
THE NEWSLETTER OF THE DAVIS HEART AND LUNG RESEARCH INSTITUTE

KATHLEEN MCNALLY, EDITOR; COLETTE TORNIK, ASSOCIATE EDITOR

SPRING 2008



2008 Spring Blood Drives-Where You Could Save Lives

The American Red Cross works hard to help save lives in our community everyday, but they need your help to do it. Donate blood to save lives of individuals in your community at one of the next spring blood drives:

- Monday, April 7 from 11 a.m. until 5 p.m. in the Ross Heart Hospital lobby
- Thursday, May 1 from 8:30 a.m. until 2:30 p.m. in Morehouse Plaza
- Friday, May 2 from 7:30 a.m. until 1:30 p.m. in the Ross Heart Hospital lobby
- Monday, June 2 from 11 a.m. until 5 p.m. in the Ross Heart Hospital lobby

To schedule an appointment call 1-800-GIVE-LIFE or go online at www.givelife.org and enter the code "Buckeyes". Walk-ins are always welcome, but may experience delay. Donors must wait eight weeks between donations. For more information about upcoming blood drives and Buddy the Blood Drop bobble head, visit the Health and Wellness page under Workplace on OneSource.



New Employees

Please join us in welcoming these new employees to the DHLRI. Contact Colette.Tornik@osumc.edu to announce a new employee in the next issue.

- Cindy Lou Evans- Administrative Assistant
- Debra Wheeler- Research Associate, PI: Dr. Richard Gumina
- Tonya Carter- Clinical Research Specialist
- Cynthia Hale- Information Assistant
- Teresa Murrell- CCTRO Team Manager
- Beth Taulbee- Clinical Research Specialist
- Kim Kallmeyer- Office Production Assistant
- Shannon Wells, Research Associate, PI: Dr. Clay Marsh
- Freweine Berhe, Research Assistant, PI: Dr. Mark Wewers
- Matthew Joseph, Senior Research Associate, PI: Dr. Vince Pompilli
- Sellavelu Sathyapriya, Research Assistant, PI: Dr. Govindasamy Ilangovan
- Lucy Chen, Research Aide, PI: Dr. Yong Xia
- Suxin Luo, Visiting Scholar, PI: Dr. Yong Xia
- Kathleen McNally, Office Associate
- Zhehnyu He, Clinical Research Data Manager, PI: Dr. Mani Vannan

New Research Equipment

Recently, there were two new pieces of research equipment established in Dr. Sanjay Rajagopalan's lab. Dr. Sanjay Rajagopalan's lab welcomes any faculty or staff of DHLRI who are interested in using it. For further information, please contact Dr. Qinghua Sun (office phone 7-1560 or e-mail: qinghua.sun@osumc.edu).

OASIS-1 (Ohio Air Pollution Exposure System for Interrogation of Systemic Effects)

The "OASIS-1" mobile exposure system is one of a few available in the United States; it has the capability to concentrate ambient particulate matter and allow particulate matter exposure in live animals on a chronic basis. The "OASIS-1" is currently located at the OSU Animal Facilities in Columbus Ohio. It consists of 2 rooms: one houses the whole body exposure system and the other for mice vivarium with mice caging system and changing station. This Versatile Aerosol Concentration Enrichment System (VACES) whole-body exposure mouse chamber system is used to concentrate ambient particulate matter for animal exposure. This system will allow the inclusion of PM_{2.5} and PM_{0.1} particles in the exposures. The mice will be exposed to PM at nominal 10X ambient concentrations for 6 hours per day, 5 days per week. For the filtered air experiment, an identical system will be used, except that a HEPA filter at the inlet to the VACES will be installed to remove ambient particles. The entire system allows for simultaneous exposure of up to 64 mice to PM, with an equal number of filtered air exposed mice as controls.

Intravital Microscopy

The intravital microscopy resource in Dr. Rajagopalan's laboratory is composed of FN1 Nikon microscope, CFI60 and CFI75 Infinity Optical System with removable filter turret for wavelength selection and 2 digital photometric cameras (Coolsnap CF 20MHz color 36-Bit, and Coolsnap HQ monochrome cameras). The MetaMorph software controls image acquisition, processing, storage, filter wheels, shutters, and cameras.

DHLRI Cardiovascular Imaging Research Symposium – June 25

Imaging plays an increasingly important role in basic and clinical research in cardiovascular medicine and biology. This symposium, being held on June 25 from 12:00-5:00p.m., is intended to provide an overview of ongoing imaging research within the DHLRI, and information on the imaging facilities and capabilities available at OSU.

Poster presentations

All OSU trainees (graduate students, fellows, post-doctoral researchers) involved in cardiovascular imaging research are invited to present their research in poster format in the lobby of the BRT before, during, and after the DHLRI Imaging Symposium.

Please submit a brief abstract (<300 words) in Microsoft Word format by April 30 to Colette Tornik (Colette.tornik@osumc.edu). Poster presenters are asked to be present at their posters from 12:00 – 1:00pm, and again from 4:30 – 5:00 pm in the BRT Lobby.



HIGH BLOOD PRESSURE IN OLDER ADULTS TRACED TO GENE'S EFFECTS IN BLOOD VESSELS

Scientists have identified the gene that sets off a sequence of events in the blood vessels of otherwise healthy adults that can lead to high blood pressure. The finding in a study led by Ohio State University researchers might lead to new therapeutic options for high blood pressure, especially hypertension associated with aging. Obesity and aging contribute to increasing cases of high blood pressure, which currently affects an estimated 50 million Americans. The gene, called profilin 1, has been traced to a series of interactions within the smooth muscle cells of blood vessels that causes those cells to increase in size. This in turn narrows the channel through which blood flows, causing stress on vessel walls, injuring the lining of the vessel walls and making it easier for blockages to develop. By identifying this pathway, researchers hope to pinpoint the most effective therapeutic target to interfere with the disease process. The researchers used genetically altered mice that produce excessive amounts of the human profilin 1 gene in the vascular smooth muscle cells and observed the changes to the vessels that followed, which led to high blood pressure by the time the mice were 6 months old – the rough equivalent to middle age in humans. “We created the disease in the animals and then went backwards to understand how the disease developed. This is an important finding because vascular disease originates in the smooth muscle cells, which have significant impact on the dysregulation of blood pressure that leads to heart disease,” said **Hamdy Hassanain**, assistant professor of anesthesiology at Ohio State University and senior author of the study. Hassanain also is an investigator in Ohio State's Davis Heart and Lung Research Institute. The findings were published in the Dec. 28, 2007 issue of the Journal of Biological Chemistry.



Kudos

Dr. Kasuppaiyah Selvendiran, a post-doctoral researcher working for Dr. Periannan Kuppusamy was the recipient of the award of outstanding achievement in the 2008 Ohio State University Comprehensive Cancer Center Research Competition for the research proposal entitled; “EF24 Induces G2/M Arrest and apoptosis in Cisplatin-Resistant Human Ovarian Cancer cells by Inhibiting Proteasomal Degradation of PTEN”.

New Awards: Federal, State, and Foundations

PI: Rita Alevriadou
Co-Is: Yeong-Renn Chen, Govindasamy Ilangovan
Sponsor: NHLBI, R21 HL091417-01
Title: *Mechanoregulation of endothelial mitochondrial function*
Start date: 01/01/2008 End date: 12/31/2009

PI: Valery Khramtsov
Co-Is: Clay Marsh, Tim Eubank
Sponsor: NCI, R21 CA132068-01
Title: *Spin probes in semipermeable nanospheres: EPR spectroscopy and imaging of tumor pH*
Start date: 01/09/2008 End date: 12/31/2008

PI: Brad Rovin
Co-Is: Tibor Nadasdy, Haikady Nagaraja
Sponsor: NIDDK, R01 DK074661
Title: *Modeling SLE nephritis through urine MCP-1*
Start date: 02/08/2008 End date: 01/31/2012

PI: Chandan Sen
Co-Is: Narasimham Parinandi, Sashwati Roy, Candice Askwith
Sponsor: NINDS, R01 NS042617-05A1
Title: *Vitamin E neuroprotection: Novel molecular mechanisms*
Start date: 01/01/2008 End date: 12/31/2012

PI: Art Strauch
Co-Is: Clay Marsh
Sponsor: NHLBI, R01 HL085109-01
Title: *Targeting myofibroblast activation during chronic fibrotic disease*
Start date: 12/05/2007 End date: 11/30/2011

New Industry Support

PI: Garrie Haas
Sponsor: Medtronic
Title: *PRECEDE-HF*
Start date: 10/03/2007 End date: 12/31/2010

PI: John Hummel
Sponsor: St. Jude Medical
Title: *DMS study*
Start date: 09/19/2007 End date: 12/31/2009

PI: Charles Love
Sponsor: Cardiac Concepts
Title: *Identification of pericardiophrenic vein to prevent phrenic nerve injury during cardiac electrophysiological or catheterization procedures*
Start date: 12/21/2007 End date: 01/31/2009

PI: Raymond Magorien
Sponsor: Boston Scientific
Title: *PERSEUS*
Start date: 11/09/2007 End date: 12/31/2012

PI: Ernest Mazzaferri
Sponsor: Cardiokinetix
Title: *PARACHUTE*
Start date: 01/28/2008 End date: 01/31/2012

PI: Min Pu
Co-I: Mani Vannan
Sponsor: Bristol-Myers Squibb
Title: *Utility of contrast in routine clinical echocardiography*
Start date: 12/21/2007 End date: 11/27/2008

PI: Subha Raman
Sponsor: Edwards Lifesciences
Title: MONARC CT analysis
Start date: 11/01/2007 End date: 03/01/2008



Recent Publications

Binkley PF, Lesinski A, Ferguson JP, Hatton PS, Yamokoski L, Hardikar S, Cooke GE, Leier CV. (2008). Recovery of normal ventricular function in patients with dilated cardiomyopathy: predictors of an increasingly prevalent clinical event. *Am Heart J*.155(1):69-74.

Burgett RA, Bao X, Villamena FA. (2008). Superoxide Radical Anion Adduct of 5, 5-Dimethyl-1-pyrroline N-Oxide (DMPO). 3. Effect of Mildly Acidic pH on the Thermodynamics and Kinetics of Adduct Formation. *J Phys Chem A*.

Cook SC, Ferketich AK, Raman SV. (2008). Myocardial ischemia in asymptomatic adults with repaired aortic coarctation. *Int J Cardiol*.

Ghafourifar P, Mousavizadeh K, Parihar MS, Nazarewicz RR, Parihar A, Zenebe WJ. (2008). Mitochondria in multiple sclerosis. *Front Biosci*. 13:3116-26.

Fahy RJ, Exline MC, Gavrilin MA, Bhatt NY, Besecker BY, Sarkar A, Hollyfield JL, Duncan MD, Nagaraja HN, Knatz NL, Hall M, Wewers MD. (2008). Inflammasome mRNA Expression in Human Monocytes During Early Septic Shock. *Am J Respir Crit Care Med*.

Feldman DS, Elton TS, Sun B, Martin MM, Ziolo MT. (2008). Mechanisms of Disease: detrimental adrenergic signaling in acute decompensated heart failure. *Nat Clin Pract Cardiovasc Med*.

Kutala VK, Villamena FA, Ilangovan G, Maspoch D, Roques N, Veciana J, Rovira C, Kuppusamy P. (2008). Reactivity of superoxide anion radical with a perchlorotriphenylmethyl (trityl) radical. *J Phys Chem B*.

Liu Y, Villamena FA, Sun J, Xu Y, Dhimitruka I, Zweier JL. (2008). Synthesis and Characterization of Ester-Derivatized Tetrathiatriarylmethyl Radicals as Intracellular Oxygen Probes. *J Org Chem*.

Mavrich TN, Jiang C, Ioshikhes IP, Li X, Venters BJ, Zanton SJ, Tomsho LP, Qi J, Glaser R, Schuster SC, Gilmour DS, Albert I, and Pugh BF "Nucleosome organization in the Drosophila genome" (in collaboration with researchers from Penn State U., LBNL, and Wadsworth Center) has been accepted for publication as an Article in Nature.

Moustafa Moustafa-Bayoumi, Mazin A Alhaj, Osama El-Sayed, Sheik Wisel, Maqsood A Chotani, Zeinb A. Abouelnaga, Mohamed DH Hassona, Katya Rigatto, Mariana Morris, Gerard Nuovo, Jay L Zweier, Pascal Goldschmidt-Clermont, Hamdy Hassanain. (2007). Vascular Hypertrophy and Hypertension Caused by Transgenic Overexpression of Profilin 1. Journal of Biological Chemistry, Vol. 282, (Issue 52) 37632-37639.

Moustafa-Bayumi, M., Binkley, P.F., Zweier, J., Flavahan N.A., Morris, M., Dong, C., and Goldschmidt-Clermont, P. (2007). Hypertension caused by transgenic over-expression of Rac 1. Antioxidant and Redox Signaling. 9 (1): 91-100.

Parihar MS, Parihar A, Fujita M, Hashimoto M, Ghafourifar P. (2008). Mitochondrial association of alpha-synuclein causes oxidative stress. Cell Mol Life Sci.

Parihar MS, Parihar A, Villamena FA, Vaccaro PS, Ghafourifar P. (2008). Inactivation of mitochondrial respiratory chain complex I leads mitochondrial nitric oxide synthase to become pro-oxidative. Biochem Biophys Res Commun.

Parsa KV, Butchar JP, Rajaram MV, Cremer TJ, Tridandapani S. (2008). The tyrosine kinase Syk promotes phagocytosis of Francisella through the activation of Erk. Mol Immunol.

Schreiber S, Savla M, Pelekhov DV, Iscru DF, Selcu C, Hammel PC, Agarwal G. (2008). Magnetic force microscopy of superparamagnetic nanoparticles, Small. 2008 Feb; 4(2):270-8

Sen CK, Roy S Redox signals in wound healing. (2008). Biochim Biophys Acta.

Sun Q, Yue P, Kirk RI, Wang A, Moatti D, Jin X, Lu B, Schechter AD, Lippmann M, Gordon T, Chen LC, Rajagopalan S. (2008). Ambient air particulate matter exposure and tissue factor expression in atherosclerosis. Inhal Toxicol.

Venkatakrishanan CD, Dunsmore K, Wong H, Roy S, Sen CK Phd, Wani A, Zweier JL, Ilangovan G Phd. (2008). Hsp27 Regulates p53 Transcriptional Activity in Doxorubicin Treated Fibroblasts and Cardiac H9c2 Cells: p21 Up regulation and G2/M Phase Cell Cycle Arrest. Am J Physiol Heart Circ Physiol.

Ziolo MT. (2008). The fork in the nitric oxide road: Cyclic GMP or nitrosylation? Nitric Oxide. PMID:

To submit news items, for more information, or to unsubscribe, contact the editors: Kathleen.McNally@osumc.edu and Colette.Tornik@osumc.edu. The newsletter is also available online at <http://heartlung.osu.edu>.

