### Sunday, April 27, 2003

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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<tbody>
<tr>
<td>1:00 – 3:30</td>
<td><strong>Users Group Pre-Meeting</strong></td>
<td>Salons B and C</td>
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<tr>
<td>1:00 – 1:30</td>
<td>Loma Linda Proton Synchrotron Facility Overview</td>
<td>G. A. Nelson, Loma Linda University</td>
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<tr>
<td>1:30 – 2:00</td>
<td>BNL Booster Applications Facility and the Alternating Gradient Synchrotron</td>
<td>D. I. Lowenstein, Brookhaven National Laboratory</td>
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<tr>
<td>2:00 – 3:30</td>
<td>Review of NSRL Users Manual</td>
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<tr>
<td>3:30 – 4:30</td>
<td><strong>Registration</strong></td>
<td>Hotel Prefunction Area</td>
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<tr>
<td>4:30 – 6:30</td>
<td><strong>Scientific Overview Talks</strong></td>
<td>Salons B and C</td>
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<tr>
<td>Chairs:</td>
<td>Mary Helen Barcellos-Hoff, Francis A. Cucinotta</td>
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<tr>
<td>4:30 – 5:00</td>
<td>Cancer and Aging Phenotypes in p53 Mutant Mice</td>
<td>L. A. Donehower, Baylor College of Medicine</td>
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<tr>
<td>5:00 – 5:30</td>
<td>Molecular Determinants of Cellular Responses to DNA Damage</td>
<td>M. B. Kastan, St. Jude Children’s Hospital</td>
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<tr>
<td>5:30 – 6:00</td>
<td>Beyond Genomics to Proteomics: The Next Revolution in Molecular Medicine</td>
<td>D. J. Johann, Food and Drug Administration</td>
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<tr>
<td>6:00 – 6:30</td>
<td>Translational Research</td>
<td>Elizabeth Travis, University of Texas M.D. Anderson Cancer Center</td>
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<tr>
<td>6:30 – 8:00</td>
<td><strong>Reception</strong></td>
<td>Hotel Prefunction Area</td>
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**Monday, April 28, 2003**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session Suite</th>
<th>Description</th>
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<tbody>
<tr>
<td>8:30 – 10:20</td>
<td>Welcom and DNA Damage Processing I</td>
<td>Salons B and C (All sessions include work in progress as appropriate)</td>
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<td>Chairs:</td>
<td>Walter Schimmerling, Elizabeth Travis</td>
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<tr>
<td>8:40 – 9:10</td>
<td>Review of HZE Radiobiology</td>
<td>E. A. Blakely, Lawrence Berkeley National Laboratory</td>
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<tr>
<td>9:10 – 9:40</td>
<td>Formation and Processing of Radiation-Induced Clustered DNA Damage</td>
<td>P. O’Neill, Medical Research Council, Harwell, U.K., Radiation and Genome Stability Unit</td>
</tr>
<tr>
<td>9:40 – 10:00</td>
<td>Bistranded DNA Damage Clusters Induced by Low LET Radiation and Heavy Charged Particles: Formation and Repairs</td>
<td>B. M. Sutherland, Brookhaven National Laboratory</td>
</tr>
<tr>
<td>10:00 – 10:20</td>
<td>Low-Dose Measurement of DSBs Using a Dual-Label FAR Assay</td>
<td>B. Rydberg, Lawrence Berkeley National Laboratory</td>
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<td>10:20 – 10:40</td>
<td>Break</td>
<td>Hotel Prefunction Area</td>
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<tr>
<td>10:40 – Noon</td>
<td>DNA Damage Processing II</td>
<td>Salons B and C</td>
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<td>Chairs:</td>
<td>Ann Kennedy, Amy Kronenberg</td>
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<tr>
<td>10:40 – 11:00</td>
<td>DNA Fragmentation and Rejoining in Human Cells Exposed to Gamma-rays and Charged Particles</td>
<td>M. Belli, Instituto Superiore di Sanità</td>
</tr>
<tr>
<td>11:00 – 11:20</td>
<td>The Relation Between DNA-Double Strand Breaks and Mutations Induced by Heavy Ion Exposure</td>
<td>J. Kiefer, Strahlenzentrum, University of Giessen</td>
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<tr>
<td>11:20 – 11:40</td>
<td>Cytogenetic Effects of 1 GeV/n Iron Ions Shielded with Different Materials</td>
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</table>
11:40 – Noon  
*Truly Incomplete and Complex Chromosomal Exchanges in Human Fibroblast Cells Exposed in Situ to Energetic Heavy Ions*  
H. Wu, Wyle Laboratories

Noon – 12:10  
**Poster Overview**

12:10 – 1:30  
**Lunch**  
Salons D and E

1:30 – 3:20  
**Cellular and Tissue Models of Signal Transduction, Aberrant Differentiation, and Apoptosis**  
*Chairs:* Eleanor Blakely, Michael Story

1:30 – 2:00  
*Interaction Between Tissue and Cellular Stress Responses: TGF-β 1 Is a Key Mediator of the DNA Damage Response*  
M. H. Barcellos-Hoff, Lawrence Berkeley National Laboratory

2:00 – 2:20  
*Response of Thyroid Tissue Units to Space-Like Radiation Fields*  
L. M. Green, Loma Linda University

2:20 – 2:40  
*Apoptotic Regulation and Mutagenesis in Human Cells Exposed to Charged Particles of Importance for Spaceflight*  
A. Kronenberg, Lawrence Berkeley National Laboratory

2:40 – 3:00  
*LET-Dependence of the TP53 Response in Human Fibroblasts*  
R. L. Warters, University of Utah Health Sciences

3:00 – 3:20  
*Radiation-Induced Gene Expression in the Nematode C. Elegans*  
G. Nelson, Loma Linda University

3:20 – 3:40  
**Break**  
Hotel Prefunction Area

3:40 – 5:20  
**In-vivo and In-vitro Model of Carcinogenesis**  
*Chairs:* Hooshang Nikjoo, Betsy Sutherland

Salons B and C
3:40 – 4:10  
*Animal Studies of Radiation-Induced Cancer*  
Robert L. Ullrich, Colorado State University

4:10 – 4:30  
*Comparison of Preliminary Results for the Risk of Mammary Carcinogenesis in the Sprague-Dawley Rat with Previous Experimental Studies*  
J. Dicello, Johns Hopkins University School of Medicine

4:30 – 4:50  
*Radiation Effects in Respiratory Tissues*  
J. Ford, Texas A&M University

4:50 – 5:10  
*Proton and Iron Radiation Effects in Transgenic Mice*  
P. Y. Chang, SRI International

5:10 – 5:30  
*Comparative Studies Between the Effect of Alpha Particles and Heavy Ions in Breast Carcinogenesis*  
G. Calaf, Columbia University

7:00 – 10:00  
**Dinner and Pier Review**  
Kemah Waterfront

*Tuesday, April 29, 2003*

8:00 – 8:40  
**Accelerator Experiment Part I**  
Salons B and C  
Chairs:  
Michael Fry  
Peter O’Neill

8:40 – 9:50  
**Non-Cancer Effects**  
Salons B and C  
Chairs:  
Michael Fry  
Peter O’Neill

9:10 – 9:30  
*Iron Ion-, Proton- and X-ray-effects on Human Lens Cell Differentiation*  
E. A. Blakely, Lawrence Berkeley Laboratory
9:30 – 9:50  
Astronauts, Exposure to Radiation in Space Flight, and Risk of Cataract  
L. T. Chylack, Jr., Center for Ophthalmic Research, Brigham and Women's Hospital

9:50 – 12:20  
CNS Radiobiology I  
Chairs:  
Michael Fry  
Peter O’Neill

9:50 – 10:20  
Radiation and Neurogenesis  
J. R. Fike, University of California, San Francisco

10:20 – 10:40  
Break  
Hotel Prefunction Area

10:40 – 12:20  
CNS Radiobiology II  
Chairs:  
John Dicello  
Gregory Nelson

10:40 – 11:00  
Cytotoxicity of Low- and High-LET Radiation on Neural Cells  
M. Vazquez, Brookhaven National Laboratory

11:00 – 11:20  
Effects of Exposure to Different Energies of 56Fe Particles on Neurochemical and Behavioral Endpoints  
B. M. Rabin, University of Maryland Baltimore County

11:20 – 11:40  
Putative Dietary Prevention of the Accelerated Age-Like Effects of Heavy Particle Irradiation  
J. Joseph, USDA Human Nutrition Research Center at Tufts University

11:40 – Noon  
Assessment of Neuropathology Following 56Fe Exposure by Magnetic Resonance Imaging and Spectroscopy  
A. Obenaus, Loma Linda University

Noon – 12:20  
The Proton Radiation Dose Response of the Rat Brain Cortical and White Matter Vasculature Compared with the Template Measured for Retinal Vessels  
J. O. Archambeau, Loma Linda University

12:20 – 1:30  
Lunch  
Salons D and E
1:30 – 4:00  
**Radiation Sensitivity and Prevention Methods**  
**Salons B and C**  

*Chairs:*
Marcelo Vazquez  
John Wilson

1:30 – 2:00  
*Identification of Individuals Susceptible to Normal Tissue Injury After Receiving Radiotherapeutic Doses of Ionizing Radiation: Development of Predictive Assays of Clinical Significance*  
M. Story, University of Texas M. D. Anderson Cancer Center

2:00 – 2:20  
*Haploinsufficiency for ATM Confers Radiosensitivity*  
L. B. Smilenov, Columbia University

2:20 – 2:40  
*Genetic Sensitivity and LET Studies of Space Irradiation-Induced Genomic Instability in Vivo*  
M. A. Kadhim, Medical Research Council

2:40 – 3:00  
*Countermeasures for the Biological Effects of Space Radiation*  
A. R. Kennedy, University of Pennsylvania

3:00 – 3:20  
*The Effect of Gamma Irradiation on the Immune Responses of Mice with Polyoma Virus Infection*  
J. M. Reuben, University of Texas M. D. Anderson Cancer Center

3:20 – 3:40  
**Break**  

Hotel Prefunction Area

3:40 – 4:00  
*Whole-Body Irradiation and Immune Challenge with a Virus-Derived Antigen*  
D. Gridley, Loma Linda University

4:00 – 5:20  
**Computational Models of Risk**  

*Chairs:*
James Joseph  
Jack Miller

4:00 – 4:20  
*Bystander Effect and Radiation Risk: A Theoretical Approach*  
H. Nikjoo

4:20 – 4:40  
*Biochemical Kinetics Model of DNA Damage Processing Competition: NHEJ and HR*  
F. A. Cucinotta, NASA Johnson Space Center
4:40 – 5:00  
**The Two-Stage Clonal Expansion Model of Cancer**  
S. B. Curtis, Fred Hutchinson Cancer Research Center

5:00 – 5:20  
**Application of the Local Effect Model to Calculate Cell Transformation After High-LET Radiation**  
M. Scholz, GSI/Biophysics

6:15 – 7:00  
Buses Transport Workshop Participants to Space Center Houston

7:00 – 10:00  
**Dinner Banquet**  
Space Center Houston

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**Wednesday, April 30, 2003**

8:00 – 10:30  
**Accelerator Experiment II and Radiation Critical Path Roadmap (CPR)**  
Salons A and B

Chairs:  
Francis A. Cucinotta  
Ron Turner

8:00 – 8:40  
**How to Do an Accelerator Experiment, Part II: Physics Considerations**  
C. Zeitlin, Lawrence Berkeley National Laboratory

8:40 – 9:00  
**Radiation Critical Path Roadmap (CPR)**  
Overview of Bioastronautics Critical Path Roadmap  
L. Leveton and J. Charles

9:00 – 10:15  
Panel Discussion  
Critical Path Roadmap for Radiation Health Research

10:15 – 10:30  
**Break**  
Hotel Prefunction Area

10:30 – 12:35  
**Physics and Dosimetry**  
Salons B and C

Chairs:  
Walter Schimmerling  
Richard Wilkins
10:30 – 10:50  One Year of Results from the Martian Radiation Environment Experiment (MARIE)
C. Zeitlin, Lawrence Berkeley National Laboratory

10:50 – 11:05  MARIE Observations of Solar Particle Events
R. Turner, ANSER

11:05 – 11:20  A New LEO ISS Environmental Model
J. W. Wilson, NASA Langley Research Center

11:20 – 11:35  Measurements of Radiation Transport in Materials Used in Human Space Flight
J. Miller, Lawrence Berkeley National Laboratory

11:35 – 11:50  Neutron Dosimetry Using Tissue Equivalent and a Silicon Equivalent Proportional Counters for Eight High-Energy Neutron Spectra
B. Gersey, Prairie View A&M University

11:50 – 12:05  Microdosimetry of Heavy Ions with Different Energies but with Similar LET
T. Borak, Colorado State University

12:05 – 12:20  Preliminary Results from the First Three ICCHIBAN Intercomparisons of Space Radiation Detectors
E. Benton, Eril Research, Inc.

12:20  Workshop Adjourns

Posters
Posters will remain on view from Sunday afternoon through Monday morning

Dose Distribution in Critical Body Organs: Phantom Torso Experiment (PTE) During the ISS Increment 2 Mission
W. Atwell, The Boeing Company

A Proton Beam Delivery System for Solar Flare Simulations at LLUMC
G. Coutrakon, Loma Linda University

Quantification of Radiation-Induced Proteins Using the Luminex 100™ System
Detection of Gamma-H2AX Foci Formation in Human Peripheral Blood Lymphocytes Exposed to Accelerated Charged Particles
M. Durante, University Federico II

The Number and Reaction Multiplicities of GCR Nuclei and Delta-rays Passing Through a Cell Nucleus on a Mars Mission
X. Hu, USRA Division of Space Life Sciences

TEPC’s Overestimate the Average Quality Factor for Trapped Protons and Underestimate the Average Quality Factor for GCR
M.-H. Kim, Wyle Laboratories

Simulation of Proton Beamline with MCNPX
M. F. Moyers, Loma Linda University

ALTEA: The Investigation of Brain Functional Effects of Microgravity and Cosmic Radiation
L. Narici, University of Roma

The Non-Invasive Imaging Laboratory at Loma Linda University: A Resource for NASA Scientists
A. Obenaus, Loma Linda University

The Effects of Whole-Body Gamma Irradiation on the Immune Response to LPS
M. J. Pecaut, Loma Linda University

Model Calculations and Visualization of GCR Particle Flux on the Surface of Mars
P. B. Saganti, Lockheed Martin Space Operations

Roadmapping Activities for NASA’s Fundamental Space Biology Division
O. Santos, NASA Ames Research Center

Development of Collaborative Engineering Environments for Spacecraft Design
R. C. Singleterry, Jr., NASA Langley Research Center

Free Flyers: A Research Platform to Augment the International Space Station
K. A. Souza, NASA Ames Research Center

*Changes in Cocaine-Induced Locomotor Activity After Exposure to 1 GeV/n Fe Ions and Gamma Rays*

M. Vazquez, Brookhaven National Laboratory

*Advances in Space Radiation Transport Codes*

J. W. Wilson, NASA Langley Research Center

**Demonstration**

*Immersive Design and Simulation Lab*

J. W. Wilson, NASA Langley Research Center