

BIOGRAPHICAL SKETCH

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NAME: Renard L. Thomas Ph.D.

eRA COMMONS USER NAME (credential, e.g., agency login): RLTHOMAS

POSITION TITLE: Associate Professor

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
Texas Southern Univ., Houston, TX	Ph.D.	12/2001	Environmental Tox.
Texas Southern Univ., Houston, TX	M.S.	05/1981	Chemistry
University of Houston, Houston, TX	B.S.	05/1976	Biology

A. Personal Statement

As Professor of Health Sciences in the College of Pharmacy and Health Sciences at Texas Southern University, Dr. Thomas' leadership ensures relevant student-centered health professions curricula and program. His leadership principles are rooted in academic rigor, early intervention, nurturing learning, and student and faculty mentorship. Dr. Thomas has been instrumental in the creation of research infrastructure to enhance the Environmental Toxicology Ph.D. program from which he leads a collaborative effort between the College of Pharmacy and Health Sciences and the College of Science Engineering and Technology. His research focus is investigating cellular mechanisms involved in the toxicity of environmental stressors has resulted in 3 recent patents -- US Patent No. US 2015/0031582 A1) entitled "Volatile Organic Gases as Bioindicators for Transplant Rejection" (Issued January 29, 2015) and US Patent No. 8,709,226 B2 and Canadian Patent No. 2673838, entitled "Instantaneous Electro Deposition of Metal Nanostructures on Carbon Nanotubes" (Issued April 29, 2014 and February 14, 2017 respectively). Currently, Thomas is leading a research initiative to assemble the critical mass of researchers and infrastructure to strengthen (i.e., efficiencies and productivities) the University cancer research capacity.

Thomas' greatest passion is his service to the research community of Texas Southern University. His persistent determination and high expectations has made significant contributions toward improving the research competency of every student (both undergraduate and graduate) that seeks his mentorship.

B. Positions and Honors

The Dow Chemical Co., Freeport, TX	1978 – 1997	Analytical Lab Manager
Texas Southern University, Houston, TX	1997 – 2002	Res. Assistant
Texas Southern University, Houston, TX	2002 – 2006	Res. Assistant Professor
Texas Southern University, Houston, TX	2006 – 2011	Assistant Professor
Texas Southern University, Houston, TX	2011 – 2017	Associate Professor
Texas Southern University, Houston, TX	2013 – 2016	Chairman, Health Sciences
Texas Southern University, Houston, TX	2017 – Present	Professor

C. Contributions to Science

- Heart transplantation is the only treatment for end-state heart disease. A significant risk to transplant recipients is the rejection of the donor heart. Thomas conducted a recent research project to develop biomarkers for the non-invasive early diagnosis of heart transplant rejection by characterizing volatile organic compounds (VOCs) in urine derived from post transplanted mouse models. The goal of this project was to profile volatile organic compounds (VOCs) in urine derived from post transplanted mouse

models. Results showed a distinctive diphenyl sulfide peak that was correlated to degree of transplant rejection. The urine VOC biomarker strategy for health surveillance is superior to current diagnostic approaches because of its non-invasive, early detection, and unlimited sampling source. It poses no risk to mouse recipients or donors, and can follow longitudinal symptoms of rejection.

Citations:

- i. Dong Cai, Zhifeng Ren, Xian C. Li, Renard L. Thomas, "Volatile Organic Gases as Bioindicators for Transplant Rejection", US 2015/0031582 A1, issued January 29, 2015.
2. Working in an Air Force Research Laboratory collaborative program with Richard Smalley (the Nobel Prize in Chemistry awardee for the discovery of buckminsterfullerene, also known as buckyballs) to develop novel nanocomposites which are the first commercialization of intellectual property developed at Texas Southern University (i.e., Patent No. US 8709226 B2 and Canadian No. 2673838 licensed to NanoRidge, Inc.). This research focused on improving the properties of epoxy resin systems through the dispersion of non-covalent modified CNTs into the resin as reinforcements. Microscopy (SEM, AFM) were used to study the micro-structure of the composites to elucidate the interphases of the CNTs and resin. Other micromechanical composite characteristics were assessed (i.e., Differential Scanning Calorimetry and Dynamic mechanical analysis). Additional pending international applications are filed in Europe (EP 2097928 A4), and Hong Kong (Hong Kong Patent Application No. 10102518.7).

Citations:

- i. Xin Wei, Yuanjian Deng, Renard L. Thomas and Bobby Wilson, "Instantaneous Electro Deposition of Metal Nanostructures on Carbon Nanotubes", Canadian Patent No. 2673838, February 14, 2017.
 - ii. Xin Wei, Yuanjian Deng, Renard Thomas and Bobby L. Wilson, "Instantaneous Electrode Position of Metal Nanostructures on Carbon Nanotubes, US Patent No. US 8,709,226 B2, April 29, 2014.
 - iii. Paul Clemens, Xin Wei, Bobby L. Wilson, Renard L. Thomas, "Anatase Titanium Dioxide Coated Single Wall Carbon Nanotubes Manufactured by Sonochemical-Hydrothermal Technique", Open Journal of Composite Materials, 2013, 3, 21-32, doi:10.4236/ojcm.2013.32A004 Published Online April 2013 (<http://www.scirp.org/journal/ojcm>).
 - iv. Kun Tao, Shuying Yang, Jaime C. Grunlan, Yeon-Seok Kim, Bachlien Dang, Yuanjian Deng, Renard L. Thomas, Bobby L. Wilson, Xin Wei, Effects of Carbon Nanotube Fillers on the Curing Processes of Epoxy Resin-Based Composites, J. of Applied Polymer Science, Vol. 102, 5248–5254 (2006).
3. In support of Richard Smalley's pioneering work on CNTs, Thomas contributed to the earliest toxicity assessment of carbon nanotubes (CNTs). CNTs are regarded as a disruptive material science technology, due to their unique physio-chemical properties extreme aspect ratio, low specific density and low solubility. However, the potential CNTs toxicity due to their increasing commercialization were of great interest. Thomas was a member of Texas Southern University research team that conducted *In vitro* toxicity studies of CNTs that showed toxicity by decreased cell viability, induction of reactive oxygen species, and depletion of antioxidant level (e.g., superoxide dismutase and glutathione). Inhalation studies (i.e., *in vivo*) showed CNT induces inflammation as characterized by the accumulation of polymorphonuclear leukocytes. Histological studies of affected lung tissue (i.e., Transmission Electron Microscope) observed CNTs engulfed by macrophages.

Citations:

- i. Prabakaran Ravichandran, Sudhakar Baluchamy, Ramya Gopikrishnan, Santhoshkumar Biradar, Vani Ramesh, Virupaxi Goornavar, **Renard Thomas**, Bobby L. Wilson, Robert Jeffers, Joseph C. Hall, and Govindarajan T. Ramesh, "Pulmonary biocompatibility assessment of inhaled single-wall and multi-wall carbon nanotubes in BALB/C mice," *J. Biol. Chem.* 2011 *jbc.M111.251884*. First Published on June 24, 2011, doi:10.1074/jbc.M111.251884.
- ii. Sharma, Chidananda S.; Sarkar, Shubhashish; Periyakaruppan, Adaikkappan; Barr, Johnny; Wise, Kimberly; Thomas, Renard; Wilson, Bobby L.; Ramesh, Govindarajan T., Single-Walled Carbon Nanotubes Induces Oxidative Stress in Rat Lung Epithelial Cells, *Journal of Nanoscience and Nanotechnology*, Volume 7, Number 7, July 2007, pp. 2466-2472(7).

- iii. Sarkar S, Sharma C, Yog R, Periakaruppan A, Jejelwo O, Thomas R, Barrera EV, Rice-Ficht AC, Wilson BL, Ramesh GT, Analysis of stress responsive genes induced by single-walled carbon nanotubes in BJ Foreskin cells, J Nanosci Nanotechnol. 2007 Feb;7(2):584-92.

D. Additional Information: Research Support and/or Scholastic Performance

Research Grant Support:

1. Renard L. Thomas (Co-Director of Toxicology Core), National Institutes of Health/National Institute on Minority Health and Health Disparities, "Center for Biomedical and Health Research Excellence". September 26, 2014 to May 31, 2018, \$1,020,732.
2. Renard L. Thomas (Principal Investigator), Texas Higher Education Coordinating Board, Health Professions Pathway Career Center, 2014 – 2016, \$ 400,000.00
3. Renard L. Thomas (Investigator), Air Force Research Laboratory (AFRL) HBCU/MI – Clarkson Aerospace Corporation: Materials and Manufacturing Research in Nanotechnology Thrust Research, 2005-2013, \$1,122,926.
4. Renard L. Thomas (Investigator), Chemical and Biological Assessment of Endocrine Disruptors in Waterways of Southeast Texas NSF, 2004-2009, \$330,000.

Publications:

1. Andrea Oyewole, Renard Thomas, Felicia Conley and Bobby Wilson, The Effects of Copper, Manganese, and Vanadate Mixtures on Caco-2 Cell Cultures: A Case for the Precautionary Principle, International Journal of Business, Humanities and Technology, Vol. 4 No. 2; March 2014.
2. Periyakaruppan A, Sarkar S, Ravichandran P, Sadanandan B, Sharma CS, Ramesh V, Hall JC, **Thomas R**, Wilson BL, Ramesh GT., Uranium Induces Apoptosis in Lung Epithelial Cells, Arch Toxicol. 2009 Jun;83(6):595-600.
3. Sarkar Poonam; Sarkar Shubhashish; Ramesh Vani; Kim Helen; Barnes Stephen; Kulkarni Anil; Hall Joseph C; Wilson Bobby L; Thomas Renard L; Pellis Neal R; Ramesh Govindarajan T, Proteomic analysis of mouse hypothalamus under simulated microgravity, Neurochemical Research 2008;33(11):2335-41.
4. Sharma Chidananda S; Sarkar Shubhashish; Periyakaruppan Adaikkappan; Ravichandran Prabakaran; Sadanandan Bindu; Ramesh Vani; Thomas Renard; Hall Joseph C; Wilson Bobby L; Ramesh Govindarajan T, Simulated microgravity activates apoptosis and NF-kappaB in mice testis., Molecular and Cellular Biochemistry 2008;313(1-2):71-8
5. Sharma, SC., Sarkar, S., Periyakaruppan, A., Sadanandan, B., Ravichandran, P., Thomas, RL., Wilson, BL. and Ramesh G. T. (2008) Simulated Microgravity Activates Apoptosis and NF [kappa]B in Mice Testis" Mol and Cell Bio -Accepted

Patents:

1. Nobuyuki Ishibe, Renard L. Thomas, Emmett I. Tasset, Preparation of an Improved Catalyst for the Manufacture of Naphthoquinone, Patent No. 4,533,653, Aug. 6, 1985.
2. Xin Wei, Yuanjian Deng, Renard L. Thomas, and Bobby Wilson, "Instantaneous Electro Deposition of Metal Nanostructures on Carbon Nanotubes", European Patent No. EP2097928, Application was renewed 12/18/2015.
3. Xin Wei, Yuanjian Deng, Renard L. Thomas, and Bobby Wilson, "Instantaneous Electro Deposition of Metal Nanostructures on Carbon Nanotubes", Hong Kong Patent No. 10102518.7, Application was renewed 12/18/2015.