

## GRADUATE STUDENTS SPOTLIGHT



### >> Shradha Prabhulkar

I was born in Mumbai, India and received my bachelor's degree in Biomedical Engineering in 2006. During my undergraduate studies I was very much interested in areas such as medical imaging and nuclear medicine, and initially planned to pursue my PhD at FIU in these areas.

However when I came to FIU, a new faculty member— Dr. Chenzhong Li— had joined the department. Dr. Li's research interests included the application of the new field of nanotechnology to biomedical engineering and seemed fascinating. I started working with Dr. Li to develop nano/micro sensors to detect various analytes using electrochemical techniques. Initially, it was very challenging as I had to learn various clean room microfabrication and imaging techniques such as sputtering, photolithography, SEM, AFM, etc. Towards the end of my first year in the PhD program, I received a National Science Foundation (NSF) fellowship to attend the Summer Institute on Nanomechanics and

Materials at UCLA which helped me improve my understanding of the field of nanotechnology and its applications.

My research project involved the development-sensing strategies for the detection of tumor biomarkers that can be found in abnormal amounts in the blood, urine or tissues of patients with cancer. Tumor markers may be used to help diagnose cancer, predict a patient's response to particular therapies, check a patient's response to treatment or determine if cancer has returned. Hence we were interested in detecting tumor markers and developing more accurate methods to detect, diagnose and monitor cancer. We fabricate carbon fiber microelectrodes and modify their surfaces using nanomaterials such as carbon nanotubes to enhance sensitivity. These electrodes are further used as sensing platforms.

Vascular Endothelial Growth Factor (VEGF) was used as a model analyte to develop a reagentless immunosensing strategy for the rapid detection of tumor markers in biological samples. The detection limit achieved was as

low as 38pg/ml. This work was published in Biosensors and Bioelectronics in May 2009. I have presented the hereforeto mentioned work at four national conferences and have three proceedings publications.

Our further work includes the monitoring of DNA damage biomarkers such as 8-hydroxydeoxyguanosine (8-OHdG) and metallothionein on a single cell level using carbon fiber microelectrodes. The study includes the measurement of 8-OHdG levels in single cells after they are exposed to cigarette smoke, UV/IR radiation, hydrogen peroxide or antioxidants such as Vitamin C, beta carotene, etc.

I was awarded the Everglades Foundation Fellowship in 2009 for the amount of \$20,000 which helps support Dr. Li's project involving the development of an in-field portable sensing system for detection of phosphorus and heavy metals in the Everglades water systems.

I hope to continue learning and making good research progress under the excellent guidance of Dr. Li who is not only my mentor, but also my role model.

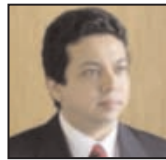
## BME Awards 2008-2009



**Anthony J. McGoron**, Associate Professor and Acting Chair, received a grant from the Florida Department of Health for \$200,000 to develop a new Image Guided Therapy for cancer. A gift of \$250,000 from the Rinker Family Foundation to Dr. Seza Gulec in the College of Medicine was received to establish a Nuclear Oncology Laboratory in the BME department. Dr. McGoron is also a Co-PI with Dr. Norman Munroe from the Mechanical and Materials Engineering department on a new \$300,000 grant from the National Institutes of Health to study the biocompatibility of new vascular stent materials.



**Malek Adjouadi**, Professor, has helped—along with other researchers in the CATE Center—secured \$765,000 in funding, out of which \$330,000 of new funding was in support of the research thrust entitled "Integrated Approach to Information Processing in Neuroscience" under the National Science Foundation Center for Research Excellence in Science and Technology (NSF-CREST) program, and \$104,143 of new funding from the NSF Broadening Participation in Computing (NSF-BPC) program geared at recruiting more students into the graduate program and onto professorship. Melvin Ayala, CATE lab manager, and Malek Adjouadi have been recently granted the following patent: Artificial Neural Network Design and Evaluation Tool.



**Armando Barreto**, Associate Professor, continued work on two active grants in 2008/2009, and had a five-year proposal to NSF titled "Human-Computer Interaction for Universal Access" accepted. Dr. Barreto serves as PI of this project, which is part of the NSF Center for Research Excellence in Science and Technology (CREST) titled: "Center for Innovative Information Systems Engineering." Dr. Barreto's project is expected to receive \$825,000 of support over five years.



**Anuradha Godavarty**, Assistant Professor, received funding (\$403,971) from the Florida Department of Health (BankHead Coley Program) and the Department of Defense (Breast Cancer Research Program) toward her research related to diagnostic breast imaging. Additionally, she received the Kauffman Professorship Award for Year 2009 from Florida International University. Her research on breast cancer was recognized and highlighted at Radiological Society of North America's Annual Meeting (via RSNA-on-the-air broadcast) in December 2008 and via WSVN (Miami, Channel 7) telecast in February 2009. Dr. Godavarty's student, Sarah Erickson, PhD, received a Department of Defense Pre-Doctoral Traineeship Award.



**Chenzhong Li**, Assistant Professor, received a \$54,000 award from the U.S. Air Force Office of Scientific Research to work on the development of biosensors for the in-field detection of toxins. He also received a Faculty Research Award and Kauffman Professor Award in 2009 for the research and education in the fields of biosensors and nanomedicine. In addition, Dr. Li has received

\$20,000 from the Everglades Foundation to develop a new biosensing tool to monitor the environmental pollutants in the Everglades water system. He successfully co-organized the 25th Southern Biomedical Engineering Conference with Dr. McGoron and Dr. Lin.



**Michael Christie**, Instructor, Undergraduate Advisor, received \$1,500 for the Training Program for Establishing and Sustaining an Undergraduate Research Program in Biomedical Engineering from the Academy for the Art of Teaching.

## 2009 Kauffman Professor Winners

Two Biomedical Engineering department faculty were recently chosen as Kauffman Professors by the Pino Center. Receiving the \$15,000 funding gift were:

• **Anuradha Godavarty**, PhD Novel Hand-held Optical Imager for Breast Cancer Diagnostics; Translational and Commercialization Efforts

• **Chenzhong Li**, PhD - Entrepreneurial Opportunities and Education of Nanotechnology in Biomedical Engineering

Under the provisions of the Kauffman Campuses gift from the Ewing Marion Kauffman Foundation to the Pino Center, 30 Florida International University (FIU) full-time faculty (tenure earning, tenured or non-tenured) were selected to receive the awards of up to \$15,000 to foster entrepreneurial activities, research and courses within their home disciplines.

The Kauffman Professors Program is intended to create an awareness of, an appetite for, and application of entrepreneurship within every aspect of the university.

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### 25th Southern Biomedical Engineering Conference

students, residency candidates and postdoctoral fellows were encouraged to submit abstracts for the paper competition. Several awards were given to honor the best presentations in each category. Two FIU students won the Doctoral Awards: Alicia Fernandez-Fernandez and Sarah J. Erickson.

There were three FIU Biomedical Engineering faculty members who helped organize the conference: Dr. Anthony McGoron, Associate Professor and Acting Chair, Dr. Chenzhong Li, Assistant Professor and Dr. Wei-Chiang Lin, Associate Professor. A program committee comprised of FIU colleagues supported the abstract review process. A student organizing committee comprised of five student leaders from the BMES and the BME Honor Society (AEMB) supported all student-related activities. The members of the SBEC 2009 student task force were Alicia Fernandez, Denny Carvajal, Carolina Bautista, Zenith Acosta and Andres Ramos. During the weekend of the conference, the task force received the assistance of 11 other student volunteers from the undergraduate and graduate BME program.

Conference proceedings were published by Springer in fully searchable CDs, which are available for purchase as hard copies. Short abstracts were published in a special issue of the International Journal of Medical Implants and Devices. During the abstract submission phase for SBEC 2009, full paper manuscripts were collected for consideration to be published in the American Journal of Biomedical Science (AJBMS) as a special issue on Biomedical Engineering.

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### Faculty Focus Dr. Chenzhong Li

optical detectors or emitters. The incident photon conversion efficiency was measured to be eight-fold higher than that of the longer carbon nanotubes, suggesting their electronic structure and photoelectrochemical properties were dramatically altered.

Says Dr. Li, "This is a remarkable discovery, and the novel photo electrochemical activities of finite size carbon nanotubes will allow us to improve the overall photoelectric quantum efficiency of photo energy conservation, the relative enhanced current induced by light irradiation will allow us to engineer highly sensitive optical sensors and miniaturized energy sources."

Dr. Li's work has been highlighted as research news at Materials Today (November 2008, page 9).

### Biomedical Engineering STATS

**Contributors:** Dr. Anthony McGoron, Olga Cepero-Diptee, T. LaShaun Wallace, Oscar Negret.

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Engineering & Computing  
FLORIDA INTERNATIONAL UNIVERSITY

Fall 2009

[HTTP://WWW.BME.FIU.EDU](http://www.bme.fiu.edu)

### Message from the Chair



This spring I had the pleasure, with the help of faculty and students in the department, of organizing the 25th Southern Biomedical Engineering conference in Miami, which is described in more detail in this issue. The overwhelming success of this two-day conference reminded me of the vigor that defines our field. Each semester I give guest lectures to our college's Introduction to Engineering classes to introduce the exciting discipline of Biomedical Engineering to freshman engineering students and the response is always gratifying. No matter what their chosen engineering field, students are always excited by the possibilities of making an important and lasting contribution to society by improving human health. The enthusiasm is evident by the success and growth of our academic programs. Our PhD program has grown to over 25 fully supported students with six alumni and our undergraduate program has a headcount of over 250 students with more than 90 alumni. Cross-disciplinary education and research defines biomedical engineering. We find our graduate and undergraduate students doing their research and senior design projects with students and faculty from other departments and colleges. BME's faculty, probably more than any other, engage in multidisciplinary collaborations. It is truly an exciting time to be an engineer.

Two important areas where medicine, science and engineering intersect are in nanobiotechnology and tissue engineering. Both research areas require integration of materials science, biological sciences, physics, chemistry, clinical medicine and of course mechanical, materials, chemical and biomedical engineering. In this issue we focus on two of our faculty doing cross-disciplinary research in these exciting areas. Our goal is to have everyone in the college involved in biomedical related research. We aren't quite there yet, but we are working on it.

*Dr. Anthony McGoron*



DEPARTMENT OF BIOMEDICAL ENGINEERING NEWSLETTER

*Integrating Academia, Clinical Medicine and the Biomedical Industry*

## 25th Southern Biomedical Engineering Conference



TOP LEFT PICTURE, FROM LEFT TO RIGHT: Dr. Homer Nazeran, Dr. Jafar Vosoughi, Dr. Subrata Saha, Dr. Anthony McGoron, Dr. Shankar Krishnan and Dr. Chenzhong Li; BOTTOM RIGHT PICTURE, FROM LEFT TO RIGHT: Springer Representative Christopher Coughlin and Dr. Shankar Krishnan

In May, the Biomedical Engineering Department hosted a multinational gathering of researchers, clinicians, students and industry leaders who came to participate in the 25th Southern Biomedical Engineering Conference (SBEC) in Miami.

Held May 15-17, 2009 at the Embassy Suites Miami Airport Hotel, the conference featured keynote lectures, presentations in diverse areas of biotechnology, student competitions and more than 140 high-quality papers. Although the SBEC was primarily designed as a regional conference, over 170 attendees came from all regions of the U.S., Latin America and around the world.

Dr. C. Mauli Agrawal, dean of the College of Engineering at the University of Texas at San Antonio, provided the morning keynote address, titled "Enabling Blood Flow: From Tissue Engineering to Drug Eluting Stents." Dr. Subrata Saha, of the Department of Orthopedic Surgery and Rehabilitation Medicine at SUNY Downstate Medical Center, provided the evening address on "The History of the Southern Biomedical Engineering Conference."

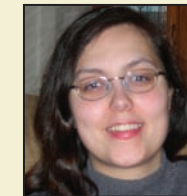
The SBEC was founded 28 years ago and has continued to serve the special purpose of emphasizing student participation. Recent unpublished work presented by student authors, while their mentors observe, helps students develop public speaking skills and establish self-confidence in their presentations. Established investigators presented papers along with the students, thus encouraging a high level of professionalism as a standard for the students, and allowing students to hear well-known authorities in the field.

In keeping with the emphasis on student participation, SBEC 2009 presented 6 student awards to undergraduate, graduate and postdoctoral researchers based on both their proceedings papers and presentations at the conference. Undergraduate and graduate students, medical/dental

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### >> Alicia Fernandez-Fernandez

Alicia Fernandez-Fernandez ended up being a biomedical engineer almost by accident – some would call it fate. She initially came to the United States from Spain in 1999, after finishing a physical therapy degree at University of Oviedo in 1997 and working in an outpatient clinic for two years. She successfully completed her master's in Physical Therapy at FIU in 2002 and passed the Florida licensure exam, but she had to wait for her U.S. working permit to be able to get a job.

"Those who know me will confirm that I am the kind of person that needs to be doing something all the time – so the prospect of waiting for my work permit, and not knowing how long I would have to wait, made me think of staying in school so I could keep myself occupied. When I first entered college in Spain, I had debated between majoring in a health sciences career or in engineering – maybe this was my second chance to take a good look at engineering."

Fernandez-Fernandez entered the FIU biomedical engineering program as an undergraduate so she could learn all the basics. By the time her working permit was approved in 2003, she was already too hooked into engineering to drop out of school.

"I just couldn't let it go. With my clinical background, and now being able to see everything from an engineering perspective, I knew that the combination made sense and that I had to keep going." She started working as a neonatal physical therapist at South Miami Hospital in 2003, and she continued her bachelor's in BME combining work, school and family (her son was born in 2005).

She received the Outstanding Graduate in Biomedical Engineering Award in Fall 2006, and she decided to stay in the department and enter the Ph.D. program supported by a RISE fellowship. She was also awarded an Enhanced Scholarship.

"My ultimate goal is to teach others – I would love to stay in academia, and going for a PhD made sense. After I started doing research in Dr. McGoron's team and teaching the student lab, I just felt that this was the right fit for me. Our group is trying to develop new therapies for cancer with reduced toxic side effects. This research is meaningful professionally and also at a personal level, because my grandmother died from ovarian cancer when she was 27 and I was never able to meet her. I would love to be able to make a difference as a cancer researcher someday, and to mentor others as well."

Alicia has been very involved in

departmental activities and was one of the founding members of the charter of Alpha Eta Mu Beta at FIU. She served as a vice president of the new chapter from 2007 to 2009, and she was recently elected as chapter president for the 2009/2010 term. She is also the graduate student representative for the FIU chapter of Tau Beta Pi, and a member of BMES. She served as the only student member in the 2008 FIU Dean of Engineering Search and Screen Committee, and she was the leader of the student task force that helped with the organization of the SBEC 2009 conference.

"Ultimately, if the department does well, it reflects positively on its graduates, and vice versa. So I think that students should try to help make the department as strong as possible. It should be a two-way street. This university and this department have given me so much in all these years. When I was a BME undergraduate, working at the hospital, and raising a baby, everyone here put their best foot forward to help me juggle, students and professors alike. Since we are a small department, we have a community of sorts where we all know each other. I feel that I have to give back and make the best of my time here. The only exception to that," she laughs, "is if you mess with my lab equipment. Then everyone knows you will be in trouble."

STATS

BME

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## Biomedical Engineering Society



### Message from the President

>>> **Manuel Romero**



The founding president of the Biomedical Engineering Society (BMES) at Florida International University, Thomas E. Claiborne, once stated that BMES "unifies biomedical engineers, organizes conferences, furthers education, [and] maintains professional standards." Little did he know that eight years after he founded the society, it would grow to its current size.

BMES has unified the biomedical engineering student body by hosting social events, such as a karaoke night at Dave & Buster's. Not only has the BMES unified the biomedical engineering student body, but it has also enhanced faculty-student interaction through events like our annual faculty-student softball game. I am proud to say that the students have a two-year winning streak that I hope we can continue this coming year.

This school year, BMES members attended the International Symposium on Endovascular Therapy (ISET) and the Area Health Education Center pre-medical conference. The BMES also obtained funding to sponsor 20 members to attend the 25th Southern Biomedical Engineering Conference.

The BMES furthers education by hosting a Professor's Panel where faculty and industry representatives are invited to speak and answer questions in front of an eager student body.

In the coming year, we hope to accomplish much more. We are working towards making the Professor's Panel an annual event, adding a Student Panel, as well as hosting an annual departmental Thanksgiving lunch. We are aiming to target lower classmen to join the society and we are working on establishing a Student Advisory Board and a mentoring program.

The Biomedical Engineering Society Hopes to achieve this with the help of our newly elected 2009-2010 Executive Board: Zenith Acosta (vice-president), Laura Fajardo (secretary), Andrea Rolong (treasurer), Andrea Sanchez (events coordinator), Denny Carvajal (marketing coordinator), Alex Rodriguez (Council for Students Organizations representative), Sergio Martinez (graduate student representative), Manuela Roman (webmaster), Dharam Persaud (Student Advisory Board chair) and Liset Hilaes (Chapter Development Report chair). I would also like to give special thanks to Lizeth Caldera (2008-2009 president) for her continuous help with the society.

There was a great deal of effort from the 2008-2009 Executive Board: Lizeth Caldera (president), Vanessa Scagliati, (vice-president), Sarah Boodram (secretary), Denny Carvajal (treasurer), Lorena Suarez (events coordinator), Maggy Seiglie (PR office), Sergio Martinez (webmaster), Javier

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### Alpha Eta Mu Beta Biomedical Engineering Honor Society: Message from the President

>>> **Alicia Fernandez-Fernandez**



It has been an exciting year for Alpha Eta Mu Beta. In the last two semesters, we have gone from a small starter society to the fourth most active organization in the entire FIU campus! The philosophy of our E-Board has always emphasized that the strength of the society is in its members, and I am proud to say that most of the students who are inducted into AEMB remain involved in our chapter after induction and participate in our activities on a regular basis. This is why we are able to put many events together and be a visible force on campus despite only having 26 members.

Our student body also includes a variety of undergraduates and graduates with different interests and goals who have been able to form lasting bonds. Thank you so much to all our members for helping us become a strong society, to our prior E-Board, including 2008-2009 president Andres Ramos, and to our advisor Dr. Anthony McGoron. We hope to be able to continue the good work.

The founding ideals of our chapter were to provide a way to recognize those who excelled academically, but also to encourage our members to give back to the community, to FIU and to the BME department. In the past two semesters, we have collaborated with Daily Bread Food Bank, Vietnam Veterans of America, the Miami-Dade public school system and the American Cancer Society's Relay for Life. We have established a monthly journal club that is open to anybody in the department who wants to learn about the latest advances in research. The discussion is led by a different student every month, and tied to their research experiences or interests.

Last spring, we were part of an Engineering Society task force that helped coordinate the so called "E-week Olympics." This series included events such as Field Day or the Engineering Brain Bowl, which was hosted by AEMB, and we hope that the "E-week Olympics" will become an annual event. We also host the "International Food Extravaganza" every semester, in which members have the opportunity to network and share dishes from different cultures. Finally, we help promote the BME department in every event, and we also have participated in the "Introduction to Engineering" classes every semester trying to recruit new students into the BME field.

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#### Biomedical Engineering Society Message from the President

Gonzalez (historian), Manuel Romero (marketing coordinator) and Zenith Acosta (Social Chair). Through the efforts of the past Executive Board, the biomedical engineering student body has been unified through our social events and has attended many conferences; also with our ongoing recruitment efforts in attending freshman orientations and introduction to engineering classes, we will continue to strive to our professional standards and maintain our legacy, while making sure to provide social opportunities to network and socialize in a different setting. Despite the fact that there might be obstacles in the future, the Biomedical Engineering Society is ready for the challenge.

AEMB was also a strong force behind the 25th Southern Biomedical Engineering Conference that was hosted by the BME department last May. Three of the five members of the SBEC 2009 Student Task Force, which assisted during an intense six-month period of conference preparations, were AEMB members. So were seven of the 11 additional volunteers who helped during the weekend of the conference. Four of our members presented their own research at the conference. I would also like to recognize BMES and the significant contribution of its volunteers to SBEC 2009. AEMB is really looking forward to establishing meaningful collaborations with BMES in upcoming semesters to promote our department, the field of biomedical engineering and the sense of community among our students.

So what's in store for next fall? Hopefully more of the same and beyond! Hoping to address the "industry vs. research" divide, and because we already have research-oriented activities such as the journal club, we are planning to start an industry lecture series in which speakers from leading biomedical companies can interact with students and discuss issues of interest for those of you who want to work in industry. Also, we would like to organize a mentoring/tutoring program. Through this program, undergraduate and graduate students would help other students excel and make progress in their studies. Engineering is no easy feat, and we know that sometimes a helping hand is very important to avoid discouragement along the way.

If you are invited next semester, join us! We want to make a difference in our department and in the FIU community, and you could be a great asset. You can contact us at aemb.fiu@gmail.com or check out our website at <http://web.eng.fiu.edu/aemb/>.

#### 2009-2010 AEMB E-BOARD

Alicia Fernandez-Fernandez, *President*  
Gisela Gonzalez, *Vice President*  
Carolina Bautista, *Events Coordinator*  
Jean Gonzalez, *Treasurer*  
Sergio Martinez, *Webmaster*  
Ana Pena, *CSO Representative*  
Konstantinos Sebekos, *Secretary*  
Anthony J McGoron, Ph.D., *Faculty Advisor*

## STUDENT NEWS

# 2009 Biomedical Engineering Technology Expo & Competition



JUDGES: TODD LARY, STEVE WHITE, MARC RAMER, AND DAVID PAUL

WINNERS OF THE SPRING 2009 SENIOR DESIGN EXPO: JOSEPH DE CERCE, GISELA GONZALEZ, EVELYN ALCANTARA, THOMAS GEORGE, AND JOSEPH SOTO

Twice every year our Senior Design students present their projects to a panel of judges. Winners for the 2009 Spring session of the Senior Design Expo and Competition, held April 17, 2009 were Joseph De Cerce, Gisela D. Gonzalez, Evelyn Alcantara, Thomas George and Joseph Soto. The title of their presentation was "Alternative Means for Inhibiting Bacteria Growth in a Hematology Analyzer." Their advisor was Dr. James Byrne and the sponsor was Santiago Galvez from Beckman

Coulter. The distinguished panel that judged the competition was comprised of active members of the Biomedical Engineering Advisory Board: David Paul, Director of Biotechnology Program at Miami Dade College; Marc Ramer, Director of R&D at Innovia LLC; Steve White, Director APD from Heartware Inc.; and Todd Lary, Director of Oxylation LLC.

The winners for the 2008 Summer competition held August 4, 2008 were Yasser Jimenez-

Pimentel, Maria V. Khvan, Margarita Igoevna Medovaya, Leander Rivera and Michelle Tillit with a project titled Combining Imaging and Hyperthermia. The judges were Carla Fleszczynski, Technical Operations Engineer at Beckman Coulter; Lori Ann Santamaria, R & D Project Leader at OrbusNeich; Marc Ramer, Director of R & D at Innovia and Hamid Shahrestani, President and CEO at Qualtech Solutions, Inc. Their advisor was Dr. Anthony McGoron.

## 2009 Norman R. Weldon Summer Research Internship

Each year, the Biomedical Engineering Department offers awards for undergraduate students to facilitate them in participating in faculty research during the summer.

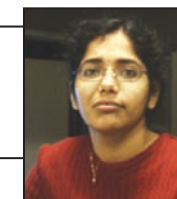
The two students selected for summer 2009 were Carolina Bautista and Jean Gonzalez. They will work for 20 hours each week for 12 weeks over the summer. The awards are intended to support students with an interest in pursuing a career in research with plans to pursue graduate studies in Biomedical Engineering. In order to apply for these internships students are required to prepare a three-page proposal to demonstrate that the resources (facilities, equipment and materials) are available for the research. Applications are reviewed and assessed according to the following criteria: (1) student's academic achievements (grades); (2) student's

history of participation in department activities (Biomedical Engineering Society); (3) the scientific proposal; (4) availability of adequate resources; and (5) research mentor's letter. At the end of the summer, the students will provide a final report and give a presentation at a student BMES chapter meeting.

Carolina Bautista's mentor is Dr. Yen-Chih Huang and the title of her project is "The Influence of Adenosine on the Proliferation and Differentiation of Endothelial Progenitor Cells Derived from Embryonic Stem Cells."

Jean Gonzalez's research mentor is Dr. Anuradha Godavarty and the title of his project is "Development of a Second Generation Hand-Held Optical Probe based Imager."

## FACULTY NEWS



### Assistant Professor recognized by FIU President

Dr. Anuradha Godavarty, assistant professor in the Department of Biomedical Engineering, was recognized by FIU President Modesto A. Maidique for her outstanding achievements in research and scholarship at a reception on March 31, 2009 at the Ronald W. Reagan Presidential Home located on the University Park Campus.

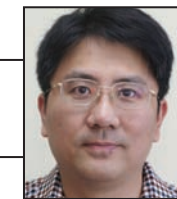
Dr. Godavarty was honored for receiving funding from the National Institutes of Health (National Cancer Institute) and the Florida Department of Health for her research efforts focused on breast imaging. Hand-held based optical imagers, which are portable, relatively inexpensive and applicable to any tissue volume, are feasible and affordable for most patients. There is no risk to patients, since the optical imaging technology is not radioactive or invasive, in contrast to widely used X-ray mammography and nuclear-based imaging techniques. However, none of the hand-held optical imagers to date can perform three-dimensional tumor detection studies. Dr. Godavarty led a team that has developed the first hand-held optical device capable of 3-D tumor detection. This technology, when used in conjunction with standard diagnostic imaging tools, can eventually save lives and

improve the early-stage diagnosis of breast cancer, which currently strikes 1 in 8 women in the United States.

Dr. Godavarty credits her team of past and current students for her successful research efforts: Jiajia Ge, a PhD student who is now a Senior Research Scientist at Covidien Imaging Solutions in Missouri; Banghe Zhu, her post-doc who joined the University of Houston Health Sciences Center as an Engineering Scientist; Bhavani Jayachandran, who joined Beckman Coulter; and Steven Regalado, who is now a Biomedical Engineer at Engineering and Network Systems in Pembroke Pines, Florida.

More than two dozen distinguished members of the FIU academic community—world-class scientists and researchers, authors, and scholars – were recognized for their accomplishments.

"On this occasion, we celebrate the achievements of a diverse community of scholars whose remarkable work inspires both students and peers and extends the academic excellence of FIU," said Executive Vice President and Provost Ronald M. Berkman.



### Dr. Yen-Chih Huang joins FIU

Dr. Yen-Chih Huang is the newest faculty member to join the Biomedical Engineering Department. Dr. Huang obtained his BS and MS degrees from the Department of Chemical Engineering at National Tsing Hua University, Taiwan. He pursued his interests in biomedical research at The University of Michigan, Ann Arbor, where he finished his PhD dissertation in the studying of skeletal muscle tissue engineering in the Department of Biomedical Engineering. Then he continued his postdoctoral training in the area of cardiac muscle tissue engineering in the BME Department and section of Cardiac Surgery at the University of Michigan. He also had the opportunity to work in the College of Medicine at National Cheung Kung University, Taiwan, and the VA Hospital, Ann Arbor, Michigan, for interdisciplinary research, such as the bioartificial kidney.

Dr. Huang's current research interests are focused in stem cells, tissue engineering and biomaterials. His ideas are to employ engineering principles and tools including biomaterials, micro/nanofabrication and bioreactors to explore and investigate the formation and function of engineered tissues at the molecular, cellular and tissue levels. He has developed the model of engineered skeletal and cardiac muscles by using fibrin gels for in-vitro basic research and in-vivo transplantation studies. Furthermore, he is also interested in the development of tissue engineering strategies for directing differentiation of stem cells toward the lineages of cardiovascular and musculoskeletal tissues.

"It is my pleasure to have the opportunity to continue my career in the BME department at FIU. Hopefully, I can promote students' interests in the areas of regenerative medicine and tissue engineering through teaching and research.

## FACULTY FOCUS

>>> **Dr. Chenzhong Li**



Assistant professor Dr. Chenzhong Li has been working on some exciting processes in his lab that will showcase the next generation of biosensors and energy sources of biomedical devices. Dr. Li's Nanobioengineering and Bioelectronics lab focuses on the development of a new class of functional materials for the applications of biosensors for medical diagnostics and assessment of environmental toxins and implantable power sources for biomedical device operations. The lab team implemented fundamental studies of the electron transfer phenomenon of bio and nano materials, such as DNA, carbon nanotubes (CNTs), graphene nanosheet and their nano-bio complexes. Particularly, his lab discovered the graphene nanosheet and carbon fiber-based highly sensitive biosensors for the detection of neurotransmitters and cancer biomarkers.

Dr. Li's lab is actively setting up research collaborations with research labs in the newly established Herbert Wertheim College of Medicine. There is day to day collaboration between Dr. Li's lab and Professor Kalai Mathee's lab in the Department of Microbiology & Infectious Disease in content creation and the development of surface plasmon resonance (SPR) sensing devices and immunochromatographic strip for pathogenic bacteria whole cell analysis. In collaboration with the lab of Professor Barry Rosen and Professor Jie Qin in the Herbert Wertheim College of Medicine, a new project which will focus on the investigation of arsenic chaperone protein is being established. In addition, the biosensor platforms developed at Dr. Li's lab for the detection of DNA mutants and cancer biomarkers have been attracting great interests and offers broad potential of collaboration with the future cytogenetic lab (Professor Joe Leigh Simpson, Professor Renee Martin and Professor Helen Tempest) in the Herbert Wertheim College of Medicine.

In another project funded by the Air Force Office of Scientific Research at the U.S. Department of Defense, Dr. Li's lab has shown that controlling the length of CNTs can improve their photoelectrochemical activity, opening opportunities in the fabrication of efficient optoelectronic sensing devices, nanotube

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