Society for Free Radical Biology and Medicine
Established 1987

SFRBM dot

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IN THIS ISSUE:

- Radical View • Doug Spitz, Ph.D.
- President's Message • Henry Jay Forman, Ph.D.
- FRBM Call for Associate Editors
- 2012 Conference Recap: Comments & Candids
- 2012 Travel Award Recipients
- 2012 Young Investigator Award Winners
- Nominations Open for Student Trainee Council
- Institutional Membership Available for Free Radical Centers
- Call for SFRBM 2013 Session Proposals
- In Memoriam: Daniel Traber, Ph.D.
- Free Radicals Abroad: Akdeniz University - Turkey
- FRBM Editor's Report
- Literature Review

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Issue Contributors: Mutay Aslan, MD, Ph.D., Tak Yee Aw, Ph.D., Ines Batinic-Haberle, Ph.D., Gabi Hanna, Doug Thomas, Ph.D.

Radical View • Doug Spitz, Ph.D.

by Ines Batinic-Haberle, Duke University

Doug SPITZ

DOT: While you are still a relatively young researcher, when you look backwards as well as ahead, do you feel happy and fulfilled with what you are presently doing, or you would like to explore another topics within free radical biology medicine or perhaps out of this field? Do you have any large goals that you have not yet had time to accomplish?

I feel very fortunate to have found a fulfilling academic career in the field of Free Radical Biology and Medicine that gives me the opportunity to pursue my passion for science, education, mentoring, and translational research. I believe the scientific principles we are all pursuing may lead to the discovery of cures for some of the most devastating and costly human diseases. I also have a passion for sharing knowledge and theoretical constructs that lead to directly testable hypotheses with all members of the scientific and clinical communities. My two major career goals are to be part of the scientific community that trains the next generation of leaders in this field as well as helping promote the use of the scientific discoveries in redox biology for finding cures for cancer and slowing the degenerative processes associated with aging.

DOT: Who most impacted your career choice and professional development? What is the reason you became a scientist?

My father was a history professor at a liberal arts college and my mother directed a program for training registered nurses at a junior college. My parents were great mentors who taught me to value education, family, community, and altruistic behavior in all aspects of my life. They embodied in me their love of knowledge, the realization that history always repeats itself and learning true historical facts allows mankind to avoid repeating costly mistakes, and that having good health and strong family relationships was a blessing that should be treasured.

In my professional life, I feel very fortunate to have had my career choices and enthusiasm for scientific discovery shaped and influenced by Dr. Larry Oberley, who sparked my life-long passion for this field. Dr. Oberley was a physicist by training who became very interested in the confluence of physics, chemistry, and electronic biology as it related to understanding human diseases and aging. In this regard, Dr. Oberley was also one of the originators of the Free Radical Theory of Cancer. He taught me the history of the field beginning with the realization that we are all complex higher order biological structures that derive our life force from the ability extract, store, and move electrons.

He taught me his love of theoretical biology and that, first and foremost, biological theories had to explain the existing data as well as to generate testable hypothesis that could result in the refinement of the theoretical construct leading to predicting interventions for curing human diseases. Dr. Oberley instructed me how to participate in a highly collaborative and interactive academic environment governed democratically that always strived to advance the goals of all participating members, who in turn shared information as well as sharing in every member's success. Finally, he also taught me to lead by example, to always act in the interest of the greater good of science as well as education, and to strive to use these principles to create a self-perpetuating scientific community that will outlive any individual member. Sadly Dr. Oberley passed away from the effects of chronic kidney failure but his teachings live in me and all the people who were fortunate enough to know him. My goal is to pass this

knowledge along to the next generation of researchers who I believe will continue to pursue this endeavor to its logical conclusion of curing human diseases.

DOT: What has been thus far your most exciting discovery in research?

I have really enjoyed participating in the scientific discoveries in every project I have ever been involved in, but I think the most far-reaching discovery I may have made with my own hands in the lab (but time will really be the judge of this) was the discovery of glucose deprivation-induced oxidative stress in human cancer cells. For 80 years, people thought tumor cells consumed more glucose than normal cells because of a need to get more energy to support uncontrolled growth. This idea didn't really make sense to me as a graduate student because tumor cells could make energy from fat and protein. In collaboration with Dr. Yong J. Lee, we discovered that when you removed glucose from the media in cultures of MCF-7/ADR breast cancer cells they rapidly began to activate redox sensitive signaling and gene expression pathways that was accompanied by evidence of oxidative stress and eventually clonogenic cell killing (J. Biol. Chem. PMID: 9478987; Free Radic. Biol. Med. PMID: 9895234; Free Radic. Biol. Med. PMID: 10719239).

All these effects occurred more rapidly in human cancer cells, relative to normal cells, were inhibited by treatment with antioxidants that scavenged reactive oxygen species, and appeared to originate

The Spitz Lab at The University of Iowa

at least in part from mitochondrial oxidative metabolism (J Biol Chem. PMID:15561720; Biochem J. PMID:18937644). This discovery demonstrated a mechanistic link between the Free Radical Theory of Cancer I had learned from Dr. Oberley, the Genetic Theory of Cancer that I had learned in my post-doc at University of California at San Francisco, and the Metabolic Theory of Cancer originally proposed by Otto Warburg.

The observation that glucose deprivation induced oxidative stress occurred more readily in cancer cells (vs. normal cells) led to the hypothesis that cancer cells have defects in mitochondrial oxidative metabolism that lead to increased steady-state levels of pro-oxidants that are compensated for by increased glucose metabolism to generate reducing equivalents to detoxify hydroperoxides. While increased glucose metabolism keeps the cancer cell from succumbing to oxidative stress-induced reproductive cell death, the increased flux of both pro-oxidants and reductants needed to compensate for this defect in oxidative metabolism causes disruptions in normal redox regulated signaling pathways, increased genomic instability, uncontrolled cell division, an inability to properly differentiate, and progression to the malignant phenotype.

In this theoretical construct, cancer is proposed to represent a constellation of metabolic and/or genetic diseases where the common theme is the inappropriate flow of electrons from oxidative metabolic processes to redox sensitive signaling and gene expression pathways that govern cell growth and development (Ann. NY Acad. Sci. PMID: 10863552). This discovery has led my lab to test many new hypotheses directed at designing new strategies for selectively

killing cancer vs. normal cells (Cancer Res. PMID: 16452219; Cancer Res. PMID: 17409446; Free Radic Biol Med. PMID: 18215740; Free Radic Biol Med. PMID: 20083194) as well as understanding the effects of radio-chemo-therapy on cancer cells vs. normal tissues (Clin Cancer Res. PMID: 21844013; Cancer and Metastasis Reviews PMID: 15197331; Biochem J. PMID: 18352860; Radiat. Res. PMID: 19929420; Radiat. Res. PMID: 21268708).

structures that have evolved to extract store and move electrons to derive our life force, I believe that understanding the relationships linking redox biochemical reactions with biological phenomena will permeate all fields of biomedical research for many years to come. This field of research will hopefully lead to discoveries that will be helpful in developing novel strategies for easing the suffering caused by many human diseases.

> “My bias is that cancer and aging are the most interesting and ‘hot’ areas, but I know that there are many other equally interesting new areas of research.”

DOT: How would you advise a younger colleague on the start of his/her career?

I always try and advise my trainees to choose an area of science that they feel passionate about so that when they go to work each day they have fun and interesting pursuits to fulfill their professional lives.

DOT: In what direction do you belive our field is moving?

Since I still subscribe to the theory that we are all complex higher order biological

DOT: How do you view the marriage between business and academia?

I hope it continues to grow in a positive way that benefits the greater good of the “main customers” of the biomedical research community, which in my view, are the people afflicted with debilitating diseases.

DOT: Are there politics involved in fund distribution for research? What is your experience or your opinion?

I think an unbiased peer view system such as NIH has set up is the best way to distribute research funds and I feel we must all be diligent to avoid any conflicts of interest when serving in this capacity.

DOT: What do you see presently as “hot” areas of redox biology/oxidative stress?

My bias is that cancer and aging are the most interesting and “hot” areas, but I know that there are many other equally interesting new areas of research.

DOT: How crucial is it, given shortages in travel funds, to let your students participate in meetings?

I think we must do all we can to help students participate at all levels in scientific meetings as much as is possible. In this regard, I spend more than 50% of my own professional development funds each year sending students to meetings.

DOT: Do you think that foreign scientists and in particular, women are at a disadvantage if they want to move in their careers beyond postdoctoral fellowship?

I think that foreign scientists and women face all of the same challenges as everyone entering the scientific community today and that we should encourage their participation as much as possible.

DOT: Do you think that pressure caused by lack of research funds affects how freely we exchange our results and thoughts, and, precludes fruitful, sincere and productive research environment?

I share all my results and ideas freely and hope that they can help others to achieve the common goals of curing human diseases. This sharing becomes even more important during times of limited resources in order to keep making progress.

DOT: How do you achieve balance between your personal and professional life? Do you think that it is still possible somehow to manage to be dedicated scientist and a dedicated father?

I feel it is very important to be a well-rounded person with strong family values in a two career household. I find great strength and pride in being part of a strong family and am very devoted to playing my role as a father and husband as well as a member of a large extended family. My wife and I are equal partners in this endeavor and we strive for both personal and professional success we can share with our children.

DOT: Any story behind your signature baseball cap?

My baseball hat was always a practical device while I was growing up, either to keep my head warm in the winter, keep my hair out of my eyes, and keep the glare of the sun or rain from my face. As I got older, I began to wear hats with logos of schools I supported or sports teams my wife and I cheered for. I guess now I mostly wear caps with my University logo on them to show support for the workplace that I cherish.

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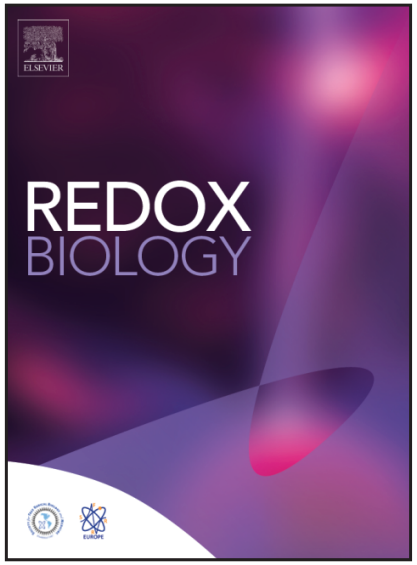

Redox Biology will be a forum for novel research, methods and review articles in redox biology in the areas of both health and disease. Acceptable paper types are research articles (short or full communications), methods, graphical reviews, mini-reviews, and commentaries.

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President's Message

Henry Jay Forman, Ph.D.

We live in challenging times both economically and scientifically but challenge brings opportunity and there is clearly a bright future ahead for SFRBM. Our Past President, Harry Ischiropoulos, began several exciting initiatives that will be implemented this year. These include having SFRR-Europe adopt our flagship journal, *Free Radical Biology & Medicine*, as their official journal. This, and other initiatives noted below, will be part of a major effort to improve the visibility of the society and FRBM. In a second partnership with SFRR-Europe and Elsevier, *Redox Biology*, a new open access journal, is being launched. SFRBM thanks Harry and Victor Darley-Usmar for leading negotiations for new contracts for the two journals with Elsevier that will provide financial security for the society.

While our field and science in general are advancing at a rapid pace, shrinking financial support for research from government and non-governmental agencies challenges us along with the increasing expectation that basic science will be translated into improved health outcomes sooner than later. At the recent SFRBM 2012 meeting, a greater emphasis on clinical relevance of our field was very apparent. This is a trend that began years ago but must continue to accelerate. Indeed, the Program Committee for next year will have a large contingent of physician-scientists, whose goal will be to help the society move further in that direction.

Basic science must also continue to grow as it is the foundation of our field. One can see on the SFRBM Research Forum that as we have become more cognizant of the limitations in methodology for measuring reactive species, the need to develop better methods is essential. As basic scientists and educators, we also must teach the rest of the scientific community about both the value and limitations of these methods. This is essential for our field and for SFRBM to be increasingly recognized as the authority in free radical biology and its application to medicine. For example, as basic research into the intricacies of redox signaling has developed, the older focus on oxidative stress has not been abandoned but shifted towards understanding of its relationship to areas including autophagy, cell fate decisions, inflammation, and the application of this basic work to the diagnosis and treatment of disease.

SFRBM is now entering the final year of our five-year strategic plan. So, we will be evaluating our progress and planning another strategic

“As basic research into the intricacies of redox signaling has developed, the older focus on oxidative stress has not been abandoned but shifted towards understanding of its relationship to areas including autophagy, cell fate decisions, inflammation, and the application of this basic work to the diagnosis and treatment of disease.”

plan. This will be largely based on the significant progress made in several areas including advancing the stature of SFRBM through outreach as exemplified by the three joint sessions with the Gerontological Society of America organized by Kelvin Davies. The inclusion of NIH administrators at our annual meeting and the formation of a new structure suggested by Anne Diers Dranka, to increase participation of graduate students and postdocs in our society and give them seats on our Council, are representative of changes that will further promote professional development, a major cornerstone of SFRBM.

In the rest of my limited space, I want to thank all of my predecessors for their valuable achievements in making SFRBM a great organization. We also have an outstanding journal and a new open access journal that is well on its way towards a successful launch. Having been one of the founders of the society back in a hotel room in San Diego, I want to thank the society for giving me the opportunity to come back to become its president. Now, I ask all of you to volunteer for committees, talk to your non-member colleagues about joining SFRBM, and help us meet and exceed the challenges ahead.

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SFRBM wishes to express its gratitude to the following institutions and companies that ensured the success of SFRBM 2012.

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FRBM – CALL FOR ASSOCIATE EDITORS

Three positions available starting April 2013, Application Deadline February 15, 2013

The Society for Free Radical Biology and Medicine (SFRBM) and the Society for Free Radical Research – Europe (SFRR-E) is seeking applications for three (3) Associate Editor positions for their journal, *Free Radical Biology and Medicine* (FRBM), to begin in **April 2013**. *FRBM* is an international, interdisciplinary journal that publishes original contributions and reviews on a broad range of topics relating to redox biology, signaling, biological chemistry and medical implications of free radicals, reactive species, oxidants and antioxidants. FRBM has an impact factor of 5.423, with 29,614 citations and 1.1 million article downloads this past year; more than 1,300 manuscripts are submitted annually with an acceptance rate of about 25%. Details of the journal's aims and scope, as well as current editors can be found at **http://sfrbm.org/sections/publications/frbm-journal**.

Ideal applicants will be experienced, established investigators with an active research program in any of the topic areas published by the journal including the chemistry, biology, or medicine of reactive oxygen and nitrogen species, oxidative stress, or antioxidant function and chemistry, as related to human health.. The preferred candidates will have a broad-based background in all major aspects of free radicals, redox biology, antioxidants, and oxidative stress. Prior experience on the editorial board of a scientific journal would be an advantage. Applications from individual that reflect the diverse membership of SFRBM and SFRR-E are particularly encouraged.

The duties of an Associate Editor are to select reviewers and render decisions that maintain rigorous scientific standards in a timely manner on manuscripts submitted to FRBM through a central office. Currently, one Associate Editor serves as a "Reviews Editor; this function is rotated every two years among the associate editors. The new Associate Editor must be prepared (if asked) to fulfill this function at some future date.

Appointments are for a five (5) year term and Associate Editors are permitted to serve two (2) consecutive terms. At the conclusion of the first five-year term, an Associate Editor will compete for a second term along with all interested candidates identified through an open call such as this. FRBM's publisher, Elsevier, provides an annual honorarium and expenses.

FRBM is an integral part of SFRBM and SFRR-Europe. Associate Editors are required to be SFRBM or SFRR-E members and attend the annual SFRBM conference each November where an in-person Editors meeting is held. Additional aspects of the Associate Editors' function are detailed on the Society's website.

Applications must include a letter (maximum 2 pages) stating the applicant's strengths and qualifications to serve as an Associate Editor, along with a current curriculum vitae (CV). These must be submitted by February 15, 2013 as a single PDF file with an email addressed to both Andre Melendez, Publications Committee Chair at jmelendez@albany.edu and Kent Lindeman, SFRBM's Executive Director, at klindeman@hp-assoc.com. Questions regarding editorial duties and philosophy may be directed to the Editor-in-Chief, Kelvin Davies at **kelvin@usc.edu**.

If you have any general questions about the application process, please contact:

Andre Melendez, Ph.D.
Chair, SFRBM Publications Committee
University at Albany - SUNY
email: **jmelendez@albany.edu**

SFRBM 2012 TRAVEL AWARD RECIPIENTS

SFRBM's Junior Awards Committee wishes to congratulate the winners of the Society's annual Travel Awards. These awards were made available to students and postdocs who applied to attend SFRBM 2012 to present their research. Submitted abstracts were judged using a double blind review process. Ten (10) awards at $1,000 each were conferred to postdoc or student members of SFRBM outside of the United States. In addition, ten (10) Travel Awards at $500 each were presented to postdoc and student members in the US and an extra five (5) awards were made available to trainees in Mexico and Central America. Winners received special recognition and their awards at the SFRBM 2012 Awards Banquet in San Diego.

Kristine Ansenberger-Fricano
University of Illinois at Chicago

MnSOD Regulation of AMPK- Mediated Transition to Glycolysis in Breast Cancer

Marcela Briones Martín del Campo
IPICYT – Mexico

The Superoxide Dismutases in the Fungal Pathogen Candida Glabrata

Sebastián Carballal
Universidad de la República – Uruguay

The Heme in Human Cystathionine -Synthase: Kinetics of Reduction and Reoxidation

Ricardo Castro-Acosta, *UNAM – Mexico*

Effect of Oxidation on Viral Protein Macrostructures Assemblies

Juan Conde Perez-Prina
Universidad Autónoma Metropolitana – Mexico

Primary Astrocytes from Adult and Old Rats are able to Activate an Antioxidant Responst via NRF-2 Nrf-2 when Pretreated with Low Levels of Oxidative Stress

Veronica Demicheli
Universidad de la República – Uruguay

Cardiolipin-Mediated Facilitation of Cytochrome C Tyrosine Nitration by Peroxynitrite

Luis Flores-López
Universidad Autónoma Metropolitana – Mexico

Phosphorylation, O-N-Acetylglucosaminylation and Poly-ADP-Ribosylation of P53 in RINm5F Cells Cultured in High Glucose

Ana Gamez
Instituto Politécnico Nacional – Mexico

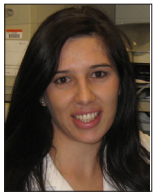
Obesity Enhances Acetylcholine-Dependent Constriction Response on Coronary Arteries

Thiago Genaro-Mattos
Universidade de São Paulo – Brazil

Cytochrome C Modifications Promoted by Cholesterol Aldehydes – Implications to Electron Transport and Apoptosis

Samantha Giordano
University of Alabama at Birmingham

Mitophagy Plays an Important Role in Preserving Neuronal Bioenergetics and Cell Survival in Response to an Environmental Toxin



Luciana Hannibal
Cleveland Clinic

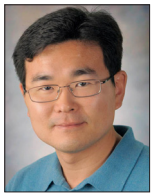
Kinetic and Structural Characterization of Inducible Nitric Oxide Synthase Substituted with Mesoheme

Shuxia Jiang, *University of Iowa*

Nox1 NADPH Oxidase Is Necessary for Late, But Not Early, Ischemic Preconditioning Against Myocardial Infarction in Mice

Rio Juni, *Cardiovascular Research Institute Maastricht - The Netherlands*

Tetrahydrobiopterin Prevents Lung Ischemia/reperfusion-Induced Uncoupling of Endothelial Nitric Oxide Synthase

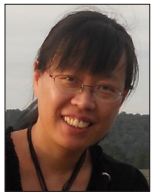


Hong Seok Kim, *UT Health Science Center at San Antonio*

Mitogen-Activated Protein Kinase Phosphatase-1 and the Redox Regulation of Monocyte Adhesion and Migration

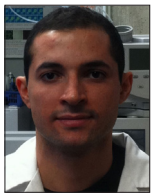
Anna Klinke, *University Heart Center Hamburg – Germany*

Myeloperoxidase Aggravates Pulmonary Arterial Hypertension in Mice



Qiuli Liang, *University of Alabama at Birmingham*

Role of Sirt3 in Autophagy



Dorival Martins, *Concordia University – Canada*

Cysteine 146 of CuZnSOD Is Oxidized to Sulfonic Acid During Aging of Yeast: A Potential Mechanism Underlying Sporadic ALS Onset

Karim Michail, *University of Alberta – Canada*

Endogenous Metabolites Modulate Macromolecular Free Radicals Derived from Aromatic Amine Drugs in Neutrophil-Like Myeloid Leukemia Cells

Tanecia Mitchell, *University of Alabama at Birmingham*

Mitochondrial Protein and Enzyme Quality in Type I Diabetes Mellitus Pathogenesis

Colin Murdoch
Boston University

Glutaredoxin-1 Negatively Regulates VEGF Signaling Inhibiting Angiogenesis in a Model of Hind Limb Ischemia

Burak Ozkosem
McGill University – Canada

Detrimental Effects of Oxidative Stress on Spermatozoa Lacking Peroxiredoxin 6

Thorben Ravekes, *Heart Center, University Hospital Cologne – Germany*

MPO-Deficiency Alleviates Dilative Cardiomyopathy in MLP-Deficient Mice

Humberto Rodriguez-Rocha, *University of Nebraska-Lincoln*

Compartmentalized Oxidative Stress in Dopaminergic Cell Death Induced by Pesticides and Complex I Inhibitors: Distinct Role of Superoxide Anion and Superoxide Dismutases

Alexsandra Scalfo
Universidade de São Paulo – Brazil

Singlet Molecular Oxygen Generation by Oleic Acid Hydroperoxides with Nitronium Ion

Jennifer Streeter
University of Iowa

Nox1 Phosphorylation in Cardiovascular Disease

2012 YOUNG INVESTIGATOR AWARD RECIPIENTS

SFRBM recognized 15 outstanding student and postdoc members with Young Investigator Awards (YIAs) at the society's Closing Banquet in San Diego. Each winner received $500 cash and a free registration to the association's 2013 or 2014 Annual Meeting.

Dario Vitturi, *University of Pittsburgh*

Modulation of Nitroalkene Signaling by a Novel Nitroalkene Reductase Activity

Irwin Fridovich YIA Award – 1 of the top 2 scored abstracts/presentations at SFRBM 2012

Stephanie Wall
University of Alabama at Birmingham

Oxidative Modification of Rac1 by the Electrophilic Lipid, 15-Deoxy 12,14 Prostaglandin J2 in Vascular Endothelial Cells

Larry Oberley YIA Award - 1 of the top 2 scored abstracts/presentations at SFRBM 2012

Malvika Rawal, *University of Iowa*

Potential of Manganoporphyrins to Enhance the Efficacy of Pharmacological Ascorbate in the Treatment of Pancreatic Cancer

Larry Oberley YIA Award in Cancer recognizing the highest scored abstract/presentation in the area of Cancer

Livia Camargo
University of São Paulo – Brazil

Protein Disulfide Isomerase: A New Player in Angiotensin II Redox Signaling in Hypertension

Adam Case, *University of Nebraska*

Disruption of Mitochondrial Superoxide Flux Causes Abnormal Heme Synthesis and Hemoglobin Gene Regulation in Erythroid Precursor Cells

Matthew Dodson
University of Alabama at Birmingham

Autophagy Plays a Protective Role in the Response to Decreased Glucose Metabolism and Oxidative Stress in Neurons

Brian Dranka, *Medical College of Wisconsin*

The NADPH Oxidase Inhibitor Diapocynin Prevents Parkinson's Disease Symptoms in the Leucine-Rich Repeat Kinase 2 (LRRK2R1441G) Transgenic Mouse

Chao He, *University of Iowa*

Redox Regulation of the Macrophage Phenotype Modulates Pulmonary Fibrosis

Christelle Kamga, *University of Pittsburgh*

Nitrite Activates Protein Kinase a in Normoxia to Increase Mitochondrial Fusion and Confer Delayed Cytoprotection After Ischemia/ Reperfusion

Saptarshi Kar, *Wayne State University*

Exploring the Role of SOD During ENOS Uncoupling Through a Computational Approach

Gizem Keceli, *Johns Hopkins University*

Reactivity of HNO-Derived Modifications of Peptides and Proteins

Chen Liu, *Wake Forest University*

Nitric Oxide Scavenging by Red Blood Cell Microparticles

Donald McCarthy, *University of Albany*

Redox-Regulation of Senescence Associated IL-1 Expression, Subsequent Processing and Its Impact on the Tumor Microenvironment

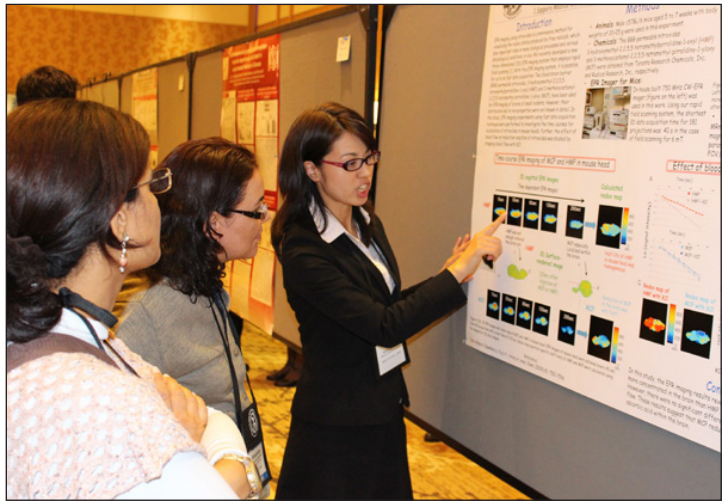
Hitesh Peshavariya, *University of Melbourne*

Prostacyclin Signalling Promotes Cytoprotection and Angiogenesis Via Up-Regulation of NADPH Oxidase 4

Erin Rosenbaugh, *University of Nebraska*

Nanoformulated Copper/zinc Superoxide Dismutase (CuZnSOD) Inhibits the Central Angiotensin II (AngII)-Induced Pressor Response

SFRBM 2012 RECAP – SAN DIEGO: CANDIDS AND COMMENTS



A wealth of cutting-edge research was shared during daily poster sessions.

Stan Hazen holds court after a morning talk.

Attendees were asked to comment on the scientific content of SFRBM 2012, why they enjoy coming to the meeting and how it contributes to their overall research and professional development. Here are some of the responses:

It was the best meeting in many years. Plenary presentations were outstanding. The diversity of speakers and fields was outstanding. The oral presentations were also excellent.

Alvaro Estevez, Ph.D., University of Central Florida

I was very appreciative of the wide range of research presented. Free Radical School and plenary session speakers ranged from chemists to physiologists and provided a lot thought-provoking information.

Madelyn Hanson, Ph.D., Medical College of Wisconsin

I felt the content this year exceeded previous years in depth and complexity.

Brad Hill, Ph.D., University of Louisville

Excellent scientific content especially with relation to areas such as gastroenterology and redox systems biology.

Saptarshi Kar, Ph.D., Wayne State University

Excellent. Covered a wide range of topics. Great introduction to the field as a new student.

Elizabeth Oczypok, University of Pittsburgh

Great. As always, the scientific content of the SFRBM meeting was awesome. Even content out of my area of expertise was a joy to listen to and learn about.

Matthew Zimmerman, Ph.D., University of Nebraska Medical Center

The field of redox biology is continually expanding and I find this to be the best meeting to learn of new advances and cutting-edge technology.

Margaret Briehl, Ph.D. , The University of Arizona

Good for acquiring basic fundamental knowledge, as well as learning state of the art developments.

Philip Eaton, Ph.D., Kings College London

This is very generous and interactive group, and the numerous opportunities to talk promote the exchange of ideas. I also think people are very good about exchanging reagents and methods.

Nicholas Heintz, Ph.D., University of Vermont

SFRBM is a great place to meet new people in your field. As well, it enables fruitful co-operations for future research. This is a place, where you can present your poster and at the same through the active discussion during this presentation form collaborations for the lab.

Yuliya Mikhed, Johannes Gutenberg University, GERMANY

Every year I learn something new. Every year I come back with a list of new experiments I want to run. Every years there is a figure in my poster that represents an experiment suggested or that spawned from the previous year's conference. The social time spent with other researchers help build future collaborations and pick great minds for ideas. This year I came back with a very solid possible collaboration.

Edward Moreira, Ph.D., Northwestern University

Format of the conference was very engaging. - I enjoyed the interactions with students, postdocs, and professors all of which were able to answer questions or simply converse about development of a career in research and continuation toward my degree.

Matthew Randall, University of Vermont

Victor Darley-Usmar receives the Lifetime Achievement Award.

Sruti Shiva (right) and Brian Day led an informative Sunrise Free Radical School.

Tanecia Mitchell and Tenelle Presley

I have certainly learned a lot especially since I am relatively new in the field. I found the Sunrise school especially informative, providing a backbone for understanding the field.

Aaron Sverdlov, MD, Ph.D., Boston University

My participation in this meeting has afforded me much education through the Sunrise Free Radical School. I have also had the ability to present my research in both poster and platform presentations. The laid-back style of the meeting has given me the opportunity to fine-tune my presentation skills. The society has given me a way to give back through participation the Young Investigator Award program.

Trent Tipple, Ph.D., Nationwide Children's Hospital

A highlight of any SFRBM meeting is spending time talking to Garry Buettner.

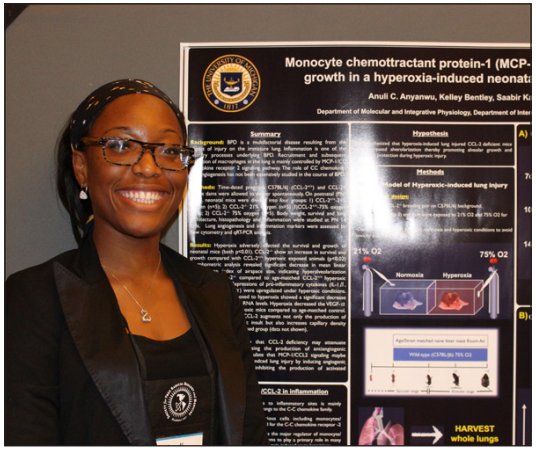
Rick Domann and Nadine Hempel

Margaret Briehl and Marcelo Bonini

Nick Khoo, Krisztian Stadler & Shawna Wicks

Aimee Landar and Ginger Milne

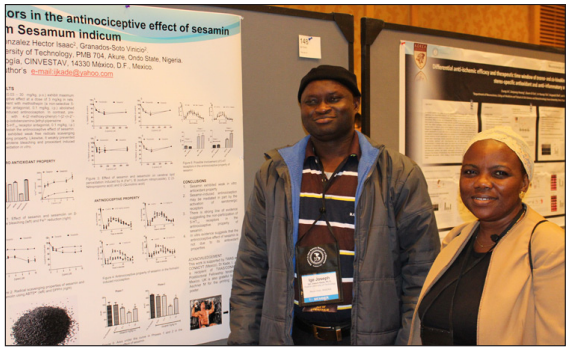
EPR says what?



Anuli Anyanwu shares her latest work.

Danny Manor and Allan Butterfield, SFRBM's newest Fellow.

Trent Tipple using the new SFRBM Mobile App to navigate the meeting schedule.



Ige Kade and Rahmat Adisa - welcome to two first time attendees from Nigeria.

Terry Kavanaugh & Brian Day collaborate.

Debalina Goswami, Jayasree Nath, Ting - Ting Huang and Shuxia Jiang

News Shorts

Nominations Open for SFRBM Trainee Council Members

SFRBM is searching for student or postdoc members to serve on a new Trainee Council that will encourage more trainee activity and participation within the society. This body will represent undergraduates, graduate and medical students, and residents as well as clinical and postdoctoral fellows. We are looking for those young investigators who are outstanding leaders with great ideas for how the SFRBM can support early-career scientists.

Nominations for these positions are open through February 1, 2013 and should be submitted to **info@sfrbm.org**. To be considered, please include a brief description of the candidate's research interests (limit of 100 words), a statement of why the candidate wishes to serve on the Trainee Council (limit of 200 words), career goals (limit of 200 words), an eligibility statement, a brief *curriculum vitae* and a letter of recommendation from the candidate's mentor.

The initial 5-member Trainee Council will be elected in a vote of all student and postdoc members in March 2013 with the two-year terms to start in April 2013. If you have any questions, please contact Ines Batinic-Haberle, Young Investigator/Trainee Committee chair at **ibatinic@duke.edu**.

Institutional Membership Now Available for Free Radical Centers

Starting with the 2013 membership renewal cycle, institutions, academic departments or institutes involved in redox research may elect Institutional Membership for their faculty and trainees. This will allow departments the option to pay one annual fee for SFRBM membership instead of processing multiple individual dues statements as well as add as many trainees members as they wish at no additional cost.

At a cost of $1,000 per year, Institutional Membership includes one (1) faculty member and an unlimited number of graduate students, postdoctoral fellows, residents or clinical fellows. 5 faculty members and unlimited trainees are included at $1,500 per year and 10 faculty and unlimited trainees are available for $2,000. For more information or to receive an Institutional Membership form, please contact SFRBM at **info@sfrbm.org**

Call for SFRBM 2013 Session Proposals

SFRBM is soliciting proposals from investigators for plenary session topics and speakers at SFRBM 2013, to be held November 20 – 24 in San Antonio, TX USA. Proposals covering a broad range of topics are encouraged such as the role of dietary and cellular antioxidants in health and disease, redox cells signaling and the effects of reactive oxygen and nitrogen species in biological systems. Proposals, which have a clear theme and high profile speakers encompassing basic mechanisms through clinical applications, are of particular interest.

Please visit **http://sfrbm.org/sections/sfrbm13proposal.php** to find additional details and guidelines for submitting your proposal. The deadline for submitting a proposal is **January 15, 2013**. Please contact Lori Pearson, SFRBM's Meeting Manager, at **lpearson@hp-assoc.com** if you have any questions.

In Memoriam

Daniel Traber, Ph.D., 74 (University of Texas Medical Branch – Galveston) passed away on September 19. Dr. Traber gave over 50 years service to UTMB as a professor and research scientist of anesthesiology and physiology. With over 500 publications, he was internationally recognized as the foremost authority on smoke inhalation injury and burns. Traber was a long-time SFRBM member and was an abstract reviewer for a number of society meetings. He was recognized by President Harry Ischiropoulos at the beginning of the recent SFRBM 2012 meeting in San Diego with a special slide and a moment of silence.

Free Radicals Abroad

Department of Medical Biochemistry, Akdeniz University

Dr. Mutay Aslan (third from right) leads a productive lab at Akdeniz University.

Advancement, accomplished through research, is a strong motivation for the laboratory of Dr. Mutay Aslan, Department of Medical Biochemistry, Akdeniz University Faculty of Medicine, Antalya, Turkey. Antalya city is a popular tourist destination on the Mediterranean coast of southwest Turkey and is surrounded by stunning beauty of mountains. In the last 10 years, Turkey has moved forward in scientific research and substantial governmental support has encouraged development of local science and scientists.

Dr. Aslan's main research interest has been on nitrative and oxidative tissue injury in disease states such as Sickle Cell Disease, Glaucoma, Diabetes and Liver ischemia reperfusion. Collaboration with groups in the USA and Canada is a strong driving force for Aslan's Lab. In collaboration with Ines Batinic-Haberle at Duke University, Aslan's research group has shown that Manganese porphyrin reduces retinal injury induced by ocular hypertension in rats. In 2012, a research project entitled "The Role of Neutral Sphingomyelinase in Endoplasmic Reticulum Stress and Inducible Nitric Oxide Synthase Activation in Glaucoma" was launched, supported by the Scientific and Technological Research Council of Turkey (TUBITAK), with Dr. Aslan as the principal investigator. Dr. Bulent Mutus at the University of Windsor Canada is participating in the research project with the goal of exploring the role of neutral sphingomyelinase in signaling functions of reactive nitrogen species.

FRBM Editor's Report

Presented by Kelvin Davies at SFRBM Business Meeting – November 15, 2012

Achievements in 2012

- Continued publication of top flight Reviews
- New high impact Methods paper section
- Special Issue: Translational Aspects of Free Rad. Biol.
- Position paper on Fluorescent Dyes
- Supported SFRRI Congress – London, Sept. 2012
- Over 1.1 million Downloads
- Over 7,000 Institutional Subscriptions
- Your Paper Your Way – a real success
- Highlights and Graphical Abstracts in papers
- Official Journal for SFRR Europe too in 2013

Plans for 2013

- Special issues: Antioxidants, Methods, Neurodegeneration, miRNA, Aging
- Position paper on Measurement of Lipid Oxidation
- Further increase Review Papers
- Increase publication of Methods Papers
- Article-based publishing begins
- Enhanced online version capabilities
- 3 New Associate Editors

Literature Review

Antiangiogenic cancer therapy: Suppression of Tumor Metastasis, and epithelial-to-mesenchymal transition by Concurrent Inhibition of c-Met and antiangiogenic agent. *(a) Lu KV, Chang JP, Parachoniak CA, Pandika MM, Aghi MK, Meyronet D, Isachenko N, Fouse SD, Phillips JJ, Cheresh DA, Park M, Bergers G. Cancer Cell. 2012 Jul 10;22(1):21-35. doi: 10.1016/j.ccr.2012.05.037; (b) Sennino B, Ishiguro-Oonuma T, Wei Y, Naylor RM, Williamson CW, Bhagwandin V, Tabruyn SP, You WK, Chapman HA, Christensen JG, Aftab DT, McDonald DM. Cancer Discov. 2012 Mar;2(3):270-87. Epub 2012 Feb 24.*

Angiogenesis is a normal and vital process in growth and development, as well as in wound healing and in granulation tissue, but also a fundamental step in tumor growth and the formation of metastases. Various classes of angiogenesis inhibitors exist which are able to inhibit various aspects of the multistep-process of angiogenesis. First cancer drug targeting angiogenesis, Avastin was approved by FDA in 2004 for colon cancer. This opened a new direction in cancer treatment with less toxicity relative to chemotherapy as well as a promise to cancer patients. However, the discussions related to the benefit of antiangiogenic therapy are ongoing. Some of the unresolved questions are: 1. When antiangiogenic is combined with chemo- or radiotherapy the timing of each individual therapy is a critical issue; 2. In clinic physicians demonstrate that the quality of life is improved especially for brain tumor patients, but little effect on life extension was observed; 3. Recently, growing studies show that antiangiogenic therapy increases metastasis. Recently two studies in particular (Cancer Cell 22, 21–35, July 10, 2012, Cancer Discovery; 2(3); 270-87, 2012) addressed these issues.

The c-Met is a receptor tyrosine kinase that has been shown to be overexpressed in a variety of malignancies. Both studies noted that VEGF, when combined with selective c-Met inhibition. is able to limit the migration of glioblastoma cells towards hepatocyte growth factor (HGF), a ligand for the pro-invasive receptor Met. Bergers and colleagues orthotopically injected mice with transformed mouse astrocytoma cells that either lacked vascular endothelial growth factor, VEGF expression (VEGF-knockout -VEGFKO cells), or had normal levels of VEGF (glioblastoma-wild type) or had overexpressed VEGF (VEGFKO–VEGF). As expected, the VEGFKO cells grew invasively along blood vessels, whereas the glioblastoma-WT cells produced angiogenic tumours with locally invasive cells. The VEGFKO–VEGF cells produced tightly packed tumours with smooth borders, suggesting the existence of few invasive cells. Although the levels of Met expression did not differ among these tumors, levels of phosphorylated Met were substantially different, with the highest levels evident in the VEGFKO cells. Similarly high levels of phosphorylated Met were evident in biopsy samples from patients with glioblastoma who had relapsed while on Avastin. Mice injected with VEGFKO cells transduced with shRNAs to target Met, developed tumors with reduced invasive growth. Part of this reduction is attributable to the blockage of a mesenchymal phenotype that becomes evident once Met is phosphorylated in the absence of VEGF. Indeed, mesenchymal markers were found with invasive glioblastoma cells in biopsy samples from patients with glioblastoma who relapsed on Avastin. These studies indicate that patients with glioblastoma who express both Met and VEGFR2 on their tumour cells might benefit from treatments that block both VEGF and HGF (Met receptor ligand) signaling. *Prepared by Gabi Hanna, Duke University Medical Center.*

Endogenously produced nitric oxide mitigates sensitivity of melanoma cells to cisplatin. *Luiz C. Godoya, Chase T. M. Andersona, Rajdeep Chowdhurya, Laura J. Trudela, and Gerald N. Wogana. PNAS November 26, 2012.*

Melanoma is an aggressive cancer with limited therapeutic options. One of the more common forms of chemotherapy used is cisplatin, a DNA cross-linking and damaging compound that triggers apoptotic cell death. Unfortunately, melanoma is relatively resistant to the apoptotic effects of cisplatin and mechanisms to explain this have

remained obscure. One of the interesting phenotypes of metastatic melanoma cells is the constitutive expression if inducible nitric oxide synthase (iNOS). A strong correlation has been shown between the prevalence of tumor cells expressing iNOS and shortened survival of patients with advanced melanoma. It has also been demonstrated that inhibition of endogenous nitric oxide production increases sensitivity to cisplatin *in vitro*. Herein, the authors demonstrated that melanoma cells express iNOS constitutively and generated sustained nanomolar levels of NO. Inhibition of NO synthesis or chemical scavenging of NO enhanced cisplatin-induced apoptotic cell death. Their data suggests that S-nitrosation is a possible mechanism underlying these effects of NO by demonstrating that S-nitrosation of cellular proteins is strongly associated with the response to cisplatin in human melanoma cells. When protein S-nitrosation was disrupted, cisplatin toxicity increased, whereas the stabilization of S-nitrosothiols (SNOs) decreased cisplatin cytotoxicity. Furthermore, in cisplatin treated cells, intracellular NO concentrations were increased significantly in the cells that survived. These higher NO levels resulted in increased S-nitrosation of caspase-3 and prolyl-hydroxylase-2 that the authors concluded was part of the complex mechanism of drug resistance. These findings highlight the therapeutic potential of modulating NO levels to increase the efficacy of cisplatin therapy for the treatment of melanoma. *Prepared by Douglas Thomas, University of Illinois at Chicago.*

Hyperactivity of the Ero1αα oxidase elicits endoplasmic reticulum stress but no broad antioxidant response. *Hansen, Schmidt, Soltoft, Ramming, et al., J. Biol. Chem. 28: 39513-39523, 2012*

The formation of structural disulfide bonds in the endoplasmic reticulum (ER) in mammalian cells is crucial to the proper folding of functional proteins, a process that has been well studied with regards to the function of Ero1 α oxidase. However, the precise cellular response to Ero1α -generated oxidative stress within the ER lumen is less well understood. In the current study, Hansen et al demonstrated that an Ero1α overexpressing mutant (C104A/C131A) exhibiting hyper enzyme activity elicited the hyperoxidation of ERp57, an ER oxidoreductase, concurrent with the induction of two unfolded protein response (UPR) targets, immunoglobulin-binding protein and homocysteine-induced ER protein. Such responses were respectively reversed or accentuated by manipulation of the ER glutathione redox buffer with N-acetylcysteine and buthionine sulfoximine. These results are consistent the notion that UPR is turned on in response to cellular oxidative stress induced by a hyper function of Ero1α. Microarray analysis further revealed that Ero1 α –induced oxidative perturbation increased the expression of two additional novel UPR targets, CRELD1 and c18orf45, but notably, not broad antioxidant response genes, suggesting an ER specific effect. This study illustrates that the GSH status within the ER is an independently controlled redox pool and that targeted disruption of its regulation (such as altered Ero1 α oxidase activity) would result in specific compartmental oxidative stress rather than in a generalized cellular response. *Prepared by Tak Yee Aw, Louisiana State University Health Sciences Center-Shreveport.*

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