Dr. Lingegowda Mangala joined USRA in mid-November. Dr. Mangala received her Ph.D. from the Central Food Technological Research Institute (CFTRI) in India in 1998. After continuing her research career as a postdoctoral fellow at the Swedish University of Agricultural Sciences in Sweden and the National Food Research Institute in Japan (1999-2003), she joined the M.D. Anderson Cancer Center (MDACC) in Houston, TX as a Research Investigator. During her stay at MDACC, she worked on novel siRNA based therapeutic approaches for breast and ovarian carcinoma.

Dr. Mangala now serves in the Radiation Biology Lab at JSC under the direction of Dr. Honglu Wu. Her office is located in Building 37, Room 119A.

Dr. Jessica Scott commenced her work as a USRA scientist at the beginning of December. Dr. Scott received her BSc from the University of Alberta (2003), her MSc from the University of British Columbia (2005), and completed her PhD in Cardiovascular Physiology at the University of British Columbia in June 2009. For her dissertation, Jess studied the effects of exercise on cardiovascular function in elite athletes and heart transplant recipients and examined the consequences of exercise on orthostatic tolerance. She now serves as a post-doctoral fellow in the Exercise Physiology Laboratory at the NASA Johnson Space Center under the guidance of Dr. Lori Ploutz-Snyder. Her office is located in Building 261, Room 115.

Please join us in welcoming both Dr. Mangala and Jess aboard!
**Grant Proposals Submitted**

Serrador J, **Mulavara A, Wood SJ.** Assessment and training countermeasures to improve adaptation to Lunar and Mars gravity. Invited for Phase 2 submission for funding through NASA Research Announcement soliciting Research and Technology Development to Support Crew Health and Performance in Space Exploration Missions (NNJ09ZSA002N).


**Sibonga JD, Lin C, Roebuck JR.** Feasibility of magnetic resonance (MR) technology to measure deterioration in trabecular microarchitecture and degradation in intervertebral disc (IVD) composition in an analog for space-flight. Invited for Phase 2 submission for funding through NASA Research Announcement soliciting Research and Technology Development to Support Crew Health and Performance in Space Exploration Missions (NNJ09ZSA002N).


**Wotring G.** Validating the use of salivary samples for pharmacokinetic measures of sleep medications. HHC Short Proposal.


**Zanello S, Goodwin T, Godley B, Ploutz-Snyder R.** Effects of oxygen tension, pressure and microgravity on retinal health. Submitted for funding through NIH R21 announcement PA-08-016.

Smith SM & **Zwart SR.** Omega-3 Fatty Acids: A Nutritional Countermeasure for Space Flight-Induced Bone and Muscle Loss. Submitted in response to NASA Research Announcement NNJ09ZSA002N.
Research Grant Awarded!

Marguerite Sognier and her co-investigators received a $3,000.00 grant from the Texas Education Agency/TRC to support STEM Education training for middle school educators. Further, Marguerite and co-investigators received a $90,000.00 grant from the Texas Education Agency/TRC to provide mentoring for teachers in the classroom for less than two years.

New Publications by DSLS Scientists


Plante I & Cucinotta FA. 2009. Calculations of the energy deposition and relative frequency of hits of a cylindrical target in medium irradiated by ions by Monte-Carlo track structure simulations. *J Radiation and Environmental Biophysics* [e-pub].


Are you SMARing yet?

**SMAR** is DSLS’ series of professional development workshops on **Statistical Methods and Applications** Review! Even if you missed the initial meetings, you can still participate!

The next session will take place in January and focus on **Hot Topics** discovered during the previous classes. Join us in lively discussions about statistics and a wide variety of statistical approaches to gain knowledge from data. Lunch is provided.

Contact Dagmar at Morgan@dsls.usra.edu if you interested in attending.
Honors and Awards

Ramona Gaza and Yvonne Roed were recognized on October 15, 2009, with the SRAG Appreciation Award for exceptional self-assigned work. They coordinated and performed TL measurements for a total of 25 detector packages to meet an unexpected deadline. Congratulations, Ramona and Yvonne!
DSLS Seminars


Shea C & Keeton K. Assessing the Fidelity of Antarctica as an Analog: What We Know, What We Don’t Know. DSLS November Brown Bag Luncheon Seminar.

Presentations at the Space Radiation Journal Club
Chappell L. An Overview of Radiation Cancer Risks: A Literature Review of BEIR VII and UNSCEAR 2006 Reports.

Patel Z. Making Stem Cells From Differentiated Cells.

Presentations at the 15th Intl Microdosimetry Symposium


Hu S & Cucinotta FA. A cell kinetic model of granulopoiesis under radiation exposure: extension from rodents to canines and humans. Poster presented by Shaowen Hu.

Plante I & Cucinotta FA. 3D visualization of Monte-Carlo simulations of HZE track structure and initial chemical species. Oral talk presented by Ianik Plante.

Presentations at the 55th Annual Meeting of the Radiation Research Society

Hada M, Huff J, Patel Z, Pluth JM, George KA, Cucinotta FA. Analysis of chromosomal aberrations after low and high dose rate gamma irradiation in ATM or NBS suppressed human fibroblast cells. Poster presented by Megumi Hada.


Plante I, Cucinotta FA. Simulation of TGFβ activation by low-dose HZE radiation in a cell culture. Poster presented by Ianik Plante.


Presentations at the 60th Intl Astronautical Congress


Presentations at the Conference for the Advancement of Science Teaching, Galveston, TX
Sognier M. Pod-Casting for All! Oral talk.

Sognier M. Basic Biotechnology Methods. Oral talk with hands-on lab experiments.

Presentations at the Gerontological Society 62nd Annual Meeting

Scott Wood mentors USRP intern M. Cordova.

Larry Kuznetz advised University of South Alabama graduate student Tom Miller on a progress report for the improved 2-D human body thermal model.

Lori Ploutz-Snyder met with NASA managers to discuss the science merit review process for Syracuse University graduate student Kyle Hackney’s dissertation proposal. She is also working with PhD student Lynne Logan of Rocky Mountain State University as her dissertation advisor; Lynne has completed data collection in Syracuse and is now analyzing data.

Camille Shea reviewed seven Phase 1 SBIR proposals in the BHP Bmed Risk area and recommended three for funding.

Jean Sibonga reviewed eight proposals for the NIH F10B ZRG special emphasis review panel.

Marguerite Sognier provided booth support for the STEM Education Programs at Moody Gardens’ Open House, sold robotic bugs to support the BEST Robotics competition, and presented an invited talk “Overview of student and teacher STEM education programs” at the 10th Annual UTMB Regional Science Teachers Conference. She also sponsored and coordinated the Boosting Engineering Science and Technology (BEST) Robotics Competition which was held in Galveston.

Roni Cromwell reviewed articles for the Journal of Biomechanics and for Archives of Physical Medicine and Rehabilitation. She was interviewed by Amy Chodroff, a morning news anchor for WBAP News/Talk radio in Dallas.

Johnny Conkin led a tour of the pressure chambers and briefed six visiting Aerospace Medicine Clerks on environmental physiology research activities.

Susi Zanello was interviewed by the New York Times about the scientific concepts behind circadian clock proteins and whether or not they may be involved in the skin’s repair mechanisms. Susi also served as a volunteer in the HACD Booth at the JSC Open House during the 2009 Ballunar Festival.

Jeff Ryder reviewed two SBIR grants for crew exercise systems.

Sara Zwart reviewed a manuscript for the European Journal of Clinical Microbiology and Infectious Diseases, provided tours of the Nutritional Lab for DSLS Bioastronautics Seminar speaker Dr. Lynda Frassetto from the University of California San Francisco, and discussed NEEMO data with a visiting scientist from Idaho State University.

Upcoming Meetings at USRA Houston

Dec. 17 - 18  Lunar Electric Rover Generation II
Dec. 22  UTMB Orthopedics Department Grand Rounds
Dec. 29  UTMB Orthopedics Department Grand Rounds
Jan. 22  Cardio Lab Retreat
Jan. 28  DSLS Brown Bag Seminar - Sara Zwart, PhD
Feb. 2 - 3  Standard Conditions Workshop
Feb. 3 - 5  NASA Human Research Program (HRP) Investigators’ Workshop (at the Westin Galleria Hotel)
Feb. 8 - 12  MMOP Air Quality
Lealem Mulugeta’s Digital Astronaut computational model has entered the beta testing stage. He is working with the Digital Astronaut team to solidify the science plan and vision for the project, and is strategizing ways to engage the project in STEM education.

Larry Kuznetz volunteered as a beta tester for the Digital Astronaut computer program and provided feedback. Larry also organized a telecom with UH, Virginia Commonwealth and NASA for the purpose of establishing a multi-disciplinary team to submit an NSBRI grant proposal for incorporating wireless technology into the spacesuit bioadvisory algorithm (LEGACI).

Hatem Nounu reviewed the FORTRAN code of BRYNTRN with UHCL professor Terry Feagin and rewrote inefficient code segments, which resulted in run time savings of 25%.

Lori Ploutz-Snyder co-chaired a muscle/bone panel for the standing review panel meeting, at which 39 national experts convened to review the HRP research portfolio.

Jean Sibonga, seeking to assess bone microarchitecture for central skeletal sites for the SLSD Innovation Strategy, is preparing written descriptions of rationale, background and impact to the space program. Jean met with Dr. J.D. Polk to discuss convening a panel of leading osteoporosis clinicians in the spring of 2010 to formulate a Bone Health Policy for long-duration astronauts.

Johnny Conkin was asked by Dr. Tom Newman to contribute a chapter to the 6th edition of Bennett & Elliot, The Physiology and Medicine of Diving. As the sole author he will summarize 30 years of research to prevent DCS in shuttle astronauts. Further, Johnny is co-authoring a paper about break in prebreathe with Dr. Andrew Pilmanis, drafted a paper entitled “Decompression sickness after air break in prebreathe described with survival model” with Drs. Pilmanis and Webb, and is co-authoring a chapter in the Biomedical Results of the Shuttle with Dr. Mike Gernhardt.

Megumi Hada worked the NSRL09C experiment run at Brookhaven National Laboratory and discussed progress and future plans for the collaborative project “Rad Gene” space experiment with Dr. Katsunori Omori of JAXA.

Myung Kim completed the analysis of environmental and mission parameters of the recent 10 ISS missions according to dosimetry reports for the periods from September 2006 to November 2008, as well as the recent 7 STS missions for the periods from June 2007 to November 2008.

Ianik Plante completed the simulation of the association of a Brownian particle (TGFβ) with a partially absorbing boundary in 1D (cell membrane with TGFβ receptors) with the possibility of dissociation and a decay channel for the TGFβ and TGFβ receptor. The first paper about this project, “Calculations of distance distributions, probabilities of binding and initiation of signal transduction by ligands in a cell culture in 1D membrane simulations”, is also complete. Ianik has now started calculations for extension of the model in 1D (2 membranes), 2D and 3D.

Rob Ploutz-Snyder has been regularly teaching the DSLS Professional Development Course entitled SMAR (Statistical Methods and Applications Review) with great success. The lunch time classes are attended by about 30 people on average who highly appreciate his dedication, knowledge and teaching skills!
Happy Holidays!

The DSLS Administrative Team wishes you and your family peace and joy for the holidays and throughout the New Year.

The DSLS Newsletter is published on a bi-monthly basis.

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