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LEI YU
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SHISHIR SHISHODIA
Editor

DESIRÉE JACKSON
Associate Editor

ALAMELU SUNDARESAN
Associate Editor

HECTOR C. MIRANDA
Photography

College of Science and Technology Receives \$ 4.8M to Develop “Center for Research on Complex Networks”

The National Science Foundation (NSF) announced an award of \$4,887,004 over five years to Texas Southern University to support its proposed “Center for Research on Complex Networks,” a new NSF Center of Research Excellence in Science and Technology (CREST).

The new Center’s multiple disciplinary team, led by Drs. Wei Wayne Li (PI), Lei Yu (Co-PI) and C. J. Tymczak (Co-PI), as well as Drs. Oscar Criner (Director of Education) and David Olowokere (Director of Technology Transfer), includes a total of 14 world-class faculty scholars representing 6 different departments in the College of Science and Technology: Computer Science, Transportation Studies, Physics, Engineering Technology, Mathematics, and Chemistry. The funded Center will have a great impact on students at TSU by providing financial support for a minimum of 15 undergraduate and graduate students each year in the next five years. The students will have the opportunity to work with faculty on cutting-edge

research and development.

The mission of this NSF center is to conduct innovative and multidisciplinary research in the area of complex networks, which will provide a knowledge base for the understanding of complex networks such as energy efficient wireless sensor networks; urban transportation environmental networks; and distributed computational networks; allowing for the development and implementation of policies for global environmental sustainability. The research will be integrated with the science, technology, engineering and mathematics (STEM) education programs, particularly striving to expand the pool of minority and underrepresented students who pursue advanced graduate studies in STEM fields, to meet the critical workforce needs of the nation. The Center will promote and implement diversity in STEM disciplines, through educational outreach initiatives and extensive efforts to recruit, retain and train members of

underrepresented minority groups. The attempt is to prepare minority students for leadership positions in the fast-changing global, scientific, engineering, and government sectors.

The National Science Foundation is an independent federal agency created by Congress in 1950 “to promote the progress of science; to advance the national health, prosperity, and welfare, and to secure the national defense.” With an annual budget of about \$6.9 billion (FY2010), NSF is the funding source for approximately 20 percent of all federally supported basic research conducted by America’s colleges and universities. NSF’s CREST program was created to make resources available to enhance the research capabilities of minority-serving institutions through the establishment of centers that effectively integrate education and research. CREST promotes the development of new knowledge, enhancement of the research productivity of individual faculty, and an expanded presence of students historically underrepresented in STEM disciplines.



July 12, 2011 designated as Donald R. Perkins Day

COST is pleased to announce that City of Houston District G Council Member, Oliver Pennington, recognized Donald Perkins before the Houston City Council on July 12, 2011 with a proclamation signed by Mayor Annise Parker designating July 12, 2011 as Donald R. Perkins Day within the City of Houston. Perkins is a Planning Leader with the City of Houston Planning & Development Department, Community Sustainability Division. He has 16 years of public service with the City of Houston.

Perkins is a 1997 graduate of Texas Southern University with a M.S. in Transportation Planning and Management.

According to Council Member Pennington's remarks, "Donald Perkins has provided exemplary service to neighborhoods, homeowner and property owner associations, civic clubs, businesses, institutions, and residents of District G, and to the City of Houston as a whole." Perkins was the Planning Leader and City's liaison with many District G super neighborhood councils. By assisting super neighborhood councils to develop greater organizational self-sufficiency, Donald Perkins has had a profound effect on the lives and well being of residents across the City.

College of Science and Technology

Open House Alumni and Partnership Luncheon

Thursday, October 20, 2011
11:00 A.M. – 2:00 P.M.

TSU Science Center Atrium
3100 Cleburne Street, Houston, Texas 77054

RSVP

Tel: 713-313-7009; Email: whaley_cs@tsu.edu

COST Starts Academic Year with Two Focused Retreats

The College of Science and Technology held its Administrative Council retreat on August 9th and 10th, 2011. The retreat was held at La Toretta Resort and Spa on Lake Conroe in Montgomery, Texas. In spite of the heat and drought, which caused Lake Conroe to be extremely low, a very productive and enjoyable time was had by all. The theme of the retreat was "Critical issues in higher education affecting TSU and COST." The Administrative Council considered issues regarding the College's Strategic Plan, and the By-Laws of the College. Recommendations for the completion of both documents were made. Each department chair delivered an assessment of the strengths and weaknesses of the programs in their departments. Considerable discussion of the state of the college's programs was engendered.

Dr. James Douglas, Executive Vice President, gave a stimulating presentation at dinner about the Urban Academic Village and its operating plans. Dr. Betty Cox, Interim Associate Provost and Associate Vice President for Student Academic Enhancement Services, provided detailed linkage information for the College to benefit from the services her office provides. Dr. John Robinson, Executive

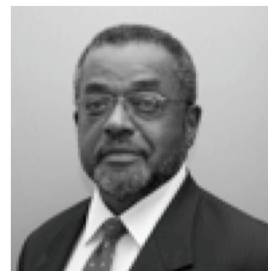
Director for Planning, Evaluation, Assessment and Retention provided details of the student retention efforts. Mr. Hasan Jamil, Special Assistant to the President, discussed significant improvements and flexibilities added to the degree plan modification and transfer credit process. The final portion of the day-and-a-half conference was devoted to courses of action and new program plans.

The College hosted a one-day retreat for COST faculty at the Medical Center/ Reliant Park Crown Plaza on Friday August 12th. Most of the faculty attended. Presentations included College and department updates; a talk on the student advisement and registration processes given by Dr. Desirée Jackson and a special presentation on effective instruction by Dr. Billie Hara, who is recognized nationally for literacy, basic writing theory and pedagogy, service learning, ethnographic research methods, and teaching with technology. Dr. Hara's keynote speech focused on techniques to improve student engagement in the classroom, and using a lesson plan in higher education to insure that courses cover the established learning outcomes.



Paul C. Simmons Chairs COST Advisory Board

During the 2010 -2011 academic year, the COST Advisory Board under the leadership of Chris Hudson, Chair, achieved success in a number of areas. The By-Laws were adopted and new members from the private, public and non-profit sector were added, and, an organizational structure including committees and sub-committees was formed.



Mr. Paul C. Simmons

In the Board meeting of August 26, 2011, Paul Simmons assumed the Chair and Ike Allen became the Vice Chair. We welcomed two new members; Kimberly J. Williams, J.D.; Chief Administrative Officer, METRO Solutions, and Dorothy S. Rasco, Manager, Space Shuttle Business Office, NASA.

Guided by Dean Yu's vision for the college, the Board assisted in the establishment of the COST Alumni Chapter. The chapter will focus on student awareness and development as well as alumni fundraising activities. A

process to partner with industry was developed and begun. The Industrial Outreach Program promises to be a valuable source for student scholarships, employment and internships, technology exchange and financial resources for the college.

Major emphasis will be placed on further developing the Industrial Outreach Program and expanding the newly formed Alumni Chapter. The primary goal of the Cost Advisory Board will be to solidify the progress made last year with more on-campus meetings with industrial partners emphasizing COST facilities, faculty, and students, and continuing fundraising activities.

COST Freshman Reception

The College of Science and Technology (COST) marked the start of something great when it hosted its first "COST Freshman Reception." Dr. Lei Yu, Dean of the COST, expressed a desire to make the COST freshmen feel welcomed in the College. He stated that it is important that the students know who the faculty and staff are in the COST and vice versa.

Dean Yu's vision of a reception for freshman COST majors and first time transfer students became a reality Friday, August 26, in the atrium of the COST building under the coordination of Dr. Desirée Jackson, Interim Assistant Dean. All freshman COST majors received a t-shirt that states, "COST Majors Have Class." The "COST Freshman Reception" afforded the students, faculty and staff a chance to enjoy a scrumptious lunch, and the opportunity to mix and mingle before beginning the rigorous

academic year of class lectures, assignments, and exams. Students were also given the opportunity to visit booths set up in the atrium for each COST department to get information and department souvenirs.

Dr. Yu introduced the COST faculty and staff including Department Chairs and the Dean's Office staff, to the students who he assured will help make the students' freshman year a smooth transition with educational success. Dr. Jackson recognized members of three student organizations: COST Dean's Student Advisory Council, COST Ambassadors, and Beta Beta Beta Biological Society, who were in attendance. Dr. Jackson acknowledged and thanked them for their volunteer assistance.

The first "COST Freshman Reception" was enjoyed by all and was hailed as, "Something that must continue!"



2011 HNSTI Graduation Ceremony

Houston National Summer Transportation Institute (HNSTI) at Texas Southern University celebrated its 10th graduation ceremony in the TSU Student Center. This HNSTI program is based on the program design developed through the Center for Transportation Training and Research (CTTR). The goal is to create an education and training delivery system that will attract secondary school students to/and enhance interest in careers in transportation; improve mathematics, science communication and technology skills; and through creative partnerships, strengthen the links between the transportation sector and public/private institutions.

Through the course of this program all modes of transportation are addressed and augmented with hands-on technical activities; lectures by transportation professionals; and field trips to such places as NASA, Houston Galveston Area

Council (HGAC), Port of Houston, and Houston METRO.

More than seventy-five applicants applied this year with twenty outstanding students from Houston and surrounding area selected to participate in the three week program that began on June 13th. More than one hundred people attended the closing ceremony.

This year's HNSTI program introduced three guest speakers. Mr. Mark Arrington, and Ms. Shundreka Givan, both from FHWA, Austin Division, shared the importance of the program and life experiences. Mr. Henry C. Murdaugh, FHWA, Washington D.C., spoke about the Dwight Eisenhower Scholarship and how each student could benefit from the program. Mr. Dave Tovar (TxDOT), Austin, explained the quality of the program and how important each student is to this program. In conclusion a certificate and check for \$250.00 was given to each student.



Summer Maritime Academy

This year, the COST hosted two sessions of the Summer Maritime Academy (SMA). The purpose of the SMA was to introduce rising high school juniors, seniors, and recent high school graduates to the maritime industry in the areas of logistics, security, and the environment. The SMA consisted of two weeks of field trips, guest speakers, and sessions on visioning and goal setting; public speaking; SAT prep and test taking strategies; and web design. Field trips included transportation related destinations in the area: Houston Maritime Museum, Houston TranStar, Port of Houston Authority (and Sam Houston Boat Tour), U.S. Coast Guard Facility, and Battleship Texas. Students learned about the maritime industry and security in the

maritime industry from seasoned maritime professionals.

The highlight of each SMA was the Closing Ceremony Luncheon. At each luncheon, students delivered presentations on the various subjects they studied during the two week SMA. The students also heard from two maritime professionals who were awarded the Paul Cuffee Maritime Leadership Award (PCMLA). The PCMLA was created by the TSU Maritime Industry Advisory Board to recognize the contributions of minorities in the maritime industry in the Texas Gulf Coast region. TSU received over 80 applications for the SMA, however only 42 students were selected this year.



L. L. Clarkson Graduate Research Scholarship

The L. L. Clarkson graduate research scholarship was awarded to Jessica Poole, a graduate student in the Department of Mathematics. While at TSU, Ms. Poole was an LSAMP Scholar and made many award winning presentations in mathematics.

After teaching in HISD for two years her plans are to continue her graduate studies until she earns a doctorate in mathematics. Her primary research focus is periodic behavior of solutions to nonlinear difference equations.

FACULTY SPOTLIGHT HECTOR MIRANDA

Dr. Hector Miranda, Jr., Associate Professor of Biology, holds a Doctorate of Philosophy degree in Biological Science from the University of Cincinnati (1997), a Master of Science degree in Zoology from the University of the Philippines at Los Banos (1987) and a Bachelor of Science degree in Biology at the University of the Philippines at Los Banos (1981).

Hector has served as an Assistant Professor at Texas Southern University since 2005. Before joining TSU, he was a Visiting Professor at Rollins College, and held postdoctoral positions at the University of Cincinnati and the University of Michigan. He also served as an Associate Professor and Department Head at the University of the Philippines from 1999-2002 and as Assistant Professor at the University of the Philippines

from 1988-1991. Dr. Miranda's teaching and research interests include ornithology, mammalogy, vertebrate biology, animal behavior, conservation biology, molecular systematics, phylogenetics, and human genetics. He has co-authored the book *A Guide to the Birds of the Philippines* (2000, Oxford Univ. Press), and co-authored book chapters in *Avian Molecular Evolution and Systematics* (1997, Academic Press), and in *Eagle Watchers* (2010, Cornell University Press). Considered as one of world's authorities on raptors, Dr. Miranda spent many years studying one of the largest and rarest eagles in the world, the Philippine Eagle. He has been involved with many prestigious research expeditions to remote Philippine islands funded by organizations such as the World Wildlife Fund and the

John D. and Catherine T. MacArthur Foundation. Many of those projects led to the discovery of many new species for science. His most recent work at TSU led to the discovery of three new species of birds. By decoding the mitochondrial DNA sequences of two genes, *cytochrome b* and *ND2*, he was able track two, possibly three independent colonization events by endemic owls within the Philippine archipelago. The findings were corroborated by co-author, Dr. Dan Brooks of the Houston Museum of Natural Science.

As one of Co-Investigators of the NASA URC CBER, Dr. Miranda developed the only research program on phylogenetics and molecular evolution at TSU. He is currently working with graduate students to identify



Dr. Hector Miranda

molecular markers for barcoding and identification of fungi.

Among his other endeavors at TSU, Dr. Miranda also spearheaded the development of the websites for the College of Science and Technology, the Biology Department and the NASA URC CBER. He also introduced new courses such as Evolution, Bioinformatics, and Conservation Biology, which he hopes, will drive further development and strengthening of the Biology curriculum at TSU.

DEPARTMENT SPOTLIGHT BIOLOGY

The Department of Biology at TSU is the largest academic unit within the College of Science and Technology. The department serves to advance the understanding and appreciation of the subject of Biology, while encouraging critical thinking and experiential learning. Biology faculty engage students in quality education through comprehensive teaching and research at the undergraduate and graduate levels.

The curricula of the two degree tracks aim to expose students to a wide variety of classroom, laboratory, and field experiences fundamental to the life sciences. Through programs supported by institutions such as the NASA University Research Center, the department provides opportunities to graduate and undergraduate students to conduct hands-on scientific research on a broad field of

expertises from cell signaling to phylogenetics in laboratories equipped with state-of-the-art equipment. Graduates are prepared to pursue employment in biological laboratories, and to pursue graduate studies or studies in the health professions.

The Department of Biology is home to the Joint Admission Medical Program and the Early Medical School Acceptance Program. The department graduated two

students this year who have been accepted to medical school.

The Masters Program also produced several graduates whose thesis work spanned several disciplines in Biology. The department admitted 20 graduate students with another 25 applications currently being considered for the Fall Semester. The Department of Biology had 88 graduates for the 2010 -2011 academic year.

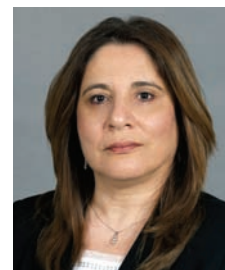
STAFF SPOTLIGHT NADEREH JAHED

Nadereh Jahed has been employed at Texas Southern University in the Computer Science Department since October of 1989. She received her Bachelor of Science in Civil Engineering Technology in 1982, and a Bachelor of Science in Computer Science in 1991, Magna Cum Laude, both from Texas Southern University. Currently she is the Administrative Assistant for the Computer Science

Department and has held this position since 1995. She supervises the office staff comprised of number of undergraduate work study students and graduate students to facilitate the Computer Science Department's day-to-day activities in addition to the chair and faculty requests.

Mrs. Jahed loves helping students to excel and achieve their potential in their respective programs. She is known to go the extra mile

to assist the students and takes great pride knowing that she is able to assist students along their journey to success. She understands and believes in TSU's goal of achieving excellence by preparing students to meet the challenges of the real world. She is very dedicated to her job and strives to improve and learn more in order to face new challenges each and every day at work. Mrs. Jahed has a great work



Mrs. Nadereh Jahed

ethic and won the COST 2010 Distinguished Staff Award. She comes to work with a smile ready to face any situation that comes her way. Mrs. Jahed is happily married and has two beautiful daughters.

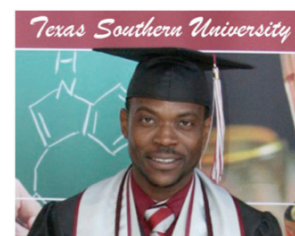
GRADUATE STUDENT SPOTLIGHT CEDRIC K. TANTCHOU

Thierry Cédric Kouamou Tantchou was always intrigued by food and the changes it undergoes in the cooking process. Years later, he realized that the attraction that he had for cooking was related to science, specially chemistry.

Four years ago, he came to the United States and enrolled at TSU. After completing his freshman year with outstanding grades, several opportunities became

available to him. The opportunity that affected his education most was joining the Louis Stokes Alliance for Minority Participation (LSAMP) program. Being an LSAMP Scholar pushed Cédric to not only maintain his GPA above the 3.5, but to participate in a summer research experience at an outstanding research facility in the country, and to tutor other students. In addition to being an LSAMP scholar, he

was also a McNair Scholar and the recipient of several other scholarships: the American scholarship; National Pan Hellenic Council scholarship; and General University scholarship. Cédric finished his undergraduate studies in May 2011 and earning a Bachelor of Science degree in Chemistry with "Magna Cum Laude honors" and is thankful to the faculty and staff of the COST. As a



Cedric K. Tantchou

Graduate Assistant working for the COST Dean's office, Cédric is actively doing research with Dr. Lei Yu on Portable Emissions Measurement Systems in the Department of Transportation Studies.

UNDERGRADUATE STUDENT SPOTLIGHT SAMUEL K. SOMUAH

Samuel K. Somuah graduated as the Valedictorian of the 2011 Summer Commencement class with a major in Computer Science. He started at TSU in the Spring of 2008, and since joining the department, has worked as a tutor and undergraduate

lab assistant. During the summers of 2010 and 2011 he was an undergraduate research assistant at the DIMACS center at Rutgers University and the DSSI at the University of Illinois Urbana-Champaign. These experiences provided breadth to his academic career, giving

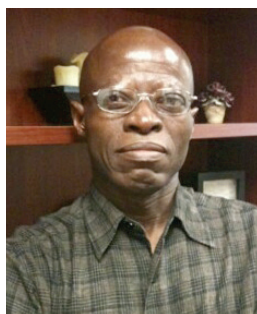
him the opportunity to learn data mining, information retrieval and machine learning amongst others. He presented his work from Rutgers University at the 2010 National Association of Mathematicians' Undergraduate MathFest. His career goal is to become



Samuel K. Somuah

a software developer where he would be able to continue his passion for programming. Samuel is originally from Accra, Ghana.

NEW TENURE-TRACK FACULTY



Dr. Shodimu Olufemi

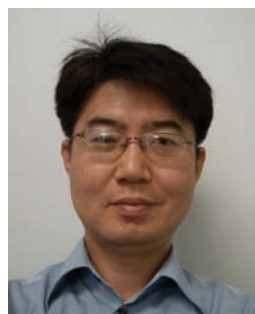
The College of Science and Technology is pleased to welcome four new tenure-track faculty members to join its faculty team.

Dr. Shodimu-Emmanuel Olufemi, a new faculty in the Department of Biology, earned his Ph.D. in Genetics and Human Genetics from Howard University, Washington, DC and an M.S. in Biology from Texas Southern University, Houston, Texas. Dr. Olufemi's research interests include studying gene regulation and molecular mechanisms of diseases that are influenced by genetic and/or environmental factors.



Dr. Maruthi Bhaskar

Dr. Maruthi Bhaskar, a new faculty in the Department of Environmental Science and Technology, earned his Ph.D. in Forest Resources from Mississippi State University in Starkville, MS and a M.Sc. in Soil Sciences from Acharya N. G. Ranga Agricultural University, Hyderabad, India, and Hampton University in Hampton, VA. Dr. Bhaskar's research interests include quantifying the physical and chemical changes of soils and mapping the areas of high chemical concentrations using the satellite imagery, mapping algal blooms and other water quality parameters through remote



Dr. Hyun-Min Hwang

sensing and GIS techniques and mapping the distribution and effects of the Salt cedar along the riparian areas of the Lower Colorado region.

Dr. Hyun-Min Hwang, a new faculty in the Dept. of Environmental Science and Technology, earned his Ph.D. in Environmental Chemistry/Oceanography from Texas A&M University in College Station, TX and an M.S. in Environmental Chemistry/Earth and Marine Sciences from Hanyang University, Korea. Dr. Hwang's research interests include Sediment and water quality assessment, source identification and apportionment of pollutants



Dr. Mark Harvey

and particulate matter in sediment, water and air, bioavailability of organic pollutants and trace metals, and estuarine biogeochemistry of nutrients, organic carbon, and stable carbon & nitrogen isotopes.

Dr. Mark Harvey, a new faculty in the Department of Physics, earned his Ph.D. in Experimental Nuclear Physics from Hampton University in Hampton, VA. Dr. Harvey's research interests include secondary neutron exposures in pediatric proton radiotherapy, Monte Carlo applications for nuclear analysis and experimental high energy nuclear-particle physics.

ALUMNI RAVES KENNETH & CARMELLA CALDWELL

Kenneth Caldwell completed his studies towards his Bachelors degree in Biology at TSU in May 2005, graduating summa cum laude. He matriculated into the medical program at the University of Texas Medical Branch (UTMB) in Galveston, and completed his MD in the spring of 2009. Kenneth then moved to Kansas City to begin his internship in Orthopedics at

the University of Kansas Medical Center. Carmella Jefferson began her work toward the BS in Biology as a Pre-Med student in the Early Medical Acceptance Program (EMSAP) under the guidance of Dr. Yvonne Hogan. Carmella, an Honors Program student, graduated summa cum laude, and Valedictorian of the TSU graduating class in May 2007. Carmella and Kenneth

had become good friends while at TSU and continued their friendship once Carmella began her studies at UTMB. The two married in December 2009, and in June 2011, Carmella completed her program of study toward the MD degree at UTMB. The couple is pictured in the Galveston Times during the UTMB hooding ceremony, where Dr. Kenneth Caldwell places the



hood on the shoulders of his wife, Dr. Carmella Caldwell. Carmella will intern in Family Medicine at the Research Medical Hospital in Kansas City. We are extremely proud of these two COST Alumni!

SCHOLARLY AND CREATIVE ACTIVITIES

Professor Bobby Wilson Named ACS Fellow for 2011

Dr. Bobby Wilson, L. Lloyd Woods Distinguished Professor of Chemistry and Shell Oil Endowed Professor of Environmental Toxicology in the College of Science and Technology has been selected as a fellow of The American Chemical Society (ACS) for the class of 2011. Dr. Wilson, along with other 2011 ACS Fellows, was honored at a special ceremony during the ACS National Meeting in Denver during the last week of August. The ACS honored



Dr. Bobby Wilson at the bench at NASA Johnson Space Center

213 distinguished scientists who have demonstrated outstanding accomplishments in chemistry and made important contributions to ACS, the world's largest scientific society.

COST Awarded MRI Grant by National Science Foundation

The High Performance Computing Center at Texas Southern University has been awarded a grant of \$220,000 by the National Science Foundation for expanding its research capabilities. The funding secured will allow a doubling of the present computational resources, lifting TSU to a competitive position in terms of capabilities, similar to those offered by Rice University and surpassing those of the University of Houston.

Directed by Dr. Tymczak (Physics), and co-directed by Dr. Vrinceanu (Physics) and Dr. Khan (Computer Science); the High Performance Computing Center's goal is to enhance learning and improve

student achievement at TSU by integrating state-of-the-art technology into the classroom. Computational Sciences and High Performance Computing are rapidly becoming more and more relevant in many industries. Through the centers, TSU students have a chance to get first hand training in modern computational techniques, giving them a strategic advantage in the labor market.

Our vision is that TSU will become a regional leader in promoting a mobile learning environment, outside the traditional classroom, by integrating new innovative technology and advanced computational concepts.

Publications

Galindo GL, **Rosenzweig JA**, Kirtley ML, and Chopra AK. Pathogenesis of *Y. enterocolitica* and *Y. pseudotuberculosis* in Human Yersiniosis. *Journal of Pathogens*. September 2011.

Rosenzweig JA, Brackman SM, Kirtley ML, Sha J, Erova TE, Yeager LA, Peterson JW, Xu ZQ, and Chopra AK. Evaluation of a New Chemotherapeutic: Cethromycin-Mediated Protection Against the Plague Pathogen, *Yersinia pestis*, in a Rat Model of Infection and its Comparison with Levofloxacin. *Antimicrob Agents Chemother*. August 2011

Shah S, Walker P, Moore-Olufemi S, **Sundaresan A**, Kulkarni A, and Andrassy R. An Evidence based Review of a *Lentinula edodes* Mushroom Extract as Complementary Therapy in the Surgical Oncology Patient" *The Journal of Parenteral and Enteral Nutrition*, July 2011, 35, 449-458

Thomas G. Built-in-self-test (BIST) for System-On-Chip using Output Voltage Difference between Fault-Free and Faulty Devices. *International Interface Technology Journal*.

Grants

Sundaresan A (PI). Development of Technologies and Elucidation of Bone Loss in Microgravity, NASA NSTI, 2012-2015, \$300,000.00.

Thomas G. Summer of Innovation outreach Program for middle school students. NASA, \$2500.00

Presentations

Professor Marian Hillar was an invited keynote speaker at the International Conference The Western Heritage of Humanism, Skepticism, and Freethought. Toward a Reasonable World. This conference commemorated 500th anniversary of birth of Michael Servetus. His talk was entitled "The Legacy of Michael Servetus: Radical Change in the thought Pattern, Freedom of Conscience, and a Switch to the Humanistic Social Moral Paradigm." It was organized by the Institute for the Study of American Religion, University of California, San Diego, September 16--8, 2011.

Dr. Alamelu Sundaresan presented her research "Lunar dust affects human airway epithelial cells via increased inflammation" at the European Low Gravity Research Association Meeting, September 6, 2011, Antwerp, Belgium.