Gyu Cha Khak.

***Correction of immunological effects of stress by Vitamin A.***

Byulleten' Eksperimental'noy Biologii i Meditsiny.

CIV(11): 609-611; 1987.

[20 references; 9 in English]

Authors' affiliation: Scientific Research Institute of Pathology and Pathological Physiology, USSR Academy of Medicine

*Immunology*

*Mice*

*Nutrition, Vitamin A; Psychology, Immobilization Stress*

### ISSUE 18

#### PAPERS:

P848(18/88)\* D'yakonov MM, Kudrin ID, Stolyarova NA.

***Work capacity and bioenergetics in older individuals on reduced flight rations.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(2): 73-74; 1988.

(14 references; 2 in English)

*Immunology*

*Mice*

*Nutrition, Vitamin A; Psychology, Immobilization Stress*

## OPERATIONAL MEDICINE

### ISSUE 15

#### PAPERS:

P622(15/88) Anashkin OD, Andretsov VA, Vernadskiy VI, Bogdanov VI, Volgin VA, Demida BF, Kaniovskiy SS, Monastyrev AA, Pozdnyakov SV, Ponomarev SI, Talavrinov VA, Chirkov AA.

***Operational control of medical support during flights of "Salyut-7" visiting crews.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].  
Moscow: Nauka; 1986. Pages 5-6.

*Operational Medicine, Medical Support  
Cosmonauts  
Space Flight, Salyut-7, Visiting Crews*

### ISSUE 16

#### PAPERS:

P716(16/88) Bogomolov VV.

***Problems relating to emergency medical care on manned space flights.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].  
Moscow: Nauka; 1986.  
Pages: 23 - 25.

*Operational Medicine, Emergency Care, Resuscitation  
Humans, Cosmonauts  
Space Flight, EVA*

P717(16/88) Goncharov IB, Polevoy LG, Semeykina LA, Podobuyeva LP.

***Determining need for drugs on flights varying in duration.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].  
Moscow: Nauka; 1986.  
Pages: 41 - 42.

*Operational Medicine, Drug Supplies, Cardiovascular and Respiratory Systems, Neurophysiology,  
Motion Sickness, Body Fluids, Immunology, Human Performance  
Humans, Cosmonauts  
Space Flights, Short- and Long-Term, Soyuz, Salyut*

## OPERATIONAL MEDICINE

P723(16/88) Romanov AN, Vladimirov IV.

***Local hypothermia in treatment of acute diseases of the organs in the abdominal cavity in the practice of space medicine.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 116-117.

*Operational Medicine, Local Hypothermia; Gastrointestinal System, Diseases of Abdominal Cavity Organs*

*Humans, Cosmonauts*

*Space Flight, Hypokinesia with Head-Down Tilt*

### ISSUE 17

#### PAPERS:

P753(17/88)\* Iseyev LR, Tsvilashvili AS, Chadov VI.

***Analysis of clinical symptoms of high altitude-decompression sickness in barochamber studies.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(1): 17-21; 1988.

(6 references; 3 in English)

*Operational Medicine, Decompression, High Altitude, Symptomatology*

*Humans, Individual Differences*

*Barochamber Studies*

P800(17/88) Bogomolov BB, Tkachenko VA.

***Rehabilitative measures after long-term space flights in a health resort in the city of Kislovodsk.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 22-23.

*Operational Medicine, Rehabilitation*

*Humans, Cosmonauts*

*Post-Flight Recovery, Physical Exercise, Massage, Hydrotherapy, Heat, Nutrition*

## OPERATIONAL MEDICINE

### ISSUE 18

#### PAPERS:

P811(18/88) Vabishchevich AV.

***The potential use of long-acting peridural anaesthesia on long-term space flights.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 29-31.

*Operational Medicine, Peridural Anaesthesia, Long-Lasting Humans, Cosmonauts, Theoretical Article Space Flight*

P816(18/88) Chadov VI, Chernyakov IN, Iseyev LR, Polyakov VN, Prodin VI, Shishov AA.

***Study of the characteristics of decompression gas formation under conditions simulating weightlessness.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 154-155.

*Operational Medicine, Decompression Humans Weightlessness Simulation, Head-Down Tilt, Oxygen Breathing*

### ISSUE 19

#### PAPERS:

P871(19/88)\* Iseyev LR, Polyakov VN, Chadov VI.

***Comparative study of decompression-induced gas bubble formation and occurrence of high altitude decompression sickness.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(3): 75-82; 1988.

(18 references; 11 in English)

*Operational Medicine, Decompression Sickness, Gas Bubbles Humans, Males Barochamber Decompression, Head-Down Tilt, Exercise*

## OPERATIONAL MEDICINE

P872(19/88)\* Novotny I, Shul'ts I (Czechoslovakia).  
**Acute cerebrovascular diseases in pilots.**  
Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.  
22(3): 82-84; 1988.  
(6 references; 4 in English)

*Operational Medicine, Cerebrovascular Disease*  
*Humans, Pilots*  
*Disease Incidence*

P877(19/88)\* Draguzya MD, Lustin SI.  
**The effect of Diphenin on tolerance of animals to acute hypoxic hypoxia.**  
Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.  
22(3): 92-94 ; 1988.  
(4 references; 4 in English)

*Operational Medicine, Tolerance*  
*Rats, Male*  
*Hypoxia, Countermeasures, Dilantin*

P882(19/88) Bodrov VA, Kol'tsov AN, Sergeyev VA.  
**Methods and criteria for assessing exhaustion in flight personnel.**  
Voyenno-Meditsinskiy Zhurnal.  
1988(2): 61-64.  
[No references]  
Authors' affiliation: USSR Medical Corps

*Operational Medicine, Exhaustion, Chronic Fatigue*  
*Humans, Pilots*  
*Assessment Techniques*

## OPERATIONAL MEDICINE

P904(19/88)\* Morozova LV, Nikiforov VI, Titova LA.

***The effect of space-flight factors on the tissues and organs of the oral cavity in cosmonauts.***

In: Malinin VB, Kosmolinskiy FP, Kuznets Yel (editors).

Perspektivy Razvitiya Kosmicheskoy Biomeditsiny v Svete Idey K.E. Tsiolkovskogo [Prospects for the Development of Space Biomedicine in Light of the Ideas of K.E. Tsiolkovskiy] Proceedings of the XXth and XXIst Lecture Series dedicated to the scientific legacy and development of the ideas of K.E.

Tsiolkovskiy., Kaluga 1985, 1988. Section on Problems of Space Medicine and Biology.

Moscow: USSR Academy of Sciences: 1987.

Pages 131-137.

[11 references; 3 in English]

*Operational Medicine, Oral Cavity, Stomatological Parameters*

*Humans, Cosmonauts*

*Space Flight Factors*

### ISSUE 20:

#### PAPERS:

P910(20/88) Chadov VI, Iseyev LR, Polyakov VN.

***The hypobaric normoxic cabin atmosphere and minimum acceptable level of working pressures in an EVA space suit.***

In: Malinin VB, Kosmolinskiy FP, Kuznets Yel (editors).

Perspektivy Razvitiya Kosmicheskoy Biomeditsiny v Svete Idey K.E. Tsiolkovskogo [Prospects for the Development of Space Biomedicine in Light of the Ideas of K.E. Tsiolkovskiy] Proceedings of the XXth and XXIst Lecture Series dedicated to the scientific legacy and development of the ideas of K.E.

Tsiolkovskiy., Kaluga 1985, 1988. Section on Problems of Space Medicine and Biology.

Moscow: USSR Academy of Sciences: 1987.

Pages 113-123.

*Operational Medicine, Human Performance, EVAs*

*Humans, Cosmonauts*

*Habitability and Environment Effects, Cabin Atmosphere, Space Suit Pressure*

P911(20/88) Malkin VB, Landukhova NF, Shishov AA.

***A rapid method for training hypoxia [tolerance].***

In: Malinin VB, Kosmolinskiy FP, Kuznets Yel (editors).

Perspektivy Razvitiya Kosmicheskoy Biomeditsiny v Svete Idey K.E. Tsiolkovskogo [Prospects for the Development of Space Biomedicine in Light of the Ideas of K.E. Tsiolkovskiy] Proceedings of the XXth and XXIst Lecture Series dedicated to the scientific legacy and development of the ideas of K.E.

Tsiolkovskiy., Kaluga 1985, 1988. Section on Problems of Space Medicine and Biology.

Moscow: USSR Academy of Sciences: 1987.

Pages 38-43.

[7 references; none in English]

*Operational Medicine, Hypoxia Tolerance*

*Humans*

*Adaptation, Training Method*

## OPERATIONAL MEDICINE

P930(20/88)\* Portnov FG, Slutskiy LI, Vorob'yeva LF, Iyerusalimskiy AP, Vandan YaA, Sinef'shchikova MP.

**Reactions of rat dermal connective tissue to exposure to an electrostatic field.**

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(4): 81-84; 1988.

[15 references; 1 in English]

*Operational Medicine, Connective Tissue*

*Rats*

*Radiobiology, Electrostatic Field*

P931(20/88)\* Domashuk Yu. (Poland)

**Tolerance of +Gz acceleration by pilots with health problems.**

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(4): 84-86; 1988.

[9 references; 4 in English]

*Operational Medicine, Aviation Medicine, Acceleration Tolerance*

*Humans, Pilots, Patients*

*Population Study*



# PERCEPTION

## ISSUE 17

### PAPER:

P783(17/88) Ponomarenko VA, Vorona AA, Aleshin SV.

***On certain psychological mechanisms of spatial disorientation in the cabin of a flight vehicle.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986. Pages: 199-201.

*Perception, Spatial Disorientation; Human Performance*

*Humans, Pilots*

*Psychology, Flight Vehicle Cabin*

## ISSUE 19

### PAPER:

P905(19/88) Moseyeva II.

***On the perception of time under extreme conditions.***

In: Malinin VB, Kosmolinskiy FP, Kuznets Yel (editors).

Perspektivy Razvitiya Kosmicheskoy Biomeditsiny v Svete Idey K.E. Tsiolkovskogo [Prospects for the Development of Space Biomedicine in Light of the Ideas of K.E. ] Proceedings of the XXth and XX1st Lecture Series dedicated to the scientific legacy and development of the ideas of K.E. Tsiolkovskiy., Kaluga 1985, 1988. Section on Problems of Space Medicine and Biology.

Moscow: USSR Academy of Sciences: 1987.

Pages 72-76.

[9 references; 0 in English]

*Perception, Time Perception, Human Performance*

*Humans, Athletes, Hang Glider Pilots*

*Extreme Conditions, Psychology, Stress; Biological Rhythms, Rhythm Types*

## ISSUE 20:

### PAPER:

P918(20/88) Ivanov VV, Vorob'yev OA, Shipkov YuYu.

***The development of spatial orientation in the process of flight training.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(4): 31-34; 1988.

[21 references; 4 in English]

*Perception, Spatial Orientation*

*Humans, Pilots*

*Pilot Training*

## PERSONNEL SELECTION

### ISSUE 18

#### MONOGRAPH:

M127(18/88) Makharenko NV, Pukhov BA, Kol'chenko NV, Maydikov YuL,  
Kiyenko VM, Voronovskaya VI.

Osnovy professional'nogo psikhofiziologicheskogo otbora [*Principles of psychophysiological occupational selection*].

Kiev: Naukova Dumka; 1987.

[244 pages; 37 tables; 44 figures; 244 references; 10 in English]

Affiliation: A.A. Bogomolets Institute of Physiology; Ukrainian Academy of Sciences.

*KEY WORDS: Personnel Selection, Psychology, Human Performance, Neurophysiology, Group Dynamics, Perception*

### ISSUE 20:

#### PAPER:

P909(20/88) Voronin LI, Zhernavkov AF, Kalinichenko VV, Kravchenko VV, Ulyatovskiy NV.

*On the development of K.E. Tsiolkovskiy's ideas in the area of predicting human gravitational tolerance during space flight.*

In: Malinin VB, Kosmolinskiy FP, Kuznets Yel (editors).

Perspektivy Razvitiya Kosmicheskoy Biomeditsiny v Svete Idey K.E. Tsiolkovskiyogo [Prospects for the Development of Space Biomedicine in Light of the Ideas of K.E. Tsiolkovskiy] Proceedings of the XXth and XXIst Lecture Series dedicated to the scientific legacy and development of the ideas of K.E. Tsiolkovskiy., Kaluga 1985, 1988. Section on Problems of Space Medicine and Biology.

Moscow: USSR Academy of Sciences: 1987.  
Pages 12-16.

[4 references; none in English]

*Personnel Selection  
Humans, Cosmonauts  
Orthostatic Tolerance*

# PSYCHOLOGY

## ISSUE 15

### PAPERS:

P633(15/88) Polevoy LG.

***GABA derivatives: Types of effects and methods of evaluation with respect to the goals and requirements of space psychopharmacology.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 195-196.

*Psychology, Space Psychopharmacology, GABA Derivatives  
Humans, Cosmonauts  
Adaptation, Space Flight Factors*

P648(15/88) Shlyk GG, Korol'kov VI, Kozlovskaya IB, Shirvinskaya MA, Efimova MYa, Peshekhonov OF, Abramov ON, Polyakov VV.

***Use of parameters of instrumental reflexes to assess the adaptive capacities of the higher nervous system in monkeys on COSMOS biosatellites.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages:303-304.

*Adaptation, Space Flight, COSMOS; Neurophysiology, Higher Nervous System  
Primates, Monkeys  
Psychology, Learned Instrumental Reflexes; Stress*

P677(15/88)\* Savchenko NYa.

***The immediate and remote effects of nonlethal irradiation with accelerated high energy helium ions on maintenance of existing [learned] behavioral patterns [responses] and formation of new ones.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

21(5): 70-72; 1987.

[9 references; 1 in English]

*Psychology, Learned Behavior Patterns, Maze, Stress  
Rat,  
Radiobiology, Accelerated High Energy Helium*

## PSYCHOLOGY

P681(15/88)\* Durnova GN, Vorotnikova YeV, Prodan NG.  
***Comparisons of stress reaction in rats exposed to different simulations of certain effects of weightlessness.***  
Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.  
21(5): 79-81.  
[7 references; 6 in English]

*Psychology, Stress Response; Endocrinology, Adrenal, Thymus  
Rats, Male  
Weightlessness Simulations, Immobilization, Tail Suspension*

### ISSUE 16

#### PAPERS:

P726(16/88) Chatterjee RS (India), Kozlovskaya IB, Grigoryeva LS, Suvorov AS, Singatulin YeG, Vadkhavan JM (India), Dikshit MB (India).  
***Performance of Yoga on manned space flights.***  
In: Gazenko OG (editor).  
Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].  
Moscow: Nauka; 1986.  
Pages: 155-156.

*Psychology, Stress Response; Endocrinology, Adrenal, Thymus  
Rats, Male  
Weightlessness Simulations, Immobilization, Tail Suspension*

P727(16/88) Medvedeva YeYu.  
***Psychological work capacity as a function of individual differences in emotional traits under conditions of hypokinesia with head-down tilt.***  
In: Gazenko OG (editor).  
Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].  
Moscow: Nauka; 1986.  
Pages: 188-189.

*Human Performance, Psychological Work Capacity  
Humans, Males, Individual Differences, Personnel Selection  
Psychology, Emotional Traits; Hypokinesia with Head-Down Tilt*

# PSYCHOLOGY

## ISSUE 17

### PAPERS:

P799(17/88) Kolinichenko TB, Koreshkov AA, Kots AR, Makarov VI, Rudometkin NM.

***Diurnal periodicity of psychomotor reactions and speech parameters in individuals working on non-24 hour schedules.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages:179-180.

*Psychology, Psychomotor Reactions, Speech Parameters; Human Performance  
Humans*

*Biological Rhythms, Diurnal Rhythms, Non-24 Hour Sleep Wakefulness Cycles  
Space Flight, Salyut-7*

## ISSUE 18

### PAPERS:

P818(18/88) Zhdanov OI, Shpatenko YuA.

***Intentional self-regulation as one of the factors in on-the-job adaptation to extreme performance conditions.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 166-167.

*Human Performance, Adaptation*

*Humans*

*Psychology, Self-Regulation, Stress, Extreme Conditions*

### MONOGRAPHS:

M130(18/88) Furduy FI, Kaydarliu SKh, Shirby Yel, Nadvodnyuk AI, Mamalyga LM.

***Mekhanizmy razvitiya stressa: Stress, adaptsiya i funktsional'nyye narusheniya [Mechanisms underlying the development of stress: Stress, Adaptation and Functional Disorders.]***

**KEY WORDS:** *Psychology, Stress, Adaptation, Neurophysiology, Immunology, Endocrinology, Space Flight, Biological Rhythms, Pharmacological Countermeasures, Developmental Biology, Gastrointestinal System*

## PSYCHOLOGY

M131(18/88) Platonov KK, Gol'dshtein BM.

Osnovy aviatsionnoy psikhologii [*Principles of aviation psychology.*]

Moscow: Transport; 1987.

[222 pages; 9 tables; 19 figures; 32 references; none in English]

*KEY WORDS: Psychology, Aviation Psychology, Stress, Pilots, Human Performance, Small Groups, Training, Perception, Personnel Selection, Man- Machine Systems*

## RADIOBIOLOGY

### ISSUE 15

#### PAPER:

P682(15/88)\* Zubkova IV, Gutorova LV, Panferova NYe.  
***The effects of hypokinesia with head-down tilt and illumination conditions on sensitivity of skin of the upper body to UV-radiation.***  
Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.  
21(5): 81-82; 1987.  
[4 references; 3 in English]

*Radiobiology, UV Radiation, Skin Sensitivity  
Humans, Males  
Hypokinesia with Head-Down Tilt, Illumination*

### ISSUE 16

#### PAPERS:

P688(16/88)\* Gaubin Y, Delpoux M, Bionov J, Planel H, Gasset G, Pianezzi B, Burg M, Barbast A.  
(France).  
***The effects of space flight factors on biological subjects exposed on the COSMOS-1514 biosatellite.***  
Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.  
21(6):18-24; 1987.  
[7 references; 7 in English]

*Radiobiology, Biological Effects, Cosmic Radiation  
Botany, Rice, Tobacco; Brine Shrimp  
Space Flight, COSMOS-1514*

P710(16/88) Fedorova NL, Shafirkin AV, Osipova YeYu.  
***Quantitative description of radiation damage to the spermatogenic epithelium and rate of recovery after exposure to fast neutrons and gamma-irradiation.***  
Radiobiologiya.  
XXVII(4): 492-496; 1987.  
[8 references; 3 in English]

Authors' affiliation: Institute of Biomedical Problems, USSR Ministry of Health, Moscow.

*Reproductive Biology, Spermatogenic Epithelium  
Mice, Male  
Radiobiology, Radiation Damage, Fast Neutrons, Gamma Radiation*

## RADIOBIOLOGY

P711(16/88) Ul'yanova VA, Shafirkin AV, Farber YuV, Markelov BA.

***Characteristics of development of radiation damage and recovery processes in the hemopoietic tissue of mice after repeated exposure to fast neutrons and gamma-irradiation.***

Radiobiologia.

XXVII(4): 510-515; 1987.

[9 references; 2 in English]

Authors' affiliation: Institute of Biomedical Problems, USSR Ministry of Health, Moscow

*Hematology, Hemopoietic Tissue*

*Mice*

*Radiobiology, Fast Neutrons, Gamma Irradiation, Repeated Exposure*

P712(16/88) Antipov VV, Fedorov VP, Ushakov IB, Davydov BI.

***Changes in synapses after irradiation of the heads of rats.***

Radiobiologiya.

XXVII(5): 644-649; 1987.

[14 references; none in English]

Authors' affiliation: Institute of Biomedical Problems, USSR Ministry of Health, Moscow

*Neurophysiology, Synapses*

*Rats*

*Radiobiology, Gamma-Irradiation, Head*

P713(16/88) Gerasimenko VN, Portman AI, Bulanova M, Ivanov B, Mileva M.

***The effect of charged particles of relativistic energy on the frequency of chromosome aberrations in human blood lymphocytes. Dose -- response and RBE of protons, deuterons and helium ions.***

Radiobiologiya.

XXVII(6): 743-747; 1987.

[16 references; 1 in English]

Authors' affiliation: Institute of Biomedical Problems, USSR Ministry of Health, Moscow.

*Genetics, Chromosome Aberrations; Hematology, Lymphocytes*

*Humans*

*Radiobiology, Gamma Radiation, Protons, Deuterons, Helium Ions; Dose-Effect, RBE*



## RADIOBIOLOGY

P738(16/88) Kovalev YeYe, Sakovich VA.

***The concept of radiation risk in setting radiation safety standards for space flights.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 314-315.

*Radiobiology, Radiation Safety, Radiation Risk*

*Humans, Theoretical Article*

*Space Flight, Standard Setting*

### ISSUE 17

#### PAPERS:

P791(17/88) Fedorenko BS.

***Remote consequences of the biological effects of accelerated high energy charged particles.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages:326-327.

*Biological Effects, Remote Effects, Cataracts, Tumors*

*Rats*

*Accelerated HZE, Protons, Helium Ions, Gamma-Radiation*

P763 (17/88)\* Tartakovskiy VN, Daniyarov SB.

***Hemorrhaging and hemostasis in guinea pigs irradiated at high altitude.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(1): 53-57; 1988.

(24 references; 10 in English)

*Hematology, Hemorrhaging, Hemostasis*

*Guinea Pigs*

*Radiobiology, Irradiation, High Altitude*

## RADIOBIOLOGY

P769(17/88)\* Petrov VM, Logachev Yul, Karachevskiy SN, Bengin VV,  
Gvozdev IK, Kolesov GYa, Kudryavtsev MI, Martynov AI, Podorol'skiy AN,  
Sud SA, Devicheva YeA.

***An automated spectrometric system for studying radiation characteristics of cosmic radiation on Prognoz-9 satellites.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(1): 75-78; 1988.

(11 references; 4 in English)

*Radiobiology, Solar Proton Events  
Equipment and Instrumentation, Spectrometric System, Sosna  
Space Flight, Prognoz-9 Satellites*

### ISSUE 18

#### PAPERS:

P812(18/88) Il'in VA, Neumyvakin IP, Kondrat'yev II.

***The potential use of ultraviolet irradiation of the blood in the practice of space medicine.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 64-65.

*Operational Medicine, Space Flight, Immunology, Non-Specific Resistance  
Humans, Cosmonauts, Theoretical Article  
Radiobiology, Ultraviolet Radiation, Hematology, Blood*

P853(18/88)\* Gerasimenko VN, Zukhbaya TM.

***Properties of radiation damage and reparation in bone marrow of mice irradiated with 4GeV/nuclon helium ions and 9GeV protons.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(2): 85-87; 1988.

(9 references; 1 in English)

*Musculoskeletal System, Bone Marrow  
Mice  
Radiobiology, Helium Ions, Protons*

# RADIOBIOLOGY

## ISSUE 19

### PAPER:

P900(19/88) Akopova AB, Dudkin VYe, Karpov ON, Melkumyan LV, Potapov YuV, Rshtuni ShB.  
***Determination of the characteristics of cosmic radiation on Salyut-7 space station.***  
Kosmicheskoye Issledovaniye.  
XXVI(1): 162-165; 1988.  
[14 references; 4 in English]

*Radiobiology, Cosmic Radiation  
Dosimetry  
Space Flight, Salyut-7*

P906(19/88) Davydov BI, Antipov VV, Ushakov IB.  
***Some issues in radiation psychophysiology as applied to space flight practices.***  
In: Malinin VB, Kosmolinskiy FP, Kuznets Yel (editors).  
Perspektivy Razvitiya Kosmicheskoy Biomeditsiny v Svete Idey K.E. Tsiolkovskogo [Prospects for the Development of Space Biomedicine in Light of the Ideas of K.E. Tsiolkovskiy] Proceedings of the XXth and XXIst Lecture Series dedicated to the scientific legacy and development of the ideas of K.E. Tsiolkovskiy., Kaluga 1985, 1988. Section on Problems of Space Medicine and Biology.  
Moscow: USSR Academy of Sciences: 1987.  
Pages 28-31.  
[8 references; none in English]

*Psychology, Radiobiology, Radiation Psychophysiology, Human Performance  
Theoretical Paper, Paradigm Evaluation  
Space Flight*

## ISSUE 20

### PAPER:

P929(20/88)\* Malakhovskiy VN, Bobyr' BA, Bokk MM, Mikhaylichenko PP, Sergeyev AA.  
***Some physiological characteristics of the initial reaction to radiation and its apomorphine model.***  
Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.  
22(4): 77-81; 1988.  
[25 references; 8 in English]

*Human Performance; Psychology, Animal Learning  
Dogs, Humans  
Radiobiology, Early Response, Apomorphine*

## RADIOBIOLOGY

**MONOGRAPH:**

M138(20/88) Moldotashev B.

Deystviye vysokogo'rya i ioniziruyushchey radiatsii na organizm zhivotnykh i fiziologicheskiye mexhanizmy povyshennoy radiostoychivosti [***The effects of high altitudes and ionizing radiation on animals and physiological mechanisms underlying heightened radioresistance.***]

Frunze: Ilim; 1987.

[155 pages; 239 references]

Affiliation [book]: Institute of Biochemistry and Physiology, Kirghiz Academy of Sciences

**KEY WORDS:** *Radiobiology, Ionizing Radiation, Radioresistance; Adaptation, High Altitudes, Hematology, Hemopoiesis, Immunology*

# REPRODUCTIVE BIOLOGY

## ISSUE 16

### PAPER:

P724(16/88) Tikhomirov YeP, Prilepskaya VN, Aleksashkina NI, Samokhin VG.

***Tolerance of lower body decompression in women.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 136-137.

*Reproductive Biology, Reproductive Organs and Functions; Cardiovascular and Respiratory Systems, Functional State  
Humans, Women  
LBNP, Tolerance*

## ISSUE 20

### PAPERS:

P937(20/88) Serova LV, Tikhonova GP, Denisova LA, Pustynnikova AM, Ivanov YuV, Baykova OV.

***The state of spermatogenesis and reproductive function in rats after space flight on the COSMOS-1667 biosatellite.***

Paper delivered at the XIXth conference of the Permanent Working Group of Socialist Nations on Space Biology and Medicine within the Intercosmos Program, Havana, 5-12 April 1986.

Authors' Affiliation: Institute of Biomedical Problems, USSR Ministry of Health, Moscow.

*Reproductive Biology, Spermatogenesis, Reproductive Function  
Rats, Male  
Space Flight, COSMOS-1667*

P938(20/88) Denisova LA, SNetkova YeV.

***The effects of short-term space flights on the reproductive function in animals.***

Abstract of paper delivered to the XXth Conferences of the Permanent working Group of Socialist Countries on Space Biology and Medicine, Intercosmos, 6-10 June. Baranov Sandomersky, Poland.

Authors' Affiliation: Institute of Biomedical Problems, USSR Ministry of Health, Moscow.

*Reproductive Biology; Reproductive Function  
Rats; Male  
Space Flight, COSMOS-1887*

# SPACE BIOLOGY AND MEDICINE

## ISSUE 15

### MONOGRAPH:

M118(15/88) Gazenko OG, Pestov ID, Makarov VI.  
Chelovechestvo i Kosmos [**Humanity and Space**].  
Moscow: Nauka; 1987.  
[272 pages; 28 illustrations; 4 pages of references]  
Affiliation (book): USSR Academy of Sciences.

**KEYWORDS:** *Space Biology and Medicine, Human Performance, Psychology, Space Flight Research, Biospherics*

### CONFERENCE REVIEW:

CR8(15/88)\* Salivon SG.  
*Second All-Union Conference on "Physiology of extreme states and individual protection."*  
In: Kosmicheskaya Biologiy i Aviakosmicheskaya Meditsina.  
21(5): 86-89; 1987.

**KEY WORDS :***Space Biology, Space Medicine, Adaptation, Extreme Conditions, High Altitude, Decompression Sickness, Acceleration, Psychology, Stress, Human Performance, Individual Differences, Biofeedback, Pharmacological Countermeasures, Physical Exercise, Weightlessness Simulations, Hypokinesia, Immersion, Toxic Factors, Cosmonaut Training, Equipment and Instrumentation, Operational Medicine, Immunology, Endocrinology, Metabolism*

## ISSUE 16

### PAPERS:

P729(16/88) Grigoryan EN, Mitashov VI, Tuchkova SYa, Cherdantseva YeM.  
***Regeneration in tritons in space.***  
In: Gazenko OG (editor).  
Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].  
Moscow: Nauka; 1986.  
Pages: 268-269.

*Space Biology, Regeneration  
Amphibians, Tritons  
Space Flight, Weightlessness, Theoretical Article*

## SPACE BIOLOGY AND MEDICINE

P732(16/88)\* Il'in YeA, Anitpov VV.

***Future prospects for the development of space biology.***

In: Gazenko OG (editor).

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina: Tezisy dokladov VIII Vsesoyuznoy Konferentsii, Kaluga, 25-27 June 1986 [Space Biology and Aerospace Medicine: Abstracts of papers delivered at the Eighth All-Union Conference, Kaluga, 25-27 June 1986].

Moscow: Nauka; 1986.

Pages: 273-274

*Space Biology, Ecological Physiology; Life Support Systems, CELSS; Exobiology, Theoretical Article*

*Future Prospects, Biosatellites, Mir*

### ISSUE 18

#### MONOGRAPH:

M125(18/88) Verigo VV.

Systemnyye Metody v Kosmicheskoy Biologii i Meditsine. Problemy Kosmicheskoy Biologii. Tom 55. ***[Systems Methods in Space Biology and Medicine. Problems in Space Biology. Volume 55.]***

Moscow: Nauka; 1987.

[216 pages; 12 tables; 75 figures; 17 pages of references]

**KEY WORDS:** *Space Biology and Medicine, Simulation Modeling, Systems Theory, Mathematical Modeling, Homeostasis, Operational Medicine, Cardiovascular and Respiratory Systems, Body Fluids, Cytology, Immunology, Hematology, Life Support Systems, Metabolism, Calcium, Exobiology, Planetary Quarantine, Microbiology*

### ISSUE 19

#### PAPER:

P859(19/88)\* Talavrinov VA, Anashkin OD, Bagramov KhG, Volgin VA, Luk'yanchikov VI, Lyamin VR, Sergeyev AV, Turbasov VD, Chirkov AA.

***Anthropometric studies of the prime crews on Salyut-6 and -7 space stations.***

Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.

22(3): 22-27; 1988.

(17 references; 3 in English)

*Space Medicine, Anthropometric Parameters*

*Humans, Cosmonauts*

*Space Flight, Salyut-6 and -7*

## SPACE BIOLOGY AND MEDICINE

### MONOGRAPH:

M134(19/88) Malinin VB, Kosmolinskiy FP, Kuznets Yel (editors).  
Perspektivy Razvitiya Kosmicheskoy Biomeditsiny v Svete Idey K.E. Tsiolkovskogo [**Prospects for the Development of Space Biomedicine in Light of the Ideas of K.E. Tsiolkovsiy**]  
Proceedings of the XXth and XXIst Lecture Series dedicated to the scientific legacy and development of the ideas of K.E. Tsiolkovskiy., Kaluga 1985, 1988. Section on Problems of Space Medicine and Biology.  
Moscow: USSR Academy of Sciences: 1987.  
[139 pages]  
Affiliation (Book): USSR Academy of Sciences, Commission to Develop the Scientific Heritage of K.E. Tsiolkovskiy, K.E. Tsiolkovskiy State Museum on the History of Cosmonautics.

**KEY WORDS:** *.i.Space Biology and Medicine, Human Performance, Psychology, Radiobiology, Botany, Life Support Systems, Operational Medicine, Perception, Metabolism, Cardiovascular and Respiratory Systems, Immunology,*

### BOOK REVIEW:

BR14(19/88)\* Kositskii GI.  
Review of: Fiziologiya cheloveka v usloviyakh vysokogor'ya [**Human physiology under high altitude conditions**]; OG Gzenko, editor, Moscow: Nauka; 1987.  
Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina.  
22(3): 95-96 ; 1988.

**KEY WORDS:** *Space Biology and Medicine, Adaptation, High Altitudes, Operational Medicine, Personnel Selection, Cardiovascular and Respiratory Systems*



## SPACE INDUSTRIALIZATION

ISSUE 18

*MONOGRAPH:*

M128(18/88) Grishin SD, Leskov LV.

Industrializatsiya kosmosa: Problemy i perspektivy [*Industrialization of space: Problems and prospects.*]

Moscow: Nauka; 1987

[353 pages; 26 tables; 111 figures; 356 references]

*KEY WORDS: Space Industrialization, Materials Processing, Exobiology, Weightlessness*

## Key Word Index

## A

### A

Abdominal Cavity Organs 105  
Aberrant Cells 15  
Abiogenic Synthesis 41- 42  
Acceleration Tolerance 11, 13, 24, 25, 31, 62, 109  
Acetic Acid 52, 79  
**Adaptation 1 - 3**, 5, 18, 19, 21, 48, 55, 61, 72, 74, 75, 81, 83, 90, 93, 98, 102, 108,  
112, 114, 121, 123, 125  
Adrenal Gland 98, 113  
Adrenal Glands 12, 29, 36, 37, 38, 64, 75, 98  
Adrenalin 56  
Adrenergic Receptors 37  
Adrenergic Activity 29  
Adrenergic Effects 29  
Aerospace Medicine 93  
Age Differences 27, 84  
Age Structure 16  
Aging 16, 67  
Air Pollution 54  
Air-Traffic Control 71  
Aircraft Position 62  
Alertness 63  
Allergy 64  
Alpha-Hydroxymethyl-Gamma-Aminopropylidene Biphosphonate 84  
Alpha-tocopherol 16  
Altered Gravity 46  
Amino Acids 73  
Ammonia 54,73  
AMP, Cyclic 41  
Amphibians 34, 35, 100, 123  
Amplification, Gene 46  
Amputation 85, 86, 90  
Androgen System 39  
Anesthesia, Peridural 106  
Animal Learning 120  
Antarctic 1, 3  
Antiacceleration Suit 13, 61, 62  
Antihemolytic Effect 57,58  
Anthropometric Parameters 124  
Apomorphine 120  
*Arms 80*  
*Arabidopsis thaliana 15,17*  
Artificial Gravity 74, 94  
Assessment Techniques 107  
Athletes 3, 62, 66, 110  
Atmosphere 79  
Atmosphere Cabin 108  
Atmospheric Factors 9

## Key Word Index

A-B

Automated Monitoring Devices 4  
Auxin 16  
Automicroflora 78  
Autonomic Nervous System 53  
Autonomic Responses 97  
**Aviation Medicine** 4, 109, 115  
Aviation Psychology 115  
Aviation Performance 71

## B

Balance Tests 95  
Barochamber Studies 105, 106  
Bed Rest 30, 40  
Beets 69  
Beta-Adrenoblockade 22  
Biceps 83  
Biochemistry 74  
Biodegradation 54  
Bioenergetic Parameters 57  
**Biological Rhythms** 3, 5-7, 9, 30, 61, 110, 114  
Biologically Active Compounds 16  
Biomechanics 87  
**Bionics** 8  
Biosatellites, 24  
**Biospherics** 9, 41, 71, 74, 123  
Blood 11, 40; 74, 119; See Hematology Section  
Blood Flow Rate 25  
Blood Gases 31  
Blood Pressure 25, 30, 31  
Blood Volume 13  
**Body Fluids** 7, 11-14, 36, 48, 75, 93, 104, 124  
Bones 80, 81, 82, 83, 84, 85, 86, 89; See also Musculoskeletal System  
Bone Marrow 89, 119  
**Botany** 15-17, 69, 116, 125  
Brain 91, 94, 95, 96; 98 See also Neurophysiology  
Brain Development 33  
Brine Shrimp 116

## Key Word Index

C

### C

- C-Cell Systems 37
- Calcitonin 85
- Calcium 14, 85, 87, 124
- Calcium Metabolism 75
- Carbohydrates 103
- Carbon Dioxide 6, 28, 54, 69
- Carbon Monoxide 6, 28,59
- Cardiac Bioelectric Activity 27
- Cardiac Biomechanics 28
- Cardiac Contractility 27
- Cardiac Cycle 30
- Cardiac Output 31
- Cardiac Rhythm 18, 52
- Cardiac Volume 31
- Cardiovascular and Respiratory Systems** 2,3, 9, 11, **18-31**, 52, 60, 62, 71, 75, 95, 103, 122, 124, 125
- Cardiovascular Parameters 22
- Catabolic Metabolism 57
- Catecholamines 36, 37
- Cataracts 118
- Cats 95, 96, 97, 101
- Cell Growth and Differentiation 34
- Cell Biology 32
- CELSS 68, 69, 124
- Central Nervous System 92; See also Neurophysiology
- Centrifugation 21, 34, 35, 36, 74, 94
- Centripetal Force 72
- Cerebellar Cortex 94
- Cerebellar Neurons 32
- Cerebellum 34
- Cerebrospinal System 92
- Cerebrovascular Disease 107
- Cerebrum 26, 53
- Chemical Interactions 54
- Chilling 63
- Chlorella* 16
- Chromatic 46
- Chromosome Aberrations 15,117
- Chromosome Nondisjunction 45
- Chromosome Restructuring, Mutability 17
- Circadian Rhythms 5, 6; See Biological Rhythms
- Circulation 19, 20, 28, 29
- Clay 41
- Clinostatting 32, 46
- Closure 69, 70
- Clothing, Protective 62
- Coagulation 55, 56

## Key Word Index

C

Cold 7, 82  
Collagen 75, 81  
Computer Tomography 84  
Connective Tissue 81, 109  
Contractile Parameters 28  
Coordination, Head and Eye 94  
Coriolis Acceleration 23  
Corticosteroids 12  
Cosmic Radiation 116, 120  
Cosmonaut Performance 72  
Cosmonaut Rations 73, 102  
Cosmonaut Training 72, 123  
Cosmonauts 1, 2, 12, 18, 19, 20, 21, 23, 24, 30, 43, 51, 59, 64, 69, 72, 73, 77, 80, 82, 91, 93, 102, 104, 105, 106, 108, 111, 112, 119, 124  
COSMOS 112  
COSMOS-690 46, 90  
COSMOS-782, -45, 82, 100  
COSMOS-936 17, 43, 82, 90, 94, 100  
COSMOS-1129, 17, 37, 43, 45, 74, 82, 88, 90  
COSMOS-1514 1, 5, 12, 13, 17, 25, 32, 33, 34, 35, 36, 43, 46, 80, 81, 87, 88, 94, 100, 116  
COSMOS-1667 13, 20, 36, 37, 38, 43, 45, 46, 66, 81, 82, 83, 88, 100, 101, 122  
COSMOS-1887 122  
Countermeasures, 2, 4, 13, 27, 53, 62, 65, 85, 93, 102, 107  
*Crepis capillaris* 15, 17  
Critical Flicker Fusion Frequency 60  
Cupula 92  
Cystine 73  
Cytogenetics, Plant 16  
**Cytology** 3, 32, 34, 124

## D

Damage Resistance 100  
Decompression 105, 106  
Decompression Sickness 106, 123  
Deconditioning 21, 24, 29  
Dehydrogenases 88  
Dendritic Thorns 100  
Desynchronosis 6  
Deuterons 117  
**Developmental Biology** 12,17, 32 - 36, 81, 84, 100, 114  
Diagnostic Prediction 20  
Diet, Balanced 103; See also Nutrition  
Digestive Function 43  
Digestive Lactoflora 43  
Disease 105, 107  
Disorientation 93  
Disuse Osteoporosis 86  
Displays Effectiveness 62  
Diurnal Rhythms: See Biological Rhythms  
DNA 45  
Dogs 28, 55, 56, 82, 90, 92, 96, 120  
Dose-Effect Functions 117  
Dosimetry 120  
Drivers 63  
*Drosophila* 45, 46  
Drugs: See Pharmacological Countermeasures  
Drug Sensitivity 78  
Drug Supplies 104  
Dynamic Electrocardiograms 19  
Dysbacteriosis 44

## Key Word Index

## E

### E

Echocardiography 18  
Ecological Physiology 124  
Ecological Systems 78  
Ectopic Bone 89  
EHDA 86  
EEG 95  
EKG 20, 21 25, 31, 75  
Electric Field 36  
Electric Sleep 1  
Electrocardiography, See EKG  
Electrolyte Metabolism 75  
Electromagnetic Efficiency 80  
Electrostatic Field 109  
Embryogenesis 17  
Embryonic Development 33, 35  
Embryos 32, 34  
Emergency Care 104  
Emotional Traits 113  
Endocrine Stress 44  
**Endocrinology** 2,3, 7, 12, 29, **36 - 39**, 44, 48, 56, 64, 66, 67,74, 75, 98, 113, 114, 123  
Endurance 96  
Energy 3  
Engineering Physiology 71  
Enterosorbent 28  
Environmental Factors 71, 72  
Enzymatic Antioxidants 53  
**Enzymology** 7, 28, 37, **40**, 43, 45, 53, 76, 87, 101, 102, 119, 123  
Equipment and Instrumentation 4, 11, 14, 31, 51, 97  
Erythrocyte Membrane 57, 58  
Erythrocytes 55, 56, 57  
Eukaryotes 48  
EVA 18, 104, 108  
Evoked Potentials 99  
Evolution 49  
Excess Pressure Breathing 24  
Exercise See Physical Exercise  
Exhaustion 107  
Exogenous Contrapulsation 22  
**Exobiology** **43-44**, 124, 126  
Expired Air 77  
External Respiration 20, 30, 32  
Extracellular Fluid 11, 13, 14  
Extreme Conditions 7, 63, 74, 110, 114, 123  
Extreme Factors 2, 3  
Eye Movements 94

## Key Word Index

## F - G

### F

Far North 5  
Fatigue 3, 63, 107  
Fatty Acids 56  
Females 12, 13, 33, 34, 35, 36,37, 45, 46, 51, 80, 81, 87, 88, 95, 122  
Fertility 17  
Fetuses 12  
Fibrinolysis 55, 56  
Fish, Guppies 33, 100  
Fixation, Visual 94  
Flight Crews 20  
Flies 68  
Flight Conditions 76  
Flight Performance 60  
Fluid Electrolyte Metabolism 12, 13, 14  
Fluid Redistribution 11, 48  
Food Sources 68; See Nutrition  
Forced Exercise 64  
Frogs 34, 35  
Functional State 1, 60, 63, 122

### G

GABA 91, 112  
Galactic Radiation 15, 17, 65  
Galvanic Current 94  
Gametes 45  
Gamma Irradiation 46, 92, 116, 117, 118  
Gas Bubbles 106  
Gastrocnemius Muscle 83  
**Gastrointestinal System** 7, 43 - 44, 105, 114  
Genetic Monitoring 15  
**Genetics** 15, 17, 34, 45 - 47, 67, 117  
Germination Rate 16  
Glutaminic Acid 73  
Grass Frog 35  
Gravity 24, 34, 48, 72, 74, 94  
**Gravitational Biology** 1, 34, 35, 36, 46, 48, 83  
Group Coordination 6  
**Group Dynamics** 49, 63, 111,115  
Group Performance 49  
Growth Patterns 35  
Growth Rate 16  
Guinea Pigs 52, 118  
Guppies 33



## H

- Habitability and Environment Effects** 4, 28, 51-54, 59, 60, 71, 73, 95, 108  
Head 117  
Head-Down Tilt 23, 26, 43, 75, 80, 81, 98,1065  
Hearing, 49  
Heart Disease 30  
Heart Rate 30, 31  
Heat 52, 56, 105  
Heavy Ions 17  
**Hematology** 1, 3, 7, 55 - 58, 72, 74, 84, 85, 86, 117, 118, 119, 121, 124  
Hemodynamic Response 31  
Hemodynamics 18, 23, 24, 26, 31  
Hemopoiesis 3, 55, 58, 72, 89, 121  
Hemopoietic Tissue 117  
Hemorrhaging 118  
Hemostasis 55, 58, 118  
Hepatocytes 45  
Hermetically Sealed Environment 6, 28. 51, 52, 54, 66, 70, 73, 78, 79, 103  
Hibernation 7  
High Altitudes 1, 2, 3, 105, 118, 121,123, 125  
Higher Nervous System 112  
Higher Plants 15, 69, 70; See Plants; Botany  
Histology 82, 86  
Homeostasis 9, 74, 124  
Horizontal and Vertical Positions 21, 22, 40  
Horizontal Hypokinesia 75  
Hormonal Regulation 12  
Human Engineering 71  
**Human Performance** 2, 3, 4, 6, 29, 59 - 63, 68, 71, 72, 104, 108, 110, 111, 113, 114, 115,120, 123, 125  
Humans 2, 4, 5, 6, 7, 9, 11, 12, 13, 14, 18, 19, 20, 21, 22, 23, 24,25, 26, 27, 28, 29, 30, 31, 40, 43,44, 48, 50, 51, 52, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 68, 69, 71,72, 73, 74, 75, 76, 77, 80, 82, 84, 85, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 116, 117, 118, 119, 120, 124  
Humoral Immunity 64, 65  
Hybridoma 32  
Hydration 11, 13  
Hydrotherapy,105  
Hyperbaric Oxygen 53  
Hypercapnia 26, 55, 56  
Hypercapnic-Hyperoxic Test 22  
Hypergravity 21, 34, 35, 94  
Hyperoxygenation 56, 76, 96  
Hypersecretion 43  
Hypertension 31  
Hyperthermia 62  
Hypodynamia 85, 90

Hypokinesia 1,7, 14, 25, 27, 29, 30, 38, 40, 43, 56, 74, 75, 80, 82, 84, 85, 86, 88, 89, 90, 102, 105, 123  
Hypokinesia with Head-Down Tilt 11, 13, 26, 27, 31, 56, 57, 60, 62, 64, 65, 66, 73, 74,75, 76, 80, 84, 98, 102, 103, 105, 106, 113, 116  
Hypokinesia With Head-Down Tilt, Long-term 65, 74, 75, 76  
Hypothalamus 38, 64  
Hypothalamus-Pituitary System 36  
Hypothermia, Regional 57, 105  
Hypoxia 1, 2, 3, 27, 55, 56, 92, 95, 100, 107, 108  
HZE Particles 15, 112,118, 116, 117, 118, 119

**I**

Iliac 82  
Illumination 116  
Immersion 11, 13, 21, 23, 88, 123  
Immobilization 29, 38,37, 39, 43, 45, 56, 58, 64, 73, 74, 80, 81, 83, 84, 85, 86, 87, 90, 95, 103, 113  
Immune Status 66  
Immune Surveillance 67  
Immunocompetent Cells 85  
Immunoglobulins 64  
**Immunology** 3, 64-67, 85,103, 104, 114, 119, 121, 123, 124, 125  
Impact, 48, 87, 113, 123  
Individual Differences 3, 4, 19, 24, 25, 26, 31, 58,91, 94, 95, 96,97, 99, 105  
Information Processing 49  
Intervertebral Disc 84  
Intestinal Microflora 44  
Interaction Style 50  
Interstitial Fluid 11  
Intracellular Fluid 11  
Ionizing Radiation 121  
Iron 55  
Irradiation 65, 110, 116-121  
Ischemic Heart Disease 26, 31  
Isolation 7, 26, 50, 60, 61  
Isometric Exercise 26  
Individual Differences 58

## Key Word Index

K-L

### K

Killer Cells, Normal 64

### L

Labyrinths 94

Larva, 68, 100

LBNP 12,18, 23, 122

L-Cystathionine 91

Learned Behavior Patterns 112

Learned Instrumental Reflexes 112

Lettuce 15, 17, 69

Leu-Enkephalin 58

**Life Support Systems** 14, 17, 52, 68 - 70, 78, 79, 102, 124, 125

Light Flashes 95

Lipids 27, 103

Lipid Peroxidation 40, 73

Lipoproteins 76

Liver 14, 40

Local Radiation 41

Long-term Space Flights 2, 15, 16, 18, 19, 20, 21, 27, 30, 31, 43, 48, 60, 64, 65, 72 ,  
82, 84, 88, 104

Long-term Irradiation 65

Longitudinal Study 21

Lower Body Negative Pressures: See LBNP

Lumbar Vertebrae 82, 83

Lymphatic Organs 46

Lymphocytes 1, 117

## Key Word Index

## M

### M

- Macaca mulatta* 5, 20, 25, 35, 80, 83  
Males 6, 12, 13, 14, 20, 21, 22, 23, 25, 26, 27, 29, 31, 34, 35, 36, 37, 38, 39, 40, 45,  
46, 51, 55, 57, 58, 59, 60, 61, 64, 76, 66, 74, 75, 76, 81, 83, 88, 94, 97, 98, 100, 106,  
107, 113, 116, 122  
Man -- Higher Plant System 70  
**Man-Machine Systems** 4, 8, 61, 71, 72, 115  
Massage 105  
Materials Processing 126  
**Mathematical Modeling** 5, 8, 9, 18, 31, 71, 72, 87, 92, 124  
Maze 112  
Medical Support 104  
Medullary Substance 38  
Melanin-Melanoidin Catalysts 41  
**Metabolism** 1, 2, 7, 12, 13, 27, 33, 40, 43, 56, 57, 71, 73-77, 82, 85, 87, 102, 103,  
123, 124, 125  
Metabolites, Volatile 77  
Methionine 73  
Mg<sup>2+</sup>-ATPase myosin 21  
Mice 52, 58, 64, 65, 86, 89, 103, 116, 117, 119  
Microbial Processing 69  
**Microbiology** 2, 16, 43, 44, 54, 69, 70, 78 - 79, 124  
Microclimate 68  
Microflora 44, 70, 79  
Micromethod 14  
Microorganisms, Conditionally Pathogenic 78  
Microwaves 100  
Mineral Balance 76  
Mineralization, 89  
Minerals 27, 82, 83, 84, 89  
Mir 124  
Mitosis 15, 16  
Mold 79  
Monkeys 5, 11, 25, 80, 83, 112  
Morphology 16, 36, 81, 92, 83  
Monotony 60, 64  
Mother-Fetus System 33  
Motion Sickness 1, 6, 7, 23, 48, 91, 93, 94, 95, 96, 97, 99, 100, 101, 103, 104  
Motoneuron Synapses 101  
Motor Function 90, 95  
Motor Patterns 90  
Motor Unit Potentials 88  
Multicharged Ions 17  
Multicellular Animals 48  
Multiple Flights 21  
Muscles 81, 82, 87, 90 See also Musculoskeletal System; Individual Muscle Names  
Muscle Bioenergetics 87

## Key Word Index

## M-N

**Musculoskeletal System** 2, 3, 28, 35, 48, 65, 73, 75, **80 - 90**, 101, 119  
Mutations 15,17, 47  
Myocardial Actomyosin 21  
Myocardium 18, 21, 28

## N

Natural Aging 16  
Navigation, 8  
Neonates 12, 81  
**Nutrition**  
Neurochemicals 38  
Neurocirculatory Dystonia 22, 40, 55  
Neurocytes 53  
Neurons 100  
**Neurophysiology** 1, 2, 3, 6, 7, 8, 23, 32, 33, 34, 38, 48, 52, 53, 61, 67, 72, 74, 81, 90,  
**91 - 104**, 111, 112, 114, 117  
Nondisjunction of Sex Chromosomes 46  
Noninvasive Measures 92  
Nonspecific Resistance 66, 119  
Nontraditional Food Sources 68  
Nootropic Drugs 61  
Nucleic Acids 1, 33, 46  
Nucleotides 41, 42  
**Nutrition** 4, 14, 27, 68, 70, 73, 75, 76, **102 - 103**, 105  
Nystagmus 93, 99

## Key Word Index

O

O

Occlusion Cuffs 13  
Older Individuals 25  
Olfaction 49  
Onion, Welsh 16  
**Operational Medicine** 3, 4, 20, 23, 28, 31, 48, 60, 61, 69, 78, 93, 104 - 109, 119, 123, 124, 125  
Operator Performance 60., 61, 62, 63  
Opioid Peptides 58, 95, 96  
Optokinetic Stimulation 91, 93, 94  
Oral Cavity 108  
Orchids 16  
Orthostatic Intolerance 21, 26, 48, 60, 11  
Orthostatic Reflex 29  
Osteoclast Activating Factor 85  
Osteoclasts 84  
Osteodystrophy 82  
Osteogenesis 89  
Osteopetrosis 86  
Osteoporosis 65, 85, 86, 87, 89  
Osteosclerosis 86  
Osteotrophic Effects 84, 87  
Otolith 92, 98  
Otolith Membrane 72  
Oxidative Enzymes 40  
Oxygen Inhalation 22  
Oxygen Breathing 57  
Otolith 92, 98  
Oxygen Breathing 92, 106

## Key Word Index

## P

### P

- Parabolic Flight 91
- Pathogenic Microorganisms 79
- Patients 9, 22, 25, 26, 30, 31, 40, 55, 65, 85, 92, 109
- Peptides 41, 97, 101; See also Opioid Peptides
- Perception** 4, 8, 60, 93, 94, 95, **110**, 111, 113, 115, 125
- Personal Hygiene 69
- Personnel Selection** 3, 4, 57, 82, 93, 94, **111**, 113, 115, 125
- Pharmacological Countermeasures 2, 4, 27, 60, 61, 74, 84, 85, 87, 89, 95, 96, 100, 101, 103, 104, 107, 114, 123
- Phosphorus 85
- Physical Exercise 13, 18, 19, 22, 23, 24, 26, 27, 30, 40, 56, 62, 66, 73, 84, 98, 102, 103, 105, 106, 123
- Physical Work Capacity 19, 29, 62, 63, 68, 80
- Pharmacological Countermeasures Physical Exercise
- Pilot Trainees 62
- Pilot Training 110
- Pilots 4, 6, 22, 24, 26, 53, 60, 58, 62, 76, 80, 110, 115
- Planetary Quarantine 124
- Primates 112
- Plants 68, 69, 70 See also Botany
- Polar Day and Night 1
- Polar Personnel 1
- Polymers 52, 54
- Population Dynamics 16
- Population Study 109
- Positive Pressure Breathing 24
- Posture 83
- Potassium 14, 52
- Postnatal Development 35
- Prebiotic Evolution 48
- Pregnancy 1, 12, 13, 33, 34, 35, 36, 46, 80, 81, 87, 88
- Prenatal Ontogenesis 35
- Primates 5, 11, 20, 25, 35, 80, 83, 112
- Probability 72
- Prognosis 20
- Prognoz-9 Satellites 119
- Prokaryotes 48
- Propanol 58
- Prophylactic Detoxification 28
- Protease 28
- Protein 33, 64, 74, 93, 85, 88, 95
- Protein Precursors 41
- Protein Turnover 90
- Protons 117, 118, 119
- Provocative Tests 19, 23, 48
- Psychological Work Capacity 59, 62, 63, 68, 113

## Key Word Index

## P-Q

**Psychology** 2, 6, 37, 38, 43, 56, 58, 60, 61, 63, 64, 73, 76, 81, 83, 87, 95, 96, 99, 103, 110, 111, 112, 113, 114, 120, 123, 125; See also Stress, Perception, Human Performance

Psychomotor Performance 6, 114

Psychopharmacology 112

Psychophysiology 120

Psychotropic Drugs 60

Public Health 9

## Q

Quadriceps, 83



## Key Word Index

## R

### R

- RBE 117
- Rabbits 52, 85, 99
- Radiation Damage 116
- Radiation Risk 118
- Radiation Safety 118
- Radiation Safety Standards 72
- Radiobiology** 2, 3, 15, 17, 41, 46, 65, 72, 74, 92, 100, 109, 112, **116-121**, 125
- Radioresistance 121
- Radiotracer System 11
- Rana temporaria* 34
- Rats 2, 12, 13, 14, 21, 27, 28, 29, 32, 33, 34, 35, 36, 37, 38, 39, 40, 43, 45, 46, 51, 52, 53, 56, 64, 66, 68, 73, 74, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 94, 95, 96, 98, 100, 101, 107, 109, 112, 113, 117, 118, 122
- Readaptation 19, 75, 105
- Reclaimed Water 14, 52, 70
- Reentry 48
- Regeneration 123
- Regional Vascular Effects 29
- Relaxation 63
- Renal Physiology, 14
- Reoxygenation 27
- Replication 45
- Reproductive Biology** 1, 12, 33, 34, 35, 37, 39, 45, 46, 80, 81, 116, **122**
- Reserve Spaces 92
- Resistance, Immunological 3
- Resistance to Respiration 22
- Respiration 5:, 122, 124 See Cardiovascular and Respiratory Systems
- Respiration Regulation 26
- Respiratory Disease 9
- Respiratory Function 22
- Restraint 29, 38
- Resuscitation 10
- Rhesus Monkeys: See *Macaca mulatta*
- Rice 116
- RNA, rDNA 46
- RNA-Synthesis 45

## Key Word Index

## S

### S

- Saccadic Movements, 93
- Safety 51, 72
- Salivary Glands 37
- Salt 11
- Salt Excretion 7
- Salyut-5,17
- Salyut-6 2, 15, 16, 17, 30, 45, 124
- Salyut-7 2, 12, 15, 16, 17, 18, 20, 23, 30, 42, 43, 59, 64, 68, 80, 102, 104, 114, 120, 124
- Schedule, Inverted 5: See also Work-Rest Schedules
- Seeds 15, 16, 17
- Selection 25: See also Personnel Selection
- Self Regulation 63, 114
- Sensorimotor Cortex 100
- Sensory Conflicts 1, 93
- Self-Regulation 114
- Sensory Physiology 49
- Serotonergic System 95
- Serum Enzymes 40
- Serum Proteins 13
- Sex Differences 13, 46
- Shift Work 6
- Short-term Space Flight 5, 11, 16, 19, 21, 36, 37, 64, 81, 82, 84, 87, 88, 90, 104
- Signal Detection 63
- Skeletal Development 35
- Skeletal Muscles 80, 81, 83, 88, 90; See also Muscles, Musculoskeletal System, Individual Muscle Names
- Skin and Body Temperature 5
- Skin Sensitivity 116
- Sleep 7
- Sleep Deprivation 61, 63
- Sleep, Electric 1
- Sleep Wakefulness Cycles 114
- Small Groups 50
- Sodium, 14, 52
- Solar Proton Events 119
- Solar Radiation 9
- Soleus, 83
- Sound 97
- Soyuz, 104
- Soyuz-2 2
- Soyuz-5 59
- Soyuz -7 59
- Soyuz-9 90
- Soyuz-16 17
- Soyuz- T 59

## Key Word Index

## S

Soyuz-T-13 23

Soyuz-T-14 23

**Space Biology and Medicine 123 - 125** (Used as a classifier only for material too broad or varied to fit elsewhere,)

Space Flight 1, 2, 5, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 23, 25, 30, 32, 33, 34, 35, 36, 37, 38, 42, 43, 45, 46, 47, 48, 55, 59, 64, 66, 68, 72, 73, 77, 78, 80, 81, 82, 83, 87, 88, 89, 90, 91, 93, 94, 100, 101, 102, 104, 105, 106, 112, 114, 116, 118, 119, 120, 122, 123, 124

Space Flight Factors 1, 65, 100, 108, 112

Space Flight Simulation 26

**Space Industrialization 126**

Space Motion Sickness: See Motion Sickness

Space Suit Pressure 108

Spacecraft 69, 71, 72, 78

Spacecraft Atmosphere 108

Spacecraft Cabins 78, 110

Spacecraft Control Systems 72

Spacecraft Design 71

Spatial Disorientation 110

Spatial Orientation 8

Speech Parameters 114

Spermatocytes 34

Spermatogenesis 122

Spermatogenic Epithelium 116

Spinal Cord 95

Spine 87

Spleen 1, 66

Spongiosa 86

Sports 3, 31

Steroids 66

Stem Cells 86

Step Test 91

Stomatological Parameters 108

Stress 2, 6, 7, 37, 38, 43, 48, 56, 58, 61, 64, 73, 76, 80, 82, 83, 85, 86, 87, 90, 95, 96, 99, 103, 105, 110, 112, 113, 114, 115, 123: See also Immobilization

Stress Resistance 6

Striatum 64

Sulphur Hexafluoride 51

Submandibular Glands 37, 74

Survival 35

Sympathetic-Adrenal System 37

Synapses 100, 117

Systems Theory, 124

## Key Word Index

## T

### T

- T-Lymphocytes 64, 65
- Tail-Suspension 81, 83, 90, 113
- Telencephalon 100
- Temperature 15
- Temperature and Humidity Fluctuations 41
- Tests, Deceleration 48
- Thermal Energy 42
- Thymus 66, 113
- Thyroid 37
- Tibia 82, 83
- Tilt Tests 21, 26, 30, 31, 60
- Time Perception 110
- Tissue Oxygenation 27
- Tissue Preservation 82
- Tobacco 116
- Tolerance 93, 97, 98, 107, 108, 122 See also factor being tolerated
- Tolerance, Nonspecific 2
- Tortoises 46
- Toxic Effects 53, 54, 123
- Toxicology 51
- Tracking 59, 61, 63, 97
- Training 108, 115
- Transpiration Water 69
- Tritons 123
- Tumors 118

## Key Word Index

## U - V - W

### U

Ultraslow Activity, Brain 96  
Ultrasound 92  
Ultrastructure 94, 101  
Ultraviolet Radiation 41, 116, 119  
Upright Position 31, 83  
Urea 52

### V

Variability 47  
Vestibular System 93, 94, 95, 96, 97, 99, 100  
Vestibuloautonomic Stimulation 23  
Vestibulometric Device 97  
Vestibulospinal Reflexes 91  
Vestibular System 101  
Vibration 53, 60, 95, 100  
Vigilance 60  
Visiting Crews 104  
Vision 49  
Visual 93, 95  
Vitamin A 103  
Vitamin D 14, 27, 75  
Vitamin K 14  
Vitamin Status 102  
Voluntary Control 95  
Voskhod 59

### W

Walking Erect 83  
Wash Water 51  
Waste Utilization 69  
Water: See Reclaimed Water  
Weightlessness 46, 87, 89, 113, 123, 126; See also Space Flight  
Weightlessness Simulations 11, 82, 83, 106, 113, 123  
Well-being 63  
Welsh Onion 16  
Wheat 69  
Women 63  
Work Capacity See Physical or Psychological Work Capacity  
Work-Rest Schedules 6, 61

1. Report No. NASA CR-3922(25)		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle USSR Space Life Sciences Digest - Index to Issues 15-20				5. Report Date April 1989	
				6. Performing Organization Code	
7. Author(s) Lydia Razran Hooke, Editor				8. Performing Organization Report No.	
				10. Work Unit No.	
9. Performing Organization Name and Address Lockheed Engineering and Sciences Company 600 Maryland Avenue SW, Suite 600 Washington, DC 20024				11. Contract or Grant No. NASW-4292	
				13. Type of Report and Period Covered Contractor Report	
12. Sponsoring Agency Name and Address Office of Space Science and Applications National Aeronautics and Space Administration Washington, DC 20546				14. Sponsoring Agency Code	
				15. Supplementary Notes	
16. Abstract <p>This document provides an index to issues 15-20 of the USSR Space Life Sciences Digest. There are two sections. The first section lists bibliographic citations of abstracts in these issues, grouped by topic area categories. The second section provides a key word index for the same abstracts.</p>					
17. Key Words (Suggested by Author(s)) space life sciences    space flight aerospace medicine    experiments space biology            USSR space flight simulations			18. Distribution Statement Unclassified - Unlimited Subject Category 51		
19. Security Classif. (of this report) Unclassified		20. Security Classif. (of this page) Unclassified		21. No. of Pages 156	22. Price A08