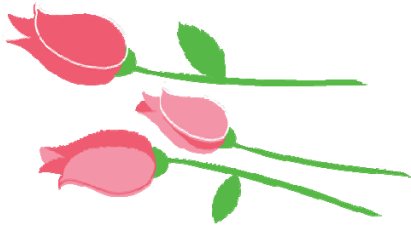


Early Spring 2009



DSLS New Year Social

DSLS began the New Year in style by celebrating with a New Year's Social on January 14.



Those in attendance enjoyed a scrumptious buffet and a toast to the New Year. Toward the end of the evening, a door prize drawing was held.

DSLS raffled off several books which had been autographed by Apollo 17 astronaut, former US Senator for New Mexico, and DSLS's first director,

Dr. Harrison "Jack" Schmitt.

The lucky winners were Artem Ponomarev, Rob Ploutz-Snyder, James Fiedler, Jancy McPhee, and Zarana Patel.

Stay tuned for announcements regarding the upcoming DSLS Spring Social!



Dr. Artem Ponomarev



Dr. LeBlanc explains his New Year resolutions to Dr. Jeff Ryder and Dr. Roni Cromwell.

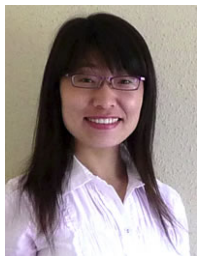


Drs. Billy Wallace, Zarana Patel, and Susi Zanella



Drs. Roni Cromwell & Lori Ploutz-Snyder

Welcome to DSLS!



Chunli Quan, PhD

In January DSLS welcomed Dr. **Chunli Quan** to the team. Chunli earned her Bachelor of Science degree in Chemistry from Beijing Normal University, China, in 2001. Her undergraduate research was conducted at the Institute of Chemistry, Chinese Academy of Science. Chunli received her doctorate

in Environmental Health Sciences with a focus on Inhalation Toxicology from New York University in 2008. Dr. Quan now works in the Space Toxicology Group at JSC under the direction of Dr. Noreen Khan-Mayberry. Her research focuses on evaluating the toxicity of lunar dusts, and on establishing the exposure limits to lunar dust for astronauts.

Welcome aboard, Chunli!

Terri Jones, DSLS's Project Manager, and her husband recently welcomed two brand-new additions to their lives: twins Josie and Wyatt.

Congratulations, Terri and Owen!



Wyatt and Josie Jones

The DSLS Newsletter is published on a bi-monthly basis.
Dagmar Morgan—Editor

The following contributions to this issue are gratefully acknowledged:
Photography at New Year Social—Kay Nute

Division of Space Life Sciences
Universities Space Research Association
3600 Bay Area Boulevard, Houston, TX 77058



Awards and Honors for DSLS Scientists



Jitendra Joshi, PhD

Jitendra Joshi, PhD, a DSLS scientist serving as the Lead Technologist, Human Systems Research and Technology Program at NASA headquarters, was recently awarded the

Space Flight Awareness Award. The SFA award is one of NASA's highest awards and honors employees for their dedication to quality work and flight safety.

In addition to the SFA, Dr. Joshi previously was the recipient of the NASA Special Services award and the Silver Snoopy Award.

Congratulations, Dr. Joshi!



Dr. Marguerite Sognier was recently presented with the University of Texas-Pan American, Outstanding Achievement Award, in recognition of outstanding work performed under extreme conditions after Hurricane Ike.



Marguerite Sognier, PhD

Dr. Sognier has been a member of the DSLS team since 1997. She is a graduate of Jacksonville University, Tulane University and The University of Texas Graduate School of Biomedical Science at the UT Health Sciences Center in Houston.

Congratulations, Dr. Sognier!



Artem Ponomarev, PhD

Artem Ponomarev, PhD, recently celebrated his 5 year service anniversary with USRA. Dr. Ponomarev received his degree from Columbia University in New York, and presently works on radiation protection for astronauts under the guidance of Dr. Francis Cucinotta.

Congratulations, Dr. Ponomarev!

Dr. Patrice Yarbough was appointed Adjunct Assistant Professor, Division of Infectious Diseases, in the Department of Internal Medicine at the University of Texas Medical Branch in December 2008.



Patrice Yarbough, PhD

Congratulations, Dr. Yarbough!

Grants Awarded!

Batki S and **Ploutz-Snyder R**, "Improving Hepatitis C Treatment in Injection Drug Users", awarded RO1 DA16764 by the NIH.

Sognier M, funding received from Shell Oil/Texas Regional Collaborative to support the Galveston County Science and Engineering Fair.

Don't Forget ...

Daylight Savings Time begin this weekend—March 8!

Don't forget to set your clocks one hour **forward** Saturday evening!



New Team Alignment

Recently, the scientist teams were re-aligned. There are now four science teams.

The **Radiation Health** team is led by Janice Huff. Members: Artem Ponomarev, Claudio Carra, Megumi Hada, Shaowen Hu, Ianik Plante, Myung Kim, Zarana Patel, and Lori Jackson.

The **Research Operations** team is led by Ramona Gaza. Members: Dazhuang Zhou, Yvonne Roed, Chunli Quan, James Fiedler, Camille Shea, and Maureen McCarthy.

The **Research** team is led by Scott Wood. Members: Sara Zwart, Ajit Mulavara, Jason Boyd, Susana Zanello, Chris Westby, Johnny Conkin, Marguerite Sognier, Rob Ploutz-Snyder, and Larry Kuznetz.

The **Program Management** team is lead by Ronita Cromwell. Members: Jean Sibonga, Jeff Ryder, Regina Buccello-Stout, Patrice Yarbough, Lori Ploutz-Snyder, Billy Wallace, and Jancy McPhee.

The purpose of these teams is to help shape DSLS / USRA programs and procedures; create networking opportunities within and between groups; develop more connection within USRA to improve effectiveness of DSLS; brainstorm new ideas and have fun; help select speakers to present to science groups; develop better understanding of NASA goals to be more effective; identify issues that impede effectiveness and develop potential solutions; develop methods to make work more fulfilling, enjoyable, and successful; help plan social activities; and provide mentorship role for new employees.

Research Grant Proposals

Clément GR, **Wood SJ**, Lathan CE “Assessment of Visual Cognition to Enhance Object Recognition and Mental Representation of Space,” Step-2 proposal submitted for NSBRI funding through NASA/NSBRI Research Supporting Crew Health and Performance (NNJ08ZSA002N), December 2008.



Scott Wood, PhD

Reschke MF, Bloomberg JJ, Harm DL, Kozlovskaya IB, Leigh RJ, **Mulavara AP**, Parker DE, Peters BT, **Wood SJ**, “Post-Flight Ability of Astronauts to Maintain control of Vehicles and Other Complex Systems,” Step-2 proposal submitted for NASA funding through NASA/NSBRI Research Supporting Crew Health and Performance (NNJ08ZSA002N), December 2008.



Ajitkumar Mulavara, PhD

Wood SJ, Oman CM, Merfeld DM, Clément GR, Young LR, Burbank SK, Robinson SK, Locke JP, Hart SF, Johnston SL, Gilmore SM, Black FO, Stroud KJ, Reschke MF, Harm DL “Effect of Sensorimotor Adaptation Following Long-Duration Spaceflight on Perception and Control of Vehicular Motion”, Step-2 proposal submitted for NASA funding through NASA/NSBRI Research Supporting Crew Health and Performance (NNJ08ZSA002N), December 2008.

Gaza R, Semones E “Characterization of the Radiation Environment at Mid Altitudes for Human Suborbital Spaceflights Using Passive and Active Dosimeters,” submitted for funding

through NASA, ROSES-08 Amendment 17, NNH08ZDA001N-HTSS, Concept Studies for Human Tended Suborbital Science, December 5, 2008.

Mulavara AP, Bloomberg JJ, **Wood SJ**, Peters BT, Serrador JM, Reschke MF “Development of Countermeasures to Aid Functional Egress from the Crew Exploration Vehicle Following Long Duration Spaceflight,” Step-2 proposal submitted for NSBRI funding through NASA/NSBRI Research Supporting Crew Health and Performance (NNJ08ZSA002N), December 2008.

Peters BT, Bloomberg JJ, **Mulavara AP**, Reschke MF, **Wood SJ** “Visual Performance Following Long-Duration Spaceflight: Functional Metrics to Aid the Development of Hardware and Procedures,” Step-2 proposal submitted for NASA funding through NASA/NSBRI Research Supporting Crew Health and Performance (NNJ08ZSA002N), December 2008.



Lori Ploutz-Snyder, PhD

Ploutz-Snyder L, submitted an executive summary for “Evaluation of a New Evidence Based Exercise Prescription for Use on the International Space Station” to NASA Science Management in advance of the proposal’s undergoing a non-advocate review before proceeding as a pilot study.

Sognier M, submitted application for funding to the Texas Education Agency to assist teachers in Galveston County whose classrooms were damaged after Hurricane Ike.

Sognier M, applied for competitive renewal of a grant for Teacher Professional Development for Grades K-12 to the Galveston County Regional Collaborative.

Mark your Calendar!

Special Seminar

Thursday, March 5, 2009
Noon

USRA—Berkner Room

Visual-vestibular-somatosensory interaction for perception of self- and object motion and suppressing the self-motion illusion with a tactile system

Ognyan I. Kolev, MD, PhD, DSc

Professor of Neurology

Director of Science

University Hospital of Neurology and Psychiatry, Medical University

Sofia, Bulgaria



Aerospace Medicine Grand Rounds

Tuesday, March 24, 2009

8:00 a.m.

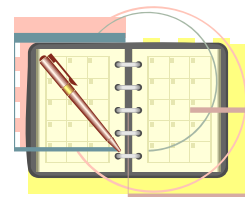
USRA—Lecture Hall

Dr. Janice Kiecolt-Glaser

Director, Division of Health Psychology

Professor, Department of Psychiatry

Ohio State University



Brown Bag Luncheon Seminars

Thursday, March 26, 2009

Noon

USRA—Berkner Room

Lori Ploutz-Snyder, PhD

Project Scientist, Exercise Physiology and Countermeasures (ExPC) Project

NASA Johnson Space Center

USRA/Division of Space Life Sciences

Thursday, April 23, 2009

Noon

USRA—Berkner Room

Susana Zanello, PhD

Scientist, Cellular Science Laboratory

NASA Johnson Space Center

USRA/Division of Space Life Sciences



New Publications by DSLS Scientists

Keyak JH, Koyama AK, **LeBlanc A**, Lu Y, Lang TF. Reduction in proximal femoral strength due to long-duration spaceflight. *Bone*. 2008 Dec 3. [Epub ahead of print] http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=19100348

Plante I and Cucinotta FA. Ionization and excitation cross sections for HZE particles in liquid water for the simulation of radiation tracks. *New Journal of Physics* 2008 Dec. 4 10 125020 <http://dx.doi.org/10.1088/1367-2630/10/12/125020>

Sawakuchi GO, Yukihara EG, McKeever SWS, Benton ER, **Gaza R**, Uchihori Y, Yasuda N, and Kitamura H. Relative optically stimulated luminescence and thermoluminescence efficiencies of Al₂O₃:C dosimeters to heavy charged particles with energies relevant to space and radiotherapy

dosimetry. *Journal of Applied Physics* 104 124903 <http://dx.doi.org/10.1063/1.3041655>

Smith SM, **Zwart SR**, Heer MA, Baecker N, Evans HJ, Feiveson A, Shackelford LC, **LeBlanc AD**. Effects of artificial gravity during bed rest on bone metabolism in humans. *J Appl Physiol*. 2008 Dec 12. [Epub ahead of print] <http://dx.doi.org/10.1152/jappphysiol.91134.2008>

Zwart SR, Crawford GE, Gillman PL, Kala G, Rodgers AS, Rogers A, Inniss AM, Rice BL, Ericson K, Coburn S, Bourbeau Y, Hudson E, Mathew G, Deckerlegand DE, Sams CF, Heer MA, Paloski WH, Smith SM. Effects of 21 days of bed rest, with or without artificial gravity, on nutritional status of humans. *J Appl Physiol*. 2008 Dec 12. [Epub ahead of print] <http://dx.doi.org/10.1152/jappphysiol.91136.2008>

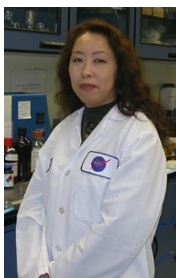
Batki S, Meszaros Z, Strutyński K, Dimmock J, Leontieva L, **Ploutz-Snyder RJ**, Canfield K, Drayer R. 2009. Medical Comorbidity in Patients with Schizophrenia and Alcohol Dependence. *Schizophrenia Research* (107):2-3, 139–146. <http://dx.doi.org/10.1016/j.schres.2008.10.016>

Zhou D, Semones E, Gaza R, Johnson S, Zapp N, Weyland M, Rutledge R, Lin T. 2009. Radiation measured with different dosimeters during STS-121. *Acta Astronautica* 64:4, 437-447, February. <http://dx.doi.org/10.1016/j.actaastro.2008.10.001>

Zwart SR, Kala G, Smith SM. 2009. Body iron stores and oxidative damage in humans increased during and after a 10-12-day undersea dive. *J Nutr* 139(1):90-5. <http://jn.nutrition.org/cgi/gca?SEARCHID=1&VOLUME=139&FIRSTPAGE=90&FIRSTINDEX=0&hits=10&RESULTFORMAT=&gca=nutrition%3B139%2F1%2F90&sendit=Get+All+Checked+Abstract>

Presentations

Radiation Biophysics Group Seminar, **Hada M**, “High LET radiation induced chromosome aberrations in human blood lymphocytes,” December 19, 2008, NASA JSC.



Megumi Hada, PhD

Radiation Biophysics Group Seminar, **Huff J**, “In vitro cell culture models for study of molecular mechanisms of radiation induced esophageal cancer,” December 15, 2008, NASA JSC.

Radiation Biophysics Group Seminar, **Plante I**, “Part 1: Cross sections for the interactions of ions and electrons with liquid water and application to Monte Carlo simulation of radiation tracks and Part 2: Simulation of TGF β activation by HZE radiation in a cell culture”, December 12, 2008, NASA JSC.

FAP Education Seminar, **Buccello-Stout RR**, **Yarborough PO**, **Cromwell RL**, “NASA Bed Rest Studies: An Overview,” January 20, 2009, USRA Houston.

FAP Education Seminar, **Yarborough PO**, **Buccello-Stout RR**, **Cromwell RL**, “Review of FAP Study Science,” January 20, 2009, USRA Houston.

Invited talk, **Ploutz-Snyder L**, “Prevention of Muscle Atrophy With Exercise Countermeasures: Where we are and where we are going,” Space Life Sciences Training Program (NSBRI), January 28, 2009, Texas A&M University, College Station, Texas—a one-hour talk followed by a one-hour discussion period, which was part of a space life sciences course in the Nutrition Department.

Invited talk, **Ploutz-Snyder L**, “Neuromuscular Adaptations To Reduced Use,” January 28, 2009, Texas A&M University, College Station, Texas—a one-hour seminar for the Kinesiology Department.

M.-H. Kim participated in the preparation of a draft report on the “Space Radiation Reference Fields Capability Meeting”, held Dec 17, 2008, at Brookhaven National Laboratory, Upton, NY.



Myung-Hee Kim, PhD

Invited talk, **Kim M-H**, “GCR and SPE Energies at Critical Organs,” Space Radiation Reference Fields Capability Panel Meeting, December 16, 2008, Brookhaven National Laboratory, Upton, New York.

Radiation Biophysics Group Seminar, **Ponomarev A**, “Systems Biology of Apoptosis: Martin Bentele and Roland Eils Article Review,” January 16, 2009, NASA JSC.



SPOTLIGHT ON: Ajitkumar Mulavara, PhD!

Ajitkumar Mulavara, PhD, of the Neurophysiology Lab was recently interviewed for the Spotlight Article.

** Tell us briefly about yourself and your family.*

I was born in Bombay, India, and completed my undergraduate studies in Biomedical Engineering from the University of Bombay. I completed my doctoral studies at the University of Akron, Ohio, and joined USRA in 2006. My group, the Neuroscience Motion Laboratory at JSC, is involved with investigating the effects of adaptation to microgravity on sensorimotor control as well as with the development of countermeasures. I am married to my wonderful wife and we have been blessed with two beautiful children.

** What are you presently working on at JSC?*

Our laboratory is currently involved in a number of projects. One of them is a multi-laboratory project called the Functional Task Test (FTT) across the Human Adaptation Countermeasure Division implemented by the Exercise Countermeasures Project. This study is investigating the decrement in physiological systems function after space flight missions and the relative impact this has on the ability to perform functional activities after return to a gravity environment. This project will enable us to inform the HRP about changes in the abilities of crewmembers to perform functional activities after space flight and to develop targeted countermeasures.

Another project we are working on is development of a sensorimotor-adaptability training countermeasure to help facilitate the recovery of function during the acute phase of post flight landing in different gravity environments. We are involved in developing field tests for the screening of vestibular and balance disorders in epidemiologic research funded by the NIH and being conducted at the Baylor College of Medicine. We are working with NSBRI investigators to develop a combined countermeasure exercise device that will help maintain bone, muscle and balance function during long-duration space flight missions. *(Continued on page 6)*



Mentoring and Outreach

Lori Ploutz-Snyder is dissertation advisor for Syracuse University and NASA GSRP students Summer Cook and Kyle Hackney and hosted them on a four day visit to JSC. Summer Cook presented a seminar on her NASA GSRP-funded research and met with Dr. Scott Smith to discuss collaborative research. Kyle Hackney will move to JSC in May/June 09 to spend two years working on his PhD dissertation research under Lori's supervision.

Lori Ploutz-Snyder is also dissertation advisor for Patrick Cowley. She further serves on the dissertation committee for Ruth Franklin and is MS thesis advisor for Syracuse University student Andrew Kelleher. Lastly, she will mentor Baylor University student Elizabeth Redd for a spring 2009 internship.

Lori Ploutz-Snyder was featured in a newspaper article (Athens Messenger) about interesting careers in exer-

cise physiology, and was contacted by a school district in Upstate New York to assist with assembling a presentation about interesting fitness-related careers for high school PE students.

Scott Wood completed an education and outreach experiment with six student researcher/interns on "Tactile Cueing as a Substitute for Gravity During Parabolic Flight". The students tested their responses to the tactile cues from a sensory belt during their flight on NASA's C-9 plane on January 13—14, 2009. This experiment was featured in a news story on KTRK-TV <http://abclocal.go.com/ktrk/story?section=news/health&id=6632255> and in an NSBRI news release. *(Continued on Page 6)*



Newsflash!

Formation of the New Exercise Physiology and Countermeasures (ExPC) Project

David Francisco, JSC's SK Division Chief, Human Adaptations and Countermeasures (HACD), just announced that effective immediately, the Exercise Countermeasures Project (ECP) and the Exercise Physiology Lab teams have been merged to form the Exercise Physiology and Countermeasures (ExPC) Project. He wrote that "the vision for the project is to identify, collect, interpret, and summarize evidence which results in effective, efficient exercise countermeasure protocols that protect crew health and performance during STS, ISS and exploration class missions". Linda Loerch will continue her role as Project Manager, while DSLS's own Lori Ploutz-Snyder will serve as Project Scientist for the newly formed organization.

Congratulations, Dr. Ploutz-Snyder!

SPOTLIGHT ON: Ajitkumar Mulavara, PhD! (cont.)



* *What is really important to you regarding your work at JSC?*

Working at JSC and to be part of the space program has been a wonderful opportunity. I thank my excellent coworkers who have supported me all these years. One of the important aspects is the interdisciplinary interactions and collaborative approaches needed to understand and solve problems in human health during space flight. All these are not possible without the cooperation and participation of crewmembers after both short and long-duration space flight missions. One of the motivations is in the application of solution to human health problems related to space flight here on Earth. The other motivation is in getting students excited about math, science and technology.

* *What are your goals for the New Year?*

These are exciting times where we will begin collecting data from crewmembers after short duration flights for the FTT experiment. My goals are to continue my work investigating issues related to human space exploration as

outlined above and balance this with spending more time with my family.

Thank you for being our Spotlight Scientist for this edition of the DSLS newsletter, Ajit!



Members of the Neuroscience Motion Laboratory (left to right): Ajitkumar Mulavara, Chris Miller, Jacob Bloomberg, Rachel Brady, Emily Lawrence, Crystal Audas, Jan Cook, Brian Peters, Elisa Allen.



Mentoring and Outreach (cont.)

Shaowen Hu served as a judge for the T. H. Rogers School Science Fair.

Jeff Ryder reviewed manuscripts for the *American Journal of Physiology—Endocrinology and Metabolism*, and the *Journal of Physiology*.

Jeff Ryder provided inputs and edits for the skeletal muscle portion of the HRP Education and outreach presentation being developed by Frassanito and Associates.

Ron White completed his Associate Editor assignment for the special issues of *IEEE Engineering in Medicine and Biology Society Magazine* devoted to Multiscale Modeling.

Billy Wallace served as science fair mentor for John and Jerome Jeevarajan. He also mentored intern Rasheen Imtiaz.

Ramona Gaza was invited to serve on the Technical Review Team to monitor progress of the “Space Radiation Instrumentation and Dosimetry” portion of Prairie View A&M University’s Center

for Radiation Engineering and Science for Space Exploration (CRESSE).

Patrice Yarbough completed teaching weekly Biotechnology class (BTEC 2320) at the University of Houston main campus.

Roni Cromwell completed a research project with four physical therapy students, “Gait Stability Ratio: A Measure of the Concurrent Validity as Measured During the 6-Minute Walk Test Versus the 5-Meter Walk Test”.

Roni Cromwell further completed a research project with four physical therapy students, “Test-Retest Reliability Study of the Gait Stability Ratio”.

Ajit Mulavara mentored JSC student intern David Cunningham, Sept—Dec 2008 and reviewed manuscripts for *Aviation Space and Environmental Medicine*, *Experimental Brain Research*, and *Neuroscience Letters*.

Janice Huff and **Jean Sibonga** participated in NSBRI Executive Advisory Council luncheon, December 3, 2008, Houston.

Marguerite Sognier assisted Dr. Marquette and student Ali Balal with the execution of a CCISD science fair project on the rate of loss of chemiluminescence under different temperature conditions.

Roni Cromwell reviewed a manuscript for the *Journal of Aging and Health* and was interviewed by Nippon TV regarding the Flight Analogs Program.

Jean Sibonga met with Dr. Erik Antonson, UTMB Aerospace Medicine Residency candidate, to discuss his interest in a research project in the bone discipline. She agreed to mentor MIT graduate student Rachel Ellman for a project on skeletal adaptation to weightlessness.

Sara Zwart mentors Sarah Watts, a Texas Women’s University masters/dietetics intern. She also mentored Emily Elton, a University of Houston dietetics intern, during December, as well as Dawn Dragos, University of Houston, who interned in the laboratory for four weeks.

