On February 9, 2010, DSLS scientist Sara Zwart, PhD, gave birth to little Emily Catherine - just a few days after presenting at the HRP workshop and at the DSLS Brown Bag Luncheon! With that much exposure to science while still in the womb, Emily is likely to become a great researcher herself! :) Welcome, Emily, and congratulations to Sara, Dan and big brother Jonathan!

New Member of the DSLS Team

On March 1, 2010, Dr. Minli Wang joined the DSLS team. Minli received her master degree in Medicine from Capital University of Medical Science (China). In 2005 she earned her Medical Doctor degree at the Institute of Medical Radiation Biology, Duisburg-Essen University (Germany). During the three years of postdoctoral training in the same institute, she studied the contribution of homologous recombination repair (HRR) and non-homologous end joining (NHEJ) in the repair of radiation induced DNA double strand breaks, and the possible function of alternative pathways of NHEJ that utilize PARP-1 and DNA Ligase III. She was selected for participation in NASA's Space Radiation Summer School in 2007. From 2009 she worked in the Radiation Oncology Department of Emory University, using a 3D culture of neuronal progenitor cells as a biological model to determine the function of PARP-1 dependent DNA repair pathway in the removal of clustered DNA damage in CNS in response to HZE. She now works in the Space Radiation Health Program with Dr. Francis Cucinotta, focusing on the roles of the Smads and activating transcription factor 2 (ATF2) proteins as the potential major contributors to cross-talk between the TGFβ and ATM pathways, and links to cell cycle control and/or the DNA damage response.

Minli’s office is currently at USRA Houston. She can be reached at wang@dsls.usra.edu and at (281) 244-2032. Please join us in welcoming her to the DSLS team!
2010 Human Research Program Investigators’ Workshop

The 2010 NASA HRP Investigators’ Workshop was held February 3 - 5, 2010, at the Westin Galleria Hotel in Houston. 472 attendees participated in plenary and break-out sessions to discuss “Human Research in the Post-Shuttle Era”. Led by Terri Jones, the DSLS administrative team provided the logistics for the meeting.

For the first time this year, USRA provided an award to recognize and highlight the accomplishments and future promise of a young investigator working on a NASA Human Research Program project. The recipient of the USRA Young Investigator Award was Dr. Daniela Trani, who works at Georgetown University under the guidance of Dr. Al Fornace. Her current research focuses on space radiation and intestinal tumorigenesis risk assessment. Congratulations, Daniela!

A student poster contest was held by the NSBRI, and Jean Sibonga’s former intern Rachel Ellman, a graduate of MIT, won first prize. Congratulations, Rachel!

Chris Westby was recognized in the New Talent Showcase, where he presented a talk on vascular differences between men and women at 6° head down bed rest. Congratulations, Chris!

Ah, Spring .... Remember the days of warmer weather? Sources differ in their estimation as to the last winter freeze in Houston, but it is supposed to occur mid- to late February. Keep your eyes on the 10-day forecasts though before you start working in your garden!

And remember another Spring feature: Daylight Savings Time begins in just a few days—March 14! Don’t forget to set your clocks one hour forward that Saturday evening!
DSLS Scientists At Suborbital Flight Training

DSLS scientists Scott Wood and Ramona Gaza, together with USRA astrophysicist Dr. Joanne Hill from Goddard Space Flight Center, successfully completed the inaugural suborbital scientist training program to familiarize themselves with human suborbital spaceflight. The course was held at the National AeroSpace Training and Research Center (NASTAR) outside of Philadelphia. NASTAR is a new facility that provides training and research support for the aerospace industry. The two-day program in January was designed to acquaint individuals with the physiological rigors of suborbital human spaceflight and included space flight training, altitude physiology, classroom work, centrifuge flights and altitude chamber runs.

The Suborbital Scientist-Astronaut training course has been developed by the NASTAR Center and is organized by Drs. Alan Stern and Dan Durda of the Southwest Research Institute.

Check out the DSLS website that now features a video of Ramona and Scott (www.dsls.usra.edu/new.html). To learn more, please mark your calendar for the DSLS Brown Bag Luncheon Seminar on March 25, where Scott and Ramona will share their experiences.

Education and Public Outreach

Regina Buccello-Stout mentored nine Graduate Student Research Projects and met with the groups weekly to guide them in finalizing their research proposals. She also teaches a Psychology Graduate Research Design course at the University of Houston Clear Lake.

Zarana Patel mentors a Reduced Gravity Education Flight Program / Systems Engineering Educational Discovery (SEED) project “Apparatus Development for 3D Cell Culture in Microgravity” to fly an experiment in the Microgravity aircraft.

Scott Wood mentored USRP intern M. Cordova.

Janice Huff assisted visiting scientist Dr. Oleg Belyakov.

Larry Kuznetz mentors Tom Miller, graduate student at University of Southwest Alabama.

Ajit Mulavara reviewed manuscripts for Journal of Vestibular Research and for Aviation Space and Environmental Medicine.

Lori Ploutz-Snyder met with University of Houston faculty about a dissertation project for student Meghan Everett and worked with Kyle Hackney to develop his dissertation proposal. Lori is also the dissertation advisor for Rocky Mountain State University student Lynne and participated by telecom in the dissertation defense for Ruth Franklin, PhD student at Syracuse University, who successfully defended her dissertation in Jan. Lori further mentored Laura Leonard, UH Clear Lake and judged 5th grade science fair projects for Sandra Mossman Elementary School, Clear Creek ISD.

Jessica Scott is a board member for “Space without Borders”, an organization looking to utilize space technology to benefit developing countries.

Claudio Carra reviewed a manuscript for J Com Chem.

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tissue systems for studies of space radiation health effects. The ultimate goal would be transition from in vitro to in vivo experimental models. The rationale of my work (in vitro - in vivo - in silico) is directed toward improving the estimation of space radiation induced cancerogenesis in humans by progressing from in vitro to in vivo and subsequently to in silico (i.e. computer) models.

What is most important to you regarding your work at JSC?

I think that JSC and USRA provide a unique environment of scientific excellence. There are many very bright researchers (and administrators!) around and it is a pleasure to work with them. On other hand NASA, in general, has very ambitious goals of space exploration and it is great to be a part of it.

What are your goals for this year?

Since I joined NASA JSC and USRA quite recently, my main activity is exploration and linking to the existing research. On the other hand, we were able to assemble a team for the new project: “Space Radiation Induced Cancer Progression and Genomic Instability in Human Bioengineered 3D Tissues and Humanized Mouse Models (SPACERADCAN)”. Now we are applying for the grant to implement this project. I also did some experimental work in collaboration with Prairie View A&M University. We irradiated 3D human EpiOcular tissues with neutrons at the Los Alamos National Lab (LANL). Pixel detection was utilized to record particle hits in the tissue with micron precision. Samples will be analyzed for DNA damage endpoints (H2AX/53BP1 foci) at various times after irradiation. The co-localization of the track passages and the biological effects will be performed.


Westby C (as Co-I) submitted DTO proposal "Evaluation of Commercial Compression Garments to Prevent Post-Spaceflight Orthostatic Intolerance." This DTO will address the efficacy of a new type of compression garment in preventing orthostatic intolerance after both short- and long-duration space flight. The project length of the study is 3-4 years.


Zarana Patel, PhD was accepted as a member of the Radiation Research Society’s Scholar-in-Training (SIT) Committee for a three year tenure.

Rob Ploutz-Snyder was invited as lead author of a Quantitative Analytical Methods chapter in a Handbook for Institutional Research. The Handbook is expected to be published by Jossey-Bass around June, and is part of the Professional Development mission of the National Association of Institutional Research.

DSLS Birthdays!

March 7 - Zarana Patel
March 10 - Rob Ploutz-Snyder
March 15 - Patrice Yarbough
March 24 - Lori Ploutz-Snyder
March 26 - Kellie Rogers
April 4 - Lingegowda Mangala
April 8 - Susi Zanello
April 8 - Sara Zwart
April 21 - Hatem Nounu

Happy Birthday!!!
Recent Scientific Presentations


Invited talk, **Belyakov O**, "Studies of non-targeted biological effects of ionising radiation", Space Radiation Journal Club, NASA JSC.


Invited talk, **Cromwell R**, "Lunar Analog Feasibility Study Results", Head Up Tilt Bed Rest Workshop, December 9, 2009, USRA Houston.

Invited talk, **Hada M**, "AT cells are not radiosensitive for chromosomal exchanges at low radiation doses", Radiation Biophysics Group Seminar, December 18, 2009, NASA JSC.


Invited talk, **Sibonga J**, "RMAT #1 Risk for Early Onset Osteoporosis", International Human System Risk Board, January 12, 2010, NASA JSC.


Upcoming Seminars at USRA Houston

March 10  BioAstronautics Speaker Series: Dr. Andrew Pilmanis, Research Physiologist (Retired), Air Force Research Laboratory, Brooks City Base, Texas: “Recent Severe Neurological Altitude Decompression Sickness (DCS)”

March 11  SMAR #10: Rob Ploutz-Snyder, PhD, USRA-DSLS: “Regression Analysis”

March 15  Research Seminar: Dr. William Marras: Professor and Director, Biodynamics Laboratory, The Ohio State University, Columbus, Ohio: “Assessment of Low Back Pain Causal Pathways in Relation to Physical and Psychological Exposure”

March 23  Aerospace Medicine Grand Rounds: Kevin Diehl, MD, Lyster Army Health Clinic, Fort Rucker, Alabama: “Operational Medical Care In and Out of Helicopters”
Patrice Yarbough teaches BTEC 2320: "Biotech Regulatory Environment" at the University of Houston Central Campus. She also attended a brainstorming session at Hunter College on new approaches to increase the number of women of color staying in science careers.

Roni Cromwell provided a tour of the Flight Analogs Research Unit for Ginger Wotring and a Nutrition Lab student intern.

Ramona Ganza supported the Technical Review Committee for the Prairie View University Research Center 4th quarter meeting at Prairie View by telecon where the progress of the PV URC has been discussed.

Myung Kim served as a reviewer for a manuscript submitted to Radiation and Environmental Biophysics and provided technical consult to Dr. Marcelo Vazquez, NSBRI Senior Scientist, for the probability calculation of having proton fluence above the double intensity of August 1972 event for a given mission period.

What’s Going On With ...

Oleg Belyakov carried out neutron irradiation of EpiOcular human artificial tissues in Los Alamos using ‘pixel detector’ in collaboration with Dr. Prem Saganti, Prairie View A&M University, and Zarana Patel. Oleg also began a 3D simulation of energy deposition in collaboration with Artem Ponomarev.

James Fiedler wrote a function for the STATA statistics program to convert data from STATA format to a format that WinBUGS, another statistics program, can understand. This new function has been added to an online repository of STATA functions.

Roni Cromwell and the FAP team successfully completed the Kick-Off Meeting for Campaign 9: Daily Bone Load Stimulus, Near Infrared Spectroscopy, and Standard Measures. The first subject will be enrolled in early March.

James Fiedler continued strategy development for the DAP STEM education outreach program. The current concept involves online game development centered around human health and countermeasures during exploration missions, particularly for ISS missions.

Rob Ploutz-Snyder volunteered at the Mossman Elementary School holiday luncheon and participated in a National Fathering Campaign as a “WATCH D.O.G.”. WATCH D.O.G.S. (Dads of Great Students) is the father involvement initiative of the National Center for Fathering that organizes fathers and father figures in order to provide positive male role models for students and to enhance school security. He also judged 5th grade science fair projects for Sandra Mossman Elementary School, Clear Creek ISD.

Jean Sibonga recorded a “Bone Research in HRP” vodcast with Teitronix contractor. This is the first vodcast in the HRP NewsNetwork.

Marguerite Sognier hosted an Honoring the Teachers event at Moody Gardens to honor teachers who are committed to being life-long learners and provided the introductory comments with slide shows for the program.

Virginia Wotring was a Science Fair Judge at Space Center Intermediate School. She also presented a short safety talk, “Safety in the Medicine Cabinet”, to the Weekly Management Tag.

Sara Zwart reviewed a manuscript for Medicine & Science in Sports and Exercise.

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Scott Wood completed 6 preflight test sessions for crewmembers on STS-130 for MR042S posturography. He also finished the repair of a rotator at KSC in preparation of ZAG-Otolith STS-130 post-flight testing.

Johnny Conkin received galley proofs to two chapters about women and DCS. Currently the publisher plans to release the book, Women and Pressure, at the Beneath the Sea conference in New Jersey in March.

Chris Westby established a collaboration between Dr. Honglu Wu (in NASA’s Space Radiation Element) and the Cardiovascular Laboratory with a focus on understanding the potential radioprotective effects of low-dose radiation in tissues that form the cardiovascular system.

Jessica Scott received approval to begin speckle tracking analysis on existing echocardiography bed rest data and finished analyzing MRI muscle images for the “MRI and Ultrasound Comparison” study. She also began a literature search for the meta analysis entitled “Effects of exercise training on aerobic capacity and skeletal muscle function in cancer patients” with collaborators from Duke University.

New Publications by DSLS Scientists

Baverstock K, Belyakov OV. 2010. Some important questions connected with non-targeted effects. Mutation Research / Fundamental and Molecular Mechanisms of Mutagenesis. [E-pub ahead of print]: http://dx.doi.org/10.1016/j.mrfmm.2010.01.002


