

## Tuesday, June 27, 2006

12.00	Registration at Hotel Beatriz	
14.30 – 15.00	Bus transport from the Hotel Beatriz to Toledo Center, for the first day afternoon-evening session in the Main Auditorium of the University of Castilla-La Mancha (“San Pedro Martir” Building).	
15.00 – 16.00	Welcome <i>Marco, R.</i>	
	<u>Plenary Session 1 - Overview of the Soyuz Missions (01)</u> <i>Chairs: Marco, R. ; Pérez-Carro, A.</i>	
	<i>Heppener, M. (ESA)</i>	
16:00 – 18:50	<u>Plenary Session 2 - Science in the ISS (02)</u> <i>Chairs: Kroesen, G. ; Medina, F.J.</i>	
16:00 – 16:20	From Cassiopeia to Delta: ESA Astronauts' On Board and On Ground Operational Experiences During the ISS Soyuz Missions 2001-2004 <i>Duque, P.; et al. ....</i>	9
16:20 – 16:40	Diffusive Mass Transport in Solution Crystal Growth. Lessons Learned in Microgravity <i>Otalora, F. ....</i>	10
16:40 – 17:00	First Observations of Sprites from the International Space Station <i>Blanc, E.; et al. ....</i>	11
17:00 – 17:30	Coffee break	
17:30 – 17:50	Radiation and its Impact to Human Spaceflight <i>Reitz, G. ....</i>	12
17:50 – 18:10	Peripheral Arterial Flow During Stand, Mental, and Respiratory Tests Pre and Post Taxi Flights <i>Arbeille, P.A.; et al. ....</i>	13
18:10 – 18:30	Life Science Research in Space: Risks and Chances for Young Scientists <i>Horn, E. ....</i>	15
18:45 – 20:30	<u>Plenary Session 3 - Utilisation Achievements and Plans of ISS International Partners (03)</u> <i>Chairs: Duque, P. ; de Groot, R.</i>	
18:45 – 19:10	The Scientific Biomedical Program Realization on ISS Russian Segment in 2001-2005 <i>Baranov, V.M. et al (IBMP Russian Federation).....</i>	14
19:10 – 19:35	NASA Utilization of ISS – Past, Present and Future- <i>Uri, J. (NASA, USA).....</i>	16
19:35 – 20:00	Current Status of the Human Space Program in Japan -Utilization Plan of International Space Station- <i>Mukai, C. (JAXA, Japan) ....</i>	17
20:05 – 20:30	Canadian Utilization Plan of the International Space Station <i>Beland, S. (CSA, Canada)</i>	

20:45 – 22:00 Opening Ceremony followed by a reception offered by the Castilla-La Mancha Regional Government. Representation of the Spanish Ministeries of Industry and Education and Science, ESA, Regional Government of Castilla-La Mancha, Toledo Town Hall, Spanish and Dutch ESA Delegations, Spanish Universities (UAM, UPM, UCLM) and CSIC.

### **Wednesday, June 28, 2006**

- 07:30 – 08:30 Breakfast
- 08:30 – 11:30 Splinter sessions 1: Biology-1 Cellular Mechanisms (O4a)  
*Chairs: Mergeay, M. ; Thompson, J.*
- 08:30 – 08:50 The Effect of Microgravity on 1,25-Dihydroxyvitamin D<sub>3</sub> Signalling in Osteoblasts  
*Coenegrachts, L.; et al. .... 18*
- 08:50 – 09:10 Italian Soyuz Mission: FRTL-5 Rexperiment  
*Meli, A.; et al. .... 19*
- 09:10 – 09:30 The Effects of Microgravity on Interaction Between Immune Cells and Target Cells In Vitro (Flight Experiments on ISS-7, -8, -9, -10, -11, -12)  
*Buravkova, L.B.; et al. .... 20*
- 09:30 – 09:50 Signalling Through RHO GTPASES in Microgravity (RHO Signalling) on ISS (SOYUZ TMA-1) Belgian Soyuz Mission "ODISSEA"  
*Nusgens, B.; et al. .... 21*
- 09:50 – 10:10 Coffee break
- 10:10 – 10:30 Does the Exposure to Microgravity Affect Dendritic Cell Maturation from Monocytes?  
*Monici, M.; et al. .... 22*
- 10:30 – 10:50 Salivary and Circulating NGF Levels in an Astronaut During the Eneide Mission  
*Santucci, D.; et al. .... 23*
- 10:50 – 11:10 Plant Cells in Space: The TUBUL Experiments of the Dutch DELTA Mission in April 2004 and the 12S Mission in March-April 2006  
*Sieberer, B.; et al. .... 24*
- 11:10 – 11:30 Seed Germination and Seedling Growth in Space Produce Alterations in Cell Proliferation and Nucleolar Activity of Arabidopsis Root Cells  
*Medina, F.J.; et al. .... 25*
- 08:30 – 11:00 Splinter sessions 1: Technology (O4b)  
*Chairs: Kuipers, A. ; Perales, J.M.*
- 08:30 – 08:50 Design, Fabrication, and Test of an Electronic Nose for the Measure of Air Quality in the International Space Station  
*Di Natale, C.; et al. .... 26*
- 08:50 – 09:10 Eneide: An Experiment of a Spaceborne, L1/L2 Integrated GPS/WAAS/EGNOS Receiver  
*Landenna, S.; et al. .... 27*
- 09:10 – 09:30 Short Term and Long Term Mission Results on Upper Limb Using the Hand Posture Analyzer Facility  
*Zolesi, V.; et al. .... 89*

09:30 – 09:50	Hardware Development for the Bone Proteomics Experiment <i>Schonenborg, R.; et al.</i> .....	29
09:50 – 10:10	Coffee break	
10:10 – 10:30	Parametrical Convection in the Microgravity. Ground-based Modelling <i>Ivanov, N.A.; et al.</i> .....	30
10:30 – 10:50	Centenary Mission - First Brazilian Microgravity Experiments at ISS <i>Bandeira, I.; et al.</i> .....	31
10:50 – 11:10	Study of Small Payload Experiments of Space Life Sciences in JAXA <i>Ishioka, N.; et al.</i> .....	32
11:10 – 11:30	The EGLE Space Experiment Onboard the ISS <i>Sgrigna, V.; et al.</i> .....	33
11:30 – 13:30	<u>Plenary Session 4:</u> <i>Chairs: Haigneré, C. ; Zell, M.</i>	
11.30 - 12.00	Soyuz Missions to the ISS. Possibilities and limitations - a technical perspective. <i>T. Tabakova (Energiya, Russia)</i>	
12.00 - 13.30	<u>Round Table: Instrumentation in the Soyuz Missions. Interactions among Agencies, Industries and Users. Lessons learned.</u>  <i>Scientists: Ph. Arbeille (France), A. Aubert (Belgium), J. M. Perales (Spain), J. J. van Loon (Netherlands), V. Zolesi (Italy).</i>  <i>Industrial Representatives: G. Adami (Italy), J-L. Cartier (France), J M Casalta (Spain), F. Prued'homme (Belgium), H. Willemsem (Netherlands).</i>	
13:30 – 15:00	Lunch and Poster Session (06)  Posters:  Cervantes Mission On Board ISS. Some Results of the Educational Experiment APIS <i>Sanz-Andres, A.; et al.</i> .....	34
	Technical Debrief of the Electrostatic Self-Assembly Demonstration (ESD) Experiment Performed During the ENEIDE Mission <i>Carey, W.</i> .....	35
	New Concepts for the Search of Life in the Universe: Epi- and Endolithic Extremophiles as Candidates for Successful Lithopanspermia and as Examples for Bio-signatures on Other Planets? <i>de Vera, J.P.P.; et al.</i> .....	36
	Changes in Cell Proliferation and Nucleolar Activity of Arabidopsis Root Cells Induced by Simulated Microgravity After Seed Germination and Seedling Growth in a Random Positioning Machine <i>Matía, I.; et al.</i> .....	38
	Response of the Bacterium <i>Cupriavidus Metallidurans</i> CH34 to Space Flight Conditions <i>Leys, N.; et al.</i> .....	39
	Mission Preparation and Operations at the KUBIK Responsible and Support Centers for BIO#1 SOYUZ <i>Schuber, M.A.; et al.</i> .....	40

Overview of Hardware Developed by CNES for Space Biology Experiments <i>Chaput, D.; et al.</i> .....	41	
Pressure-Flow Relations in the Cerebral Circulation During Oscillatory Tilt in Humans <i>Gisolf, J.; et al.</i> .....	43	
The Crab as a Model for Low Gravity Vestibular Research <i>Fraser, P.J.</i> .....	44	
Analysis of Heart Rate and Blood Pressure Variability: A Tool to Help Understanding Cardiovascular Deconditioning After Short and Long Term Space Flight <i>Custaud, M.A.; et al.</i> .....	45	
Green Unicellular Algae <i>Chlamydomonas Rehinardtii</i> Mutants in a Space Flight <i>Giardi, M.T.; et al.</i> .....	46	
Biological Effects of Geocosmical Agents on the Earth's Surface Applied to Space Research <i>Belisheva, N.K.; et al.</i> .....	47	
Under the Background Influence (UTBI): 2006 Opportunity for Flight on the Long Duration Mission Frame <i>Russu, A.; et al.</i> .....	48	
Debrief on the Preparation of Secondary Level Education Experiments per Soyuz Mission Linked to the Production of an ISS Educational DVD Lesson Series <i>Ijsselstein, S.</i> .....	49	
Microgravity Cell Culture Experiment Hardware: An Overview <i>Willemsen, H.W.; et al.</i> .....	50	
Role of the Transcription Factor foxo in Muscular Atrophy Induced by Microgravity <i>Dorado, J.; et al.</i> .....	51	
The support of scientific experiments by B.USOC on the ISS since the Odissea Flight <i>Wisemberg, J.; et al.</i> .....	52	
15:15 – 19:30	Sightseeing visit to Toledo	
19.30 – 20.00	Bus transport from the Hotel Beatriz to Toledo Center, for the-evening session in the Main Chapter Room in the Toledo Town Hall.	
20:00 – 21:15	<u>Plenary Session 5: Lecture by Nobel Laureate Prof. Samuel Ting (07)</u> <i>Chairs: Serrano, M. ; Aguilar, M.</i>	
20:00 – 20:15	Welcome address by the Mayor of the City of Toledo.	
20:15 – 21:00	The ALPHA Magnetic Spectrometer (AMS) on the International Space Station (ISS) <i>Prof. Samuel Ting (MIT, Boston)</i> .....	53
21:15	Spanish Wine offered by the Municipality of Toledo	

### **Thursday, June 29, 2006**

07:30 – 08:30 Breakfast

08:30 – 09:45	<u>Plenary Session 6: Role and evolution of Life and Physical Sciences in future Exploration Scenario: Non-ISS future research opportunities. (08)</u> <i>Chairs: Mukai, C. ; van Loon, J.</i>	
08:30 – 08:55	Krasnov, A.: Russia and ISS post 2015 / Klipper / Moon etc. (Energia)	
08:55 – 09:20	China: Manned space program / space station (Chinese representative/TBC)	
09:20 – 09:45	USA: CEV / Moon / post 2015 (NASA representative/TBC)	
09:45 – 10:45	<u>Splinter sessions 2A: Biology 2 - Behavior in Microgravity (09a)</u> <i>Chairs: Santucci, D. ; Gasset, G.</i>	
09:45 – 10:05	The "Aging Experiment" in the Spanish Soyuz Mission. Drosophila Motility Variations During Exposure to Microgravity <i>De Juan, E.; et al. ....</i>	54
10:05 – 10:25	Development of Neuronal and Sensorimotor Systems in the Absence of Gravity: Neurobiological Research on Three Soyuz Taxi Flights to the International Space Station <i>Horn, E.; et al. ....</i>	55
10:25 – 10:45	Otoconia in Amphibians Reared on Ground or in Microgravity <i>Dournon, C.; et al. ....</i>	56
09:45 – 10:45	<u>Splinter sessions 2A: Human Physiology 1 (09b)</u> <i>Chairs: Kuipers, A. ; Bos, J.</i>	
09:45 – 10:05	The Influence of Prolonged Microgravity on the Vestibular and Oculomotor Frames of Reference <i>Clarke, A.H.; et al. ....</i>	57
10:05 – 10:25	Microgravity Specifically Affects Visual Evoked Potential Related to a Virtual 3D Navigation Tunnel <i>Cebolla, A.M.; et al. ....</i>	58
10:25 – 10:45	Space Sickness on Earth <i>Nooij, S.A.E.; et al. ....</i>	59
10:45 – 11:15	Coffee break	
11:15 – 12:15	<u>Splinter sessions 2B: Biology 3 (10a)</u> <i>Chairs: Buravkova, L. ; Dournon, C.</i>	
11:15 – 11:35	Blood and Oxidative Stress (BOS): Soyuz Mission "Eneide" <i>Rizzo, A.M.; et al. ....</i>	60
11:35 – 11:55	Fitness and Gravity Disturbances: Aquatic Microinvertebrates Reproduce under (Micro)gravity <i>Ricci, C.; et al. ....</i>	61
11:55 – 12:15	Lichens Survive in Outer Space: the BIOPAN Experiment <i>Sancho, L.G.; et al. ....</i>	62
11:15 – 12:15	<u>Splinter sessions 2B: Human Physiology 2 (10b)</u> <i>Chairs: Kuipers, A. ; Aubert, A.</i>	
11:15 – 11:35	Weightlessness Effects on Visual Evoked Potential Related to Virtual In-Depth Motion <i>Bengoetxea, A.; et al. ....</i>	63

11:35 – 11:55	Orthostatic Blood Pressure Control Before and After Space Flight, Determined by Time-Domain Baroreflex Method <i>Gisolf, J.; et al.</i> .....	64
11:55 – 12:15	Heart Rate Accurately Opposes Respiratory Arterial Pressure Fluctuations After Short-Term Spaceflight <i>Verheyden, B.; et al.</i> .....	65
12:15 – 14:20	Lunch	
14:20 – 16:40	<u>Splinter sessions 3: Biology 4: Gene Expression (11a)</u> <i>Chairs: Van Loon, J. J. ; Medina, F.J.</i>	
14:20 – 14:40	Bacterial Plasmid Transfer Under Space Flight Conditions: The Mobilisatsia Experience <i>De Boever, P.; et al.</i> .....	66
14:40 – 15:00	The <i>cnrY</i> Gene, a Tool to Monitor DNA Rearrangements by Insertion Sequence Translocation in <i>Cupriavidus Metallidurans</i> CH34 in Response to Space Flight <i>Leys, N.; et al.</i> .....	67
15:00 – 15:20	Checkpoint and Physiological Apoptosis in Spaceflown <i>C. Elegans</i> <i>Higashitani, A.; et al.</i> .....	68
15:20 – 15:40	ICE-FIRST, International <i>Caenorhabditis Elegans</i> Experiment First Flight on the Space Station <i>Rose, A.; et al.</i> .....	69
15:40 – 16:00	The “Gene Experiment” in the Spanish Soyuz Mission. Gene Expression Variations During <i>Drosophila</i> Metamorphosis <i>Marco, R.; et al.</i> .....	70
16.00 - 16.20	Experiences from a German-French Project on the Integration of Pupils in an Actual Space Experiment <i>Horn, E.; et al.</i> .....	42
14:20 – 16:40	<u>Splinter sessions 3: Physical Sciences 1 (11b)</u> <i>Chairs: Kroesen, G. ; Thomas, D.</i>	
14:20 – 14:40	Self-Propagating Combustion Synthesis Under Microgravity Conditions: Theoretical Analysis of Experimental Evidences <i>Cao, G.; et al.</i> .....	71
14:40 – 15:00	NANOSLAB and ZEOGRID: Microgravity Effect on the Self-Organisation of Zeolite Building Units <i>Martens, J.; et al.</i> .....	72
15:00 – 15:20	ARGES: Radial Segregation and Helical Instabilities in Metal Halide Lamps Studied under Microgravity Conditions in the International Space Station <i>Kroesen, G.; et al.</i> .....	73
15:20 – 15:40	PKE-Nefedov Experiments on the ISS <i>Thomas, H.M.; et al.</i> .....	75
15:40 – 16:00	Viscosity Sensors for the Monitoring of Phase Transitions and Crystallization Processes <i>Jakoby, B.; et al.</i> .....	76
16:00 – 16:20	PROMISS: Protein Microscope for the International Space Station <i>Maes, D.; et al.</i> .....	77

16:20 – 16:40	Nonstandard Nucleation Mechanisms from Combined Structural and Density Fluctuations <i>Basios, V. ; et al.</i> .....	78
16:40 – 17:00	Coffee break	
17:00 – 18:00	<u>Splinter sessions 4: Radiation (12a)</u> <i>Chairs: Reiz, G. ; Kiefer, J.</i>	
17:00 – 17:20	Cosmic Ray Measurements in the ISS During the Italian Soyuz Missions: The Alteino and Lazio Experiments <i>Casolino, M.; et al.</i> .....	79
17:20 – 17:40	Biological Assessment of Space Radiation in Low-Earth Orbit <i>Kiefer, J.; et al.</i> .....	80
17:40 – 18:00	Survival of Microorganisms Representing the Three Domains of Life to Cosmic Radiations Inside the ISS (MICROSPACE Experiment, Feb – Oct 2005) <i>Canganella, F.; et al.</i> .....	81
17:00 – 18:00	<u>Splinter sessions 4: Physical Sciences 2 (12b)</u> <i>Chairs: Otálora, F. ; Kirschhock, C.</i>	
17:00 – 17:20	Zeolite Synthesis Through Self-Assembling Building Units <i>Caremans, T.; et al.</i> .....	82
17:20 – 17:40	Ground-Based Preparation of Space Experiment on Magnetothermal Convection and Thermophysical Properties in Magneto-Polarized Fluids <i>Bozhko, A.; et al.</i> .....	83
17:40 – 18:00	The Atmosphere-Space Interactions Monitor (ASIM) for the International Space Station <i>Neubert, T.; et al.</i> .....	84
18.30 – 19.00	Bus transport from the Hotel Beatriz to Toledo Center, for the-evening session in the Main Auditorium of the University of Castilla-La Mancha (“San Pedro Martir” Building).	
	<u>Plenary Session 7 (open to general public): Educational Experiments and Activities in the ISS in the course of Soyuz Missions (13)</u> <i>Chairs: Grifoni, E. ; Fenoll, C.</i>	
19:00 – 19:20	Soyuz Missions with ESA astronauts. <i>Grifoni, E.</i>	
19:20 – 19:40	: Activities for Primary Schools – (Seeds in Space) <i>van Loon, J.</i>	
19:40 – 20:00	Activities for Secondary Schools: – Body Space <i>Ijsselstein, S. / Kuipers, A.</i>	
20:00 – 20:20	.: University activities – APIS <i>Laveron, A</i>	
20:20 – 20:40	The Experience of the students (UTBI)– <i>Russu, A. / Escobar, N.</i>	
20:40 – 21:00	Closing Remarks. <i>Duque, P.</i>	
21:00 – 22:00	Reception in the Cloister of “San Pedro Mártir”	

## Friday, June 30, 2006

07:30 – 08:30	Breakfast	
08:30 – 10:30	<u>Splinter sessions 5: Human Physiology 3 (14a)</u> <i>Chairs: Strollo, F.; Ellman-Larsen, B.</i>	
08:30 – 08:50	Testicular Adaptation to Gravity Vector Changes <i>Strollo, F.; et al.</i>	85
08:50 – 09:10	Sympathetic Nervous Activity Decreases During Head Down Bed Rest but not During Microgravity <i>Christensen, N.J.; et al.</i>	86
09:10 – 09:30	Heart Beat Monitoring (HBM) Experiment in the ENEIDE Mission <i>Lo Castro, F.; et al.</i>	87
09:30 – 09:50	Long-term Follow-up of Cardiovascular Autonomic Control After Short-duration Spaceflight <i>Beckers, F.; et al.</i>	88
09:50 – 10:10	CASPER (Cardiac Adapted Sleep Parameters Electrocardiogram Recorder) <i>O Griofa, M.; et al.</i>	28
10:10 – 10:30	Assessment of Low and High LET Radiation Induced DNA Damage, Repair and Genomic Instability: State of the Art and Current Views <i>Darroudi, F.</i>	39
08:30 – 10:30	<u>Splinter sessions 5: Biology students &amp; Ground Simulation (14b)</u> <i>Chairs: Ricci C. ; Hatton, J.</i>	
08:30 – 08:50	Scientific Results and Outreach of the BugNRG Experiment <i>De Vet, S.J.; et al.</i>	90
08:50 – 09:10	Gravitropism and Phototropism: An Integrated Approach The Effects of Light and Gravity on the Development of Arabidopsis Thaliana <i>Buizer, K.</i>	91
09:10 – 09:30	Neocartilage Formation in Microgravity Environments. Implications for Tissue Engineering <i>Keller, G.; et al.</i>	92
09:30 – 09:50	Accelerating Research on Ground <i>van Loon, J.</i>	93
09:50 – 10:10	Clinorotation Influences the Expression of Nucleolar Proteins and Induces a Redistribution of rDNA and Proteins in the Plant Cell Nucleolus <i>Sobol, M.A.; et al.</i>	94
10:10 – 10:30	Magnetic Levitation as a Tool to Investigate the Weightless Environment: Effects on Bacteria <i>Dijkstra, C.; et al.</i>	95
10:30 – 11:00	Coffee break	
11:10 – 12:10	<u>Plenary Session 8: European ISS Utilisation Perspectives (ESA presentation) (15)</u> <i>Chairs: Heppener, M.; Marco, R</i>  <i>M. Heppener (ESA)</i>	



12:10 – 12:40 Closing Session: Summary of the Congress (16)  
*Duque, P.* and Chairpersons of the Scientific Committee.  
Closing Ceremony  
*Reglero, V.* (Spanish Space Program), *Marco, R.*