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BME Annual Report 2007-2008

Department of Biomedical Engineering, Florida International University

FIU

FLORIDA INTERNATIONAL UNIVERSITY
DEPARTMENT OF BIOMEDICAL ENGINEERING

Annual Report

July 2007-June 2008

Submitted by
Anthony J. McGoron
Acting Chair
Department of Biomedical Engineering
Florida International University

BME Academic Programs

The vision of the Department of Biomedical Engineering (BME) is consistent with Florida International University's vision and states that "The Biomedical Engineering Department at Florida International University (FIU) will become the prime resource for biomedical engineering education, training, research, and technology development in Florida; and become nationally recognized as a model for servicing the needs of the clinical medicine and the biomedical industries through workforce and technology development".

The Department of Biomedical Engineering houses the BS, MS, and PhD degree programs in Biomedical Engineering. We also offer an undergraduate minor in biomedical engineering. Students who major in biomedical engineering, mechanical engineering, or electrical engineering may also enter the combined accelerated BS/MS program. This five year program seamlessly combines the baccalaureate degree with the Master's in biomedical engineering.

The Department of Biomedical Engineering is leading the State in biomedical engineering education. Of the eleven universities in the State University System (SUS) of Florida, FIU is the only university with the full slate (BS, MS, PhD) of programs in biomedical engineering. No other SUS university offers the BS in Biomedical Engineering. Florida Gulf Coast University has recently established an undergraduate BS Bioengineering program. The only other established Biomedical Engineering baccalaureate program in Florida is at the private University of Miami. Only two other SUS Universities, the University of Florida and Florida Gulf Coast University, contain a Department of Biomedical Engineering (at FGCU the Department of Bioengineering is within the School of Engineering in the College of Business). FIU's Department is the largest (in terms of faculty and students) and most active (in terms of education, research, and industry partnership programs) in the State.

FIU's BS in Biomedical Engineering is accredited by ABET. The program currently contains a headcount of over 185 full-time and 59 part-time students. The student headcount and graduation rates have risen steadily since the beginning of the program in 2003. The number of FTE's has also risen steadily, despite the fact that BME offers no "service" courses and three of our core engineering courses are taken through either ECE or MME. The average SAT score for BME students entering fall 2007 was 1125, compared to the corresponding University average of 1060. The program also boasts an active student section of the Biomedical Engineering Society and a newly established Alpha Eta Mu Beta Biomedical Engineering Honor Society chapter.

The MS program currently has 26 full- and part-time students enrolled. Thirteen of these students are funded on assistantships. The newly admitted MS degree seeking students with assistantships in fall 2007 had obtained an average GRE score of 1153. There are more than 70 MS graduates, and nine more students will graduate with a MS during summer 2008. Graduation rates have continued to increase. The PhD program currently has 25 full-time students. Six students were admitted into the PhD program in fall 2007 with an average GRE score of 1274. All of these students are on fully funded assistantships. As of spring 2008 there have been two PhD graduates. The Department's ratio of RA's supported by C&G funds to TA's supported on E&G funds has consistently been greater than 1:1 and reached 2:1 in 2005 and 2006. In fall 2007 the ratio was 1:1 due to the 0.25 FTE MS students supported through the College. The total

number of graduate level FTE's has also been increasing steadily since 2004. We expect the Grad II level FTE's to increase even further as the PhD program continues to mature.

Example of Major Course Improvement

The undergraduate program added a lab component to EEE 4202C Medical Instrumentation (formerly ELR 4202C). This required purchasing multiple sets of instruments (see table below) and assigning an additional TA. Students learn to implement basic circuit and amplifier design and gain hands-on experience with the instruments and transducers that will be used in the Undergraduate Laboratory courses. This was initiated during summer 2007. In addition, we continue to add instruments to our undergraduate laboratories. The following is a list of equipment that was purchased to support our undergraduate laboratory.

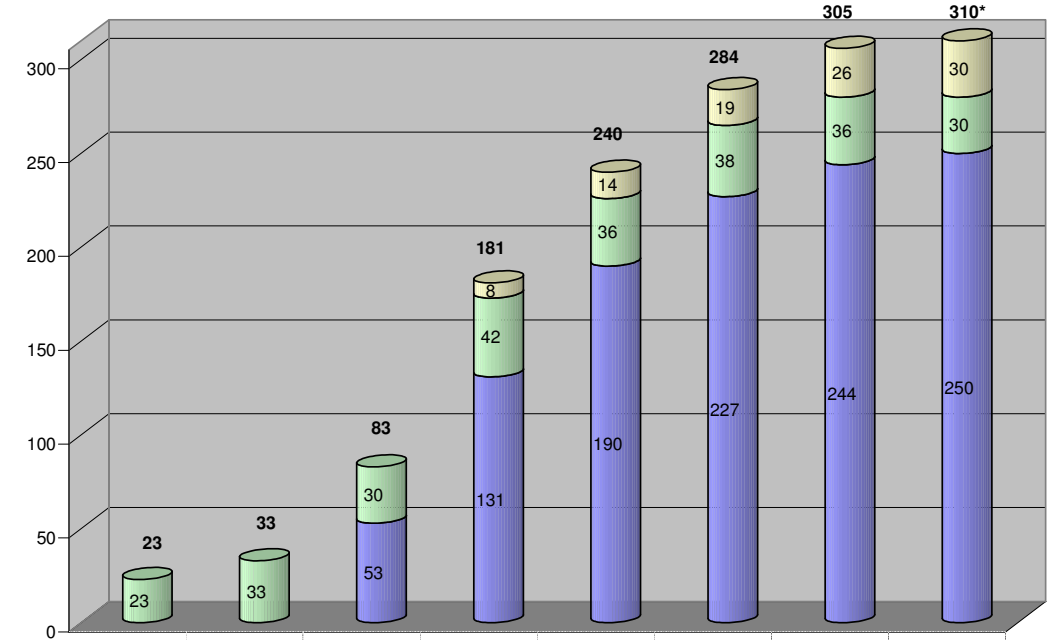
Equipment Purchased for the Undergraduate Student Laboratory in 2007-2008

Capital Item	Lab Budget Share
Sutter Instruments P-97 Pipette Puller	$3,420
Biopac MP 100 System	$3,941
Millar Pressure Catheters and Control	$10,791
Q-Imaging Retiga EXi FAST 1394 Camera	$11,986
SYS-ISO2 - Dissolved Oxygen Meter	$1,395
DC7700 Desktop HP dc7700CMT and Monitor	$2,598
3 @ Agilent E3631A Bench Power Supply	$3,765
3@ Agilent 33220A Arbitrary waveform generator	$5,500
3 @ Agilent 34401A Digital Multimeter	$3,597
3@ Custom Electronics Cabinets and fittings	$6,793
Brookfield DVII+ Cone & Plate Viscometer	$4,070
Krell Fiber Polisher	$3,665
Stimulator	$2,892
TOTAL Equipment	$64,413

Student Chapter Activities

Outside of the classroom, the BME Department supports a very active student BMES group. The BMES student chapter has over 100 active members. A few examples of recent activities that this has group sponsored include: Raising funds to send students to each BMES Annual Fall Meeting since 2003. The FIU BMES twice won the Fleetest Feet Award. Each year BMES students volunteer and attended the International Symposium on Endovascular Therapy (ISET) Conference in Miami. Each year the chapter collaborates with different organizations around school which has allowed them to organize numerous events including club fairs, academic fairs, social events, leadership seminars, and research seminars. Each year the BMES volunteers to participate in several special events that strengthen the College of Engineering and Computing. During Engineers' Week, the College hosts the annual Engineering Gala, an event that brings more than 1000 Elementary, Middle, and High School students from public and private schools across Miami-Dade County. In 2007 an Alpha Eta Mu Beta (AEMB) Biomedical Engineering Honor Society chapter was started.

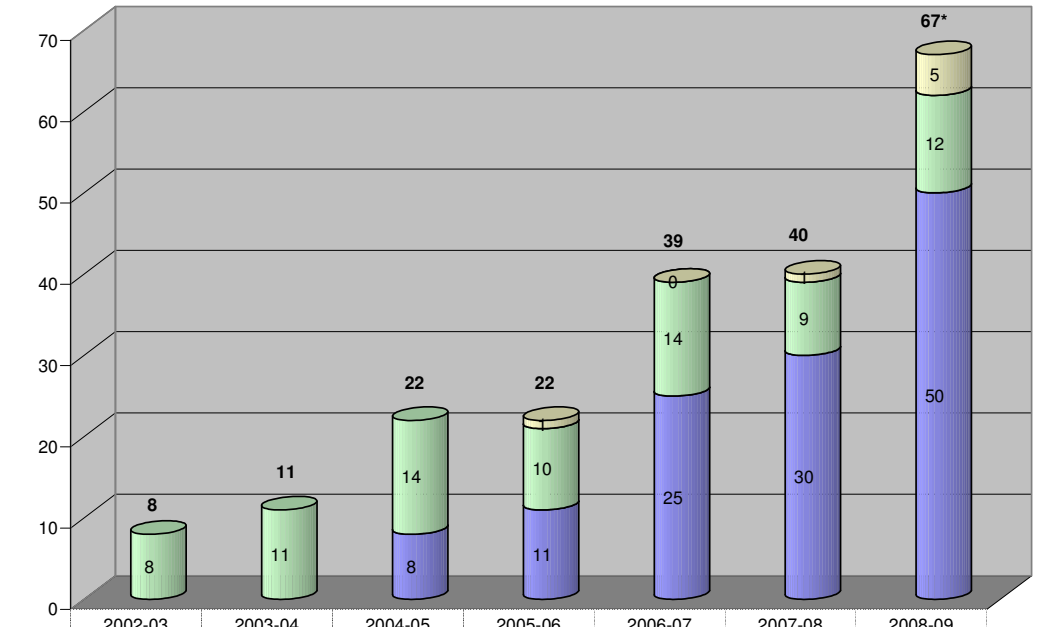
Biomedical Engineering Fall Enrolled Student Head Count



	Fall 2001	Fall 2002	Fall 2003	Fall 2004	Fall 2005	Fall 2006	Fall 2007	Fall 2008
PhD				8	14	19	26	30
MS	23	33	30	42	36	38	36	30
UG			53	131	190	227	244	250

* projections

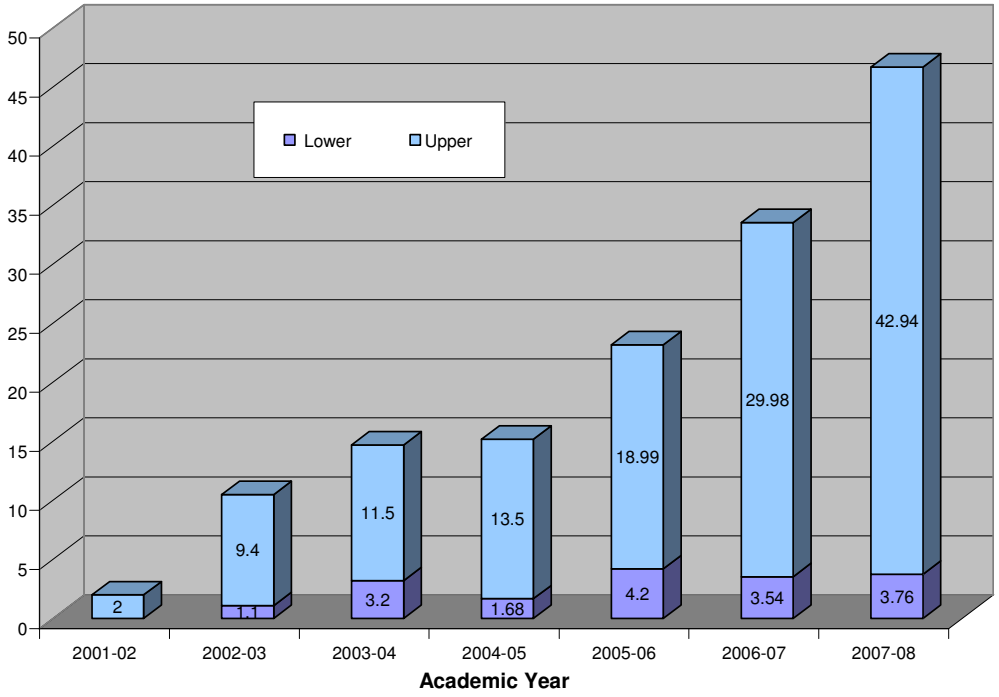
Biomedical Engineering Annual Degrees Granted**



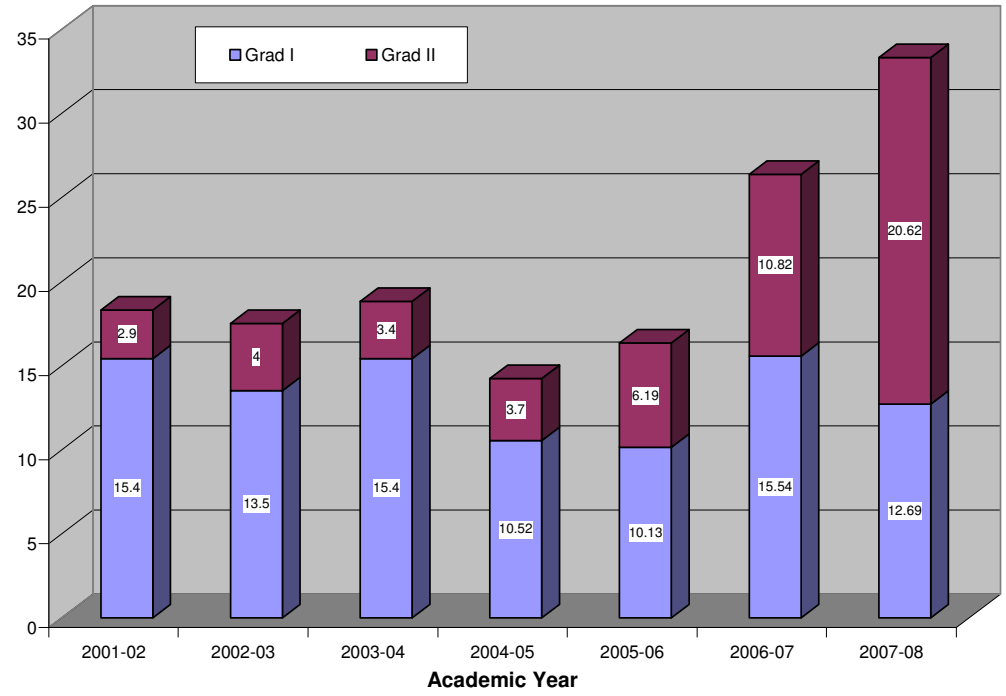
	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09
PhD				1	0	1	5
MS	8	11	14	10	14	9	12
UG			8	11	25	30	50

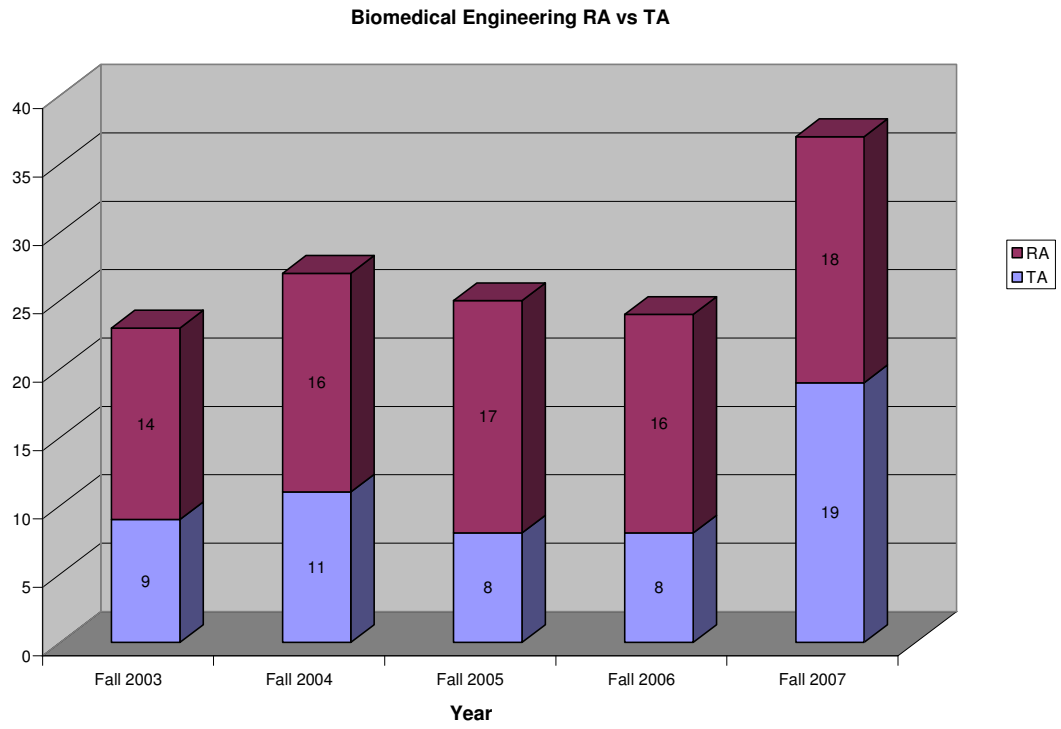
** 07-08 data are for fall and spring only, but 12 UG and 9 MS students will graduate in summer 08; * projections

Biomedical Engineering UGRD Annual FTE



Biomedical Engineering GRAD Annual FTE by GRAD I and GRAD II





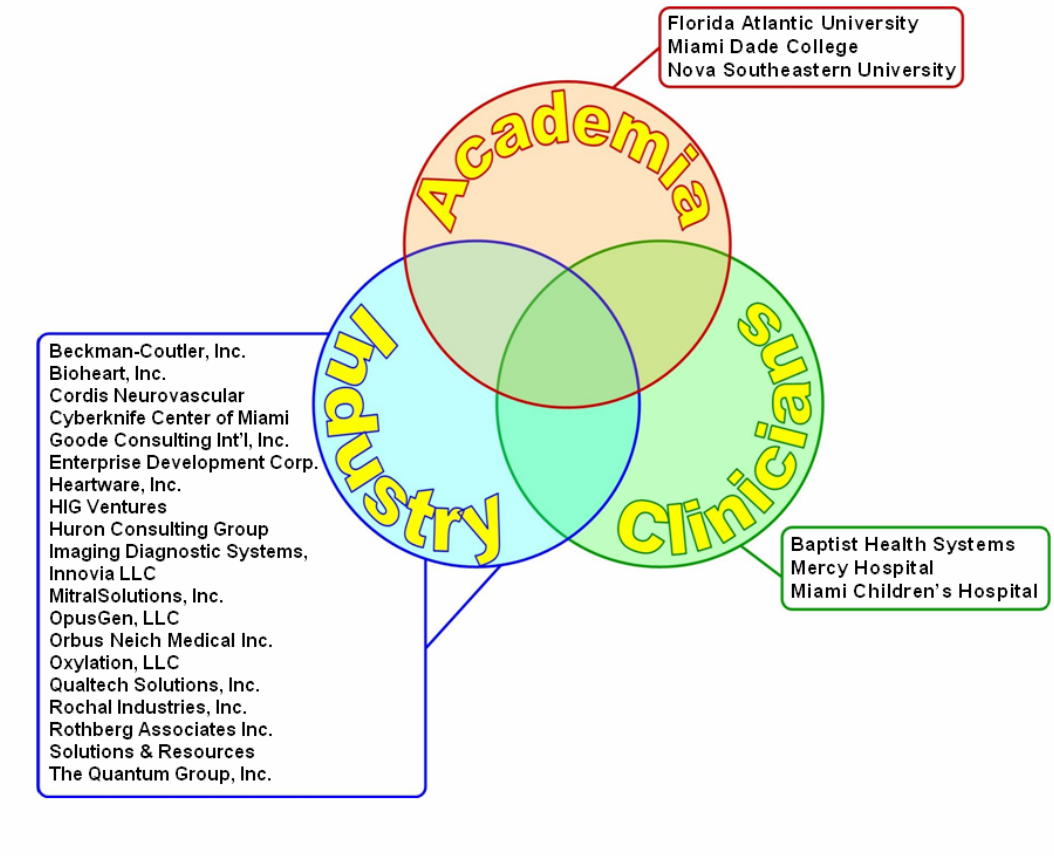
BME Partnership Program

The mission of the Department of Biomedical Engineering is to integrate academia, clinical medicine, and the biomedical industry into the biomedical engineering education and research programs. To this end, the Biomedical Engineering Partnership Program (BMEPP) at FIU was initiated in June of 2001. It is a joint enterprise of FIU, clinical research establishments, and biomedical companies. Its mission is to foster excellence in biomedical education and training; support biomedical innovation, invention, and discovery; cultivate biomedical research and development; and promote biomedical engineering entrepreneurship in South Florida. The Partnership Program is currently comprised of the Partner organizations listed below.

The Partnership Program provides the structural support to the clinical rotations and senior design projects for the baccalaureate program. The Partnership Program also provides opportunities for applied research to graduate students through the Collaborative Technology Innovation Program. This program joins BME faculty with personnel from one of the Partner organizations and provides funding for joint projects that present the potential for discovery, innovation, invention, and future commercialization or other external funding.

An example of the Partnership Program influence on the biomedical engineering programs is the Biomedical Engineering Technology Expo & Competition. It is a required curricular activity for undergraduate biomedical engineering seniors and a recommended extra-curricular activity for graduate students in the Department of Biomedical Engineering. In this biannual event, individual students and student teams present their senior design projects or theses/dissertations that create and/or investigate solutions to unmet clinical needs. The presentations are made to a

panel of judges comprised of members of the BME advisory board representing academia, industry and clinical medicine. In addition to providing a venue for students to display the product of their effort, the event offers biomedical companies and entrepreneurs a view of FIU's graduating biomedical engineers and innovative biomedical technology. Cash prizes, funded through external sponsors are awarded to the winners and runners-up in both categories.



The FIU Biomedical Engineering Partnership Program

Enterprise Development Corporation's7th Annual Life Science Conference

Several prominent leaders in the medical and technology fields met on FIU's campus during Enterprise Development Corporation's annual Life Science Conference April 24, 2008 hosted by the Biomedical Engineering Department. Using the theme "Leveraging Information Technology to Meet Today's Healthcare Challenges," the conference brought more than 300 industry leaders together to explore how information technology meets today's healthcare challenges and also to bring South Florida's Life Science community together for meaningful collaboration.

Discussion topics included:
• Improved medical billing, records retention and other healthcare services
• Underlying technology platforms that drive the healthcare industry
• South Florida's pipeline of emerging technologies

The following BME graduate students presented abstracts and posters:

- Brain Activation Map Analysis in Multi-Site Data Repository for Pediatric Epilepsy, Magno R. Guillen
- Nanomaterials Functionalized Device for Redox Studies of Cytochrome P450cam L244K, Avani Mulchandani
- Development of Cell Impedance Based Sensing System for the Nanotoxicity Assay, Evangelina Hondroulis
- A Novel Handheld Based Optical Imager Toward Diagnostic Breast Imaging, Steven Regalado
- An Inter-Patient Analysis for Seizure Detection, Maria T. Tito
- Optical Diagnosis of Ischemia-Induced Myocardial Injuries in Vivo, Yalin Ti
- Application of the Principal Component Analysis to Brain Activation Maps in Pediatric Epilepsy, Xiaozhen You

BME Endowed Programs

The earnings of the endowment from the Wallace H. Coulter Foundation grant fund the following nine programs:

- Excellence Fund – this is a general use fund for the overall enhancement of the biomedical engineering education and research programs.
- Graduate Fellowships – provide stipends for graduate students each year. Ten graduate students received support this year.
- Undergraduate Scholarships – up to five scholarships are provided each year. The scholarships are for two years. Nine students received scholarship support this year and 5 new scholarships have been awarded to students next year.
- Collaborative Technology Innovation Program – provides seed funding to faculty for development of their research programs with Partnership Program members. These funds were used for faculty start-up.
- Research Center Fund – provides support to the Cardiovascular Engineering Center.
- Eminent Scholars Chair and Professorship – funds two endowed faculty positions in the BME Department. The BME Coulter Distinguished Professor in Bioinstrumentation and Biomeasurements is currently held by Joe Leigh Simpson Executive Associate Dean for Academic Affairs, College of Medicine. The Eminent Chair position currently unfilled.
- Young Inventor Program – funds a post-doctoral fellow for up to two years.
  Dr Banghe Zhu held the title of the BME Young Inventor for the past two years. He was quite productive. Some of his accomplishments include: Peer-Review Publications: 3 (published/in press) + 3 (to be submitted in summer 2008); Conference Proceedings: 9; Presentations (Oral/Poster): 13; Patents: Co-inventor of one PCT patent filed in Sept 2007. In addition, he helped obtained industry collaboration (IDSI Inc., Plantation) along with grant funding from the company for 2 years, helped in initial establishment of the Optical Imaging Laboratory, and mentors Doctoral and Master's students in the lab.

  This year the Young Inventor Award is held by Dr Romila Manchanda.
  Romila Manchanda received her BS degree in Chemistry (with Honors) from Daulat Ram College, Delhi University, India in 1995, her MS in Chemistry, Specialization in Physical Chemistry, from Delhi University in 1998, and her PhD in Chemistry from the Institute

of Genomics and Integrative Biology CSIR, University of Delhi in 2006. The title of her dissertation was "**Design and synthesis of polymeric nanospheres as carrier for Biomolecules".** She submitted her thesis in 2003 and received post-doctoral training in the Laboratoire de physico-chimie, facultié de pharmacie, pharmacotechnie et Biopharmacie, Université paris-Sud X1, Chatenay- malabry cedex, France for one year. She returned from her post-doctoral training and worked in the Department of Chemistry, Univ. of Delhi. & School of Life Sciences. Jawaharlal Nehru University, Delhi. India till 2007. She received Young Scientist Project Award from the Department of Science and Technology (SERC Fast Track Proposals for Young Scientists Scheme), Government of India, August 2007, entitled "**Development of novel nanoparticle and nanoparticlate based targeted drug delivery systems and artificial oxygen carrier systems**. In November of 2007 she joined FIU as the 2nd BME Young Inventor Award recipient.

- Lecture Series – provides funds to offer a lecture series each year. Fifteen lectures were held this past year.

The Mammalian High Mobility Group Protein AT-hook 2: a DNA-binding onco-protein
Fenfei Leng, PhD
Monday, July 28, 2008

Tissue Engineering of Skeletal and Cardiac Muscles
Yen-Chih Huang, PhD
Thursday, May 15, 2008

Adult Stem Cell-based Craniofacial Tissue Engineering
Liu Hong, M.D.,, PhD
Wednesday, May 14, 2008

Tissue and Stress Variability in Vertebral Bone
Yener H. Yeni, PhD
Tuesday, May 13, 2008

Microfabricated Platforms for Stem Cell Research
Bonggeun Chung, PhD
Monday, May 12, 2008

Flow Divertors as Monotherapy to Cure Cerebral Aneurysms
B. Barry Lieber, PhD
Tuesday, March 11, 2008

Translational Nanomedicine: Clinical Approaches
Chiming Wei, MD, PhD, FACC, FAHA, FCCP, FAAN
Wednesday, March 5, 2008

Photonic BioEngineering for Translational Applications
In Biology, Medicine and Surgery
Daniel L. Farkas, PhD
Tuesday, March 4, 2008

Role of Mechanical Force and Scaffold in Stem Cell-Based
Cartilage Tissue Engineering
Herman S. Cheung, Ph.D.
Wednesday, February 27, 2008

Why there is no HIV-1 Vaccine Yet? What is the Nature of Molecular Defenses that are at work against HIV-1?
Omar Bagasra, M.D., Ph.D.
Monday, February 18, 2008

Chemosensing Mechanism of the Carotid body
Vakalet Tek, PhD

Research Scientist
Applied Research Center
Florida international University
Wednesday, December 12, 2007

Caught Between a Rock and a Soft Place 3-D Nanoscale Structures with Biological Applications
Dr. Carl A. Batt
Cornell University
Friday, November 30, 2007

Periodic Acceleration (pGz) The Short Story
Dr. Jose A. Adams, MD
Chief of Neonatology
Mt. Sinai Medical Center
Thursday, November 29, 2007

Computer Navigation in Joint Replacement Surgery
Carlos Lavernia, M.D.
Chief of Orthopedics
Mercy Hospital
Friday, October 26, 2007

New Advances in Nanomedicine: from Bench to Bedside
Dr. Chiming Wei
Director of Cardiovascular Molecular Research Program
Johns Hopkins University School of Medicine
Friday, October 19, 2007

In 2006 the Ware Foundation awarded FIU a $1.42 million grant to endow the Ware Foundation Laboratory for Brain Research and Neuro-Engineering Applications, to be jointly operated by the FIU BME Department and the Miami Children's Hospital Brain Institute. In addition, the Miami Children's Hospital supports one half of the BME faculty position held by Dr. Wei-Chiang Lin, which carries the title Miami Children's Hospital Assistant Professor in Neuro-engineering. Dr Lin earned tenure and promotion to associate professor.

The FIU Biomedical Engineering Department presents awards for undergraduate students to participate in faculty research during the summer from the proceeds of a $100,000 gift from Norman R Weldon received in 1998. 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. Two students are selected to conduct research in a faculty's laboratory for 20 hours each week for 12 weeks over the summer. The recipients this year were Denny Carvajal and Salinas Manuel.

BME Research Programs

Faculty size and Research Focus
In 07-08 the Department had 8 faculty members (total of 7 FTE) at the rank of Assistant Professor and above (two are joint positions with Electrical and Computer Engineering). The department has two full time Instructors, one serving as the Undergraduate Advisor. An additional Assistant Professor will start in fall 2008 and the Department is in the process of recruiting a faculty member at the Associate Professor or Professor level. The Department's research programs are in the following areas:

- Biomechanics, biomaterials, medical devices, and bionanotechnology
- Bioinstrumentation and biosignal processing
- Drug delivery, tissue engineering, and systems biology
- Medical and molecular imaging and biomedical optics

Research Funding

In 07-08 the department received $1.8 million in research award funding, and over $6 million over the last three years, from NIH, NSF, AHA, ONR, DOD, and industry. In addition, 94 journal articles and another 144 conference proceedings were published over the same period. The Department is deeply involved in translational research, particularly in the areas of cardiovascular and neural engineering. The Department, with the College of Medicine, submitted an $11 million Center of Excellence proposal to the State of Florida titled Florida Center for Advanced Diagnostic Devices. Despite not being funded, this proposal has established a foundation of collaboration between the CEC and COM. The BME chair has participated in the interview process for COM research faculty candidates and a COM faculty member was on each of the two BME faculty search and screen committees this past year.

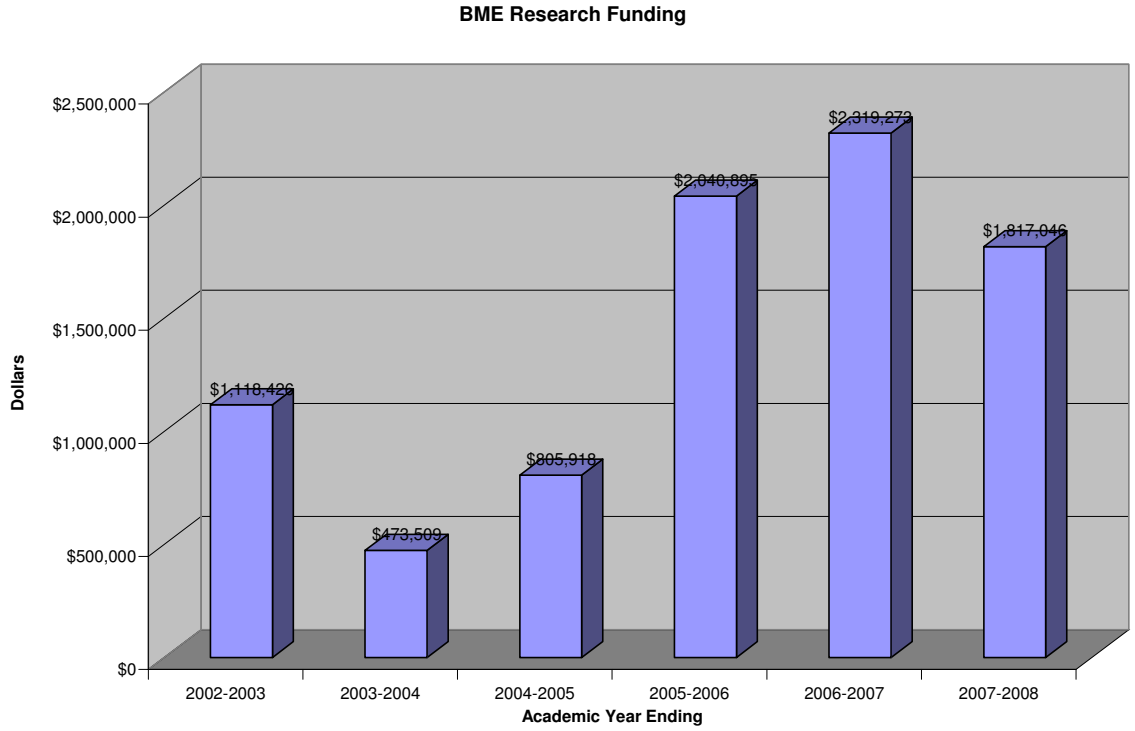
Summary of Faculty Scholarly Production for the Last Five Years

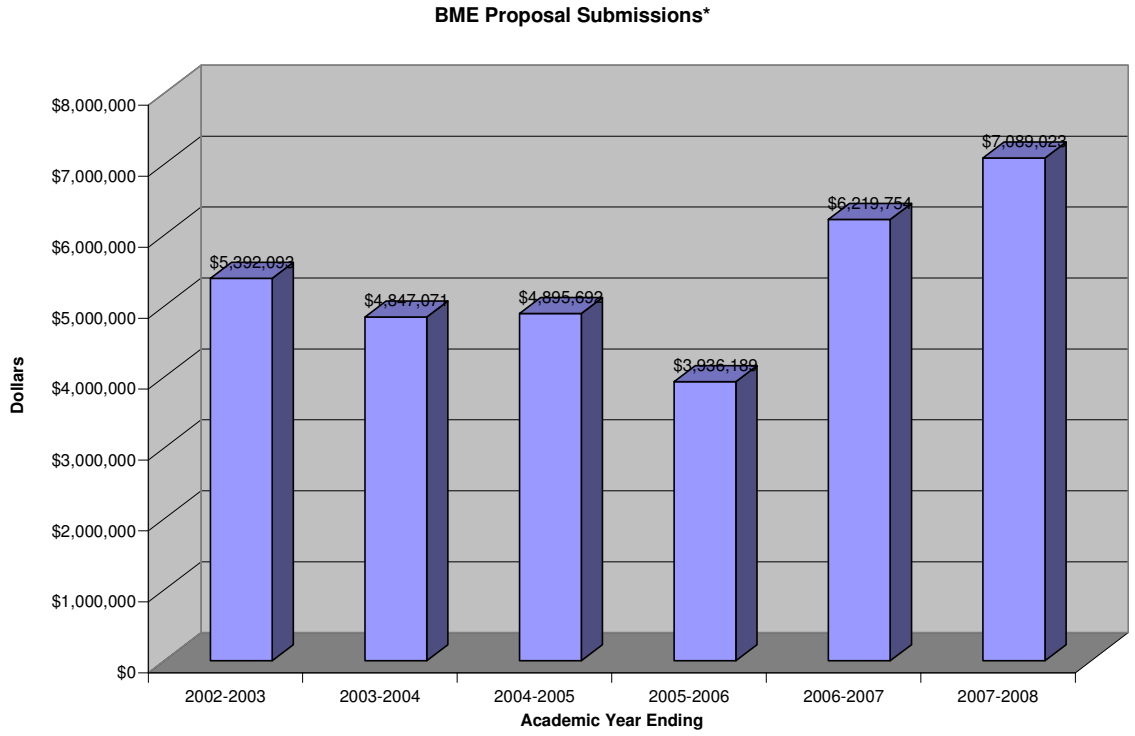
DEPARTMENT OF BIOMEDICAL ENGINEERING	AWARD YEAR				
	03-04	04-05	05-06	06-07	07-08
Number of:					
FTE Tenure-track faculty	7	7	7	8	7
Manuscripts published in major journals	30	38	36	32	26
Presentations at major scientific meetings	38	38	47	54	43
Research grant applications submitted	16	27	30	19	23
Research grant applications awarded	4	6	15	23	11
Disclosures	4	6	4	3	3
Patent Applications Files (US and foreign)	0	1	5	4	4

Summary of Academic and Research Programs Over Last Three Years

	2005-2006	2006-2007	2007-2008
Undergraduate Enrollment#	15	153	185
Undergraduate FTE	23	34	47
BS Degrees	7	25	30@
MS Enrollment#	38	32	27
MS (Grad I) FTE	10	16	13
MS Degrees	10	15	9@
0.25 FTE Assistantships	0	2	6
PhD Enrollment#	16	20	25
PhD (Grad II) FTE	6	11	21
PhD Degrees	1	0	1
Research Awards	$2,040,895	$2,319,273	$1,817,046
Research Expenditures	$1,137,238	$1,525,340	$1,290,231
RA (C&G Supported)	17	16	18
FTE Faculty*	9	10	9

@ Fall and spring only, there will be 12 BS degrees and 9 MS degrees awarded in summer 2008;
* Includes two instructors; # Full time students only





* Does not include $11M Florida Center of Excellence proposal

New Faculty

Dr. Michael Christie is the newest faculty member to join the Biomedical Engineering Department at Florida International University. A native of New Jersey, Dr. Christie attended Rutgers University where he earned a BS in Mechanical Engineering and subsequently an MS and PhD in Materials Science and Engineering, with specialization in the research and development of electroactive polymer sensors for non-invasive imaging applications. After completing his graduate studies, Dr. Christie joined Johnson & Johnson, where he worked in areas of increasing responsibility. Among his award-winning accomplishments was the establishment of a new facility for drug analysis and assay development. He was also responsible for all analytical testing for the $2 billion per year Cypher - drug-coated stent program encompassing R&D, product development and FDA approval processes. He later established Millennium Scientific Inc., a Parkland, FL-based materials and quality consulting firm, where he worked as principal scientist prior to joining the Biomedical Engineering Department. Dr. Christie said he is humbled by the appointment as an Instructor and Undergraduate Advisor. "Having worked as an adjunct and visiting professor in the department since 2005, I am happy that my commitment to students, the department, and the college as a whole has been validated by my colleagues and the college administration." In addition to teaching two undergraduate and one graduate course, Dr. Christie makes time for advising students on academic as well as career matters. He is also involved in establishing an undergraduate research initiative to study the hemodynamics of sickle cell anemia and other circulatory diseases and conditions including diabetes and hypertension.

Dr Yen-Chih Huang joins the faculty as an assistant professor in fall 2008. He received his BS and MS degrees in Chemical Engineering from National Tsing Hua University in Taiwan in 1991 and 1993 respectively, his PhD in Biomedical Engineering from the University of Michigan in 2004 and post-doctoral training from the Department of Biomedical Engineering and Section of Cardiac Surgery at the University of Michigan from 2004-2008. His MS Thesis is titled "Purification of antibodies by Zeolites" and his Doctoral Dissertation is titled "The effects of insulin-like growth factor I, thyroid hormone and electrical stimulation on the development of engineered skeletal muscles". His current research will be to develop tissue engineered skeletal and cardiac muscle. Using fibrin hydrogels with high biocompatibility and fast degradation, engineered skeletal and cardiac muscles self-organize into three-dimensional muscle tissues in 10 days and maintain their functionality for months. From the evaluation of contractile function, engineered muscles exhibit the characterizations of native muscle. One example of the development and application of novel biomaterials for muscle tissue engineering is the biomimetic crosslinking of fibrin by genipin that is developed for improving the mechanical properties and controlling the degradation. Cardiac patches based on genipin crosslinked fibrin have been used for *in vivo* transplantation studies. Another example is a novel biodegradable polyester elastomer developed for musculoskeletal and cardiovascular tissue engineering. Tissue engineered skeletal and cardiac muscles not only represent useful models to explore the underlying molecular and cellular mechanisms of muscle physiology, but they also exhibit great potential to investigate the translational applications of functional engineered muscle tissues. Dr Huang is the author of more than 11 peer-reviewed publications, 26 conference proceedings, and three patent disclosures.

Dr. Joe Leigh Simpson, MD, recently recruited to Florida International University as Executive

Associate Dean for Academic Affairs, College of Medicine, was named the department's BME Coulter Distinguished Professor in Bioinstrumentation and Biomeasurements. A member of the National Academy of Sciences Institute of Medicine, he has served as President of multiple national and international organizations, and has multiple ongoing interactions with extramural (including SBIR) and intramural NIH (Board of Scientific Counselors, NICHD) and other funding agencies. Dr. Simpson is also a World Class Scholar funded by the 21st Century Technology, Research and Scholarship Enhancement Act. Dr Simpson has a track record of successful collaboration with the biotechnology industry. He was the first to achieve definitive noninvasive prenatal cytogenetic diagnosis of fetal trisomy through recovery and analysis of fetal cells from maternal blood. Substantial support from NICHD for individual and collaborative efforts led the agency to recommend biotech for future progress. Dr. Simpson is Chair of the Medical Advisory Board of Biocept, Inc. (San Diego), which expects to offer a clinical test in 2008. Experience gained with public and private funding agencies, academic centers, and biotech industries will be invaluable in the development of research collaborations between the Department of Biomedical Engineering and the College of Medicine.

Individual Faculty Accomplishments

Anthony J. McGoron, Associate Professor and Acting Chair, received an INNOVIA, LLC - FIU Foundation award in the amount of $15,000 to support the study of Biocompatibility Evaluation of Composite Polymeric Materials. He also received a Faculty Research Award for $23,000 from the FIU Foundation to work on Image Guided Targeted Therapeutics for Cancer: Experimental Protocol Development. The Larry Foundation awarded him $10,000 to continue support of the Bubble Oxygenator project. The Arthritis Research Foundation gave $3,000 to support the Implant Retrieval Research.

Anuradha Godavarty, Assistant Professor, received an award in the amount of $196,640 from the National Institute of Health to work on A Novel Hand-Held Based Optical Imager for Fluorescence Imaging of Breast Cancer. Under this award she is developing a handheld-based imaging device for breast cancer diagnostics using the non-invasive and non-ionizing near-infrared light rather than harmful x-rays. She also received an award in the amount of $52,500 from the Florida Department of Health to work on a Hand-held Optical Probe for fluorescence imaging of breast cancer.

Wei-Chiang Lin, Miami Children's Hospital Assistant Professor of Neuro-Engineering, recently received his tenure and promotion to Associate Professor. Dr. Lin received an award in the amount of $320,214 from the Thrasher Research Fund to work on Optimizing Pediatric Brain Tumor Surgery through Optical Spectroscopy to Enhance Survival and Quality of Life. The arrangement between FIU and Miami Children's Hospital has been a very successful and the BME department looks forward to building on that success.

Malek Adjouadi, Professor, Joint Appointment, was promoted to full professor this year. He also received $16,276 from Children's Memorial Hospital; $87,000 from the Ware Foundation, and $661,656 form the National Science Foundation.

Nikolaos Tsoukias, Assistant Professor, received a $1 million award in June 2008 from the National Institute of Health to study microcirculatory function in hypertension. The title of this

project is Theoretical and Experimental Investigations of Microcirculatory Signaling. He previously received a Faculty Research Award in the amount of $22,500 to work on In Vitro Models to Investigate Microcirculatory NO-$Ca2^+$

Chenzhong Li, Assistant Professor, received an award of $186,153 from the U.S. Air Force Office of Scientific Research to work on Biosensing Approaches for the Evaluation of Toxicity of Nanomaterials. Dr Li is part of a team in the Advanced Materials Engineering Research Institute (AMERI) that received $1.9 million for Bio-Nano related research.

Armando Barreto, Associate Professor, Joint Appointment, received yearly installments for two ongoing NSF grants in 2007-2008: $102,781 in a project as Principal Investigator and $173,199 as leader of the Assistive Technology Thrust and Co-PI of the CREST Center Project.

Departmental Goals for 2008-2009

1. Increase collaborations with science and health related departments, and the Applied Research Center (ARC), and the number of faculty with joint appointments. In particular establish collaborations with the College of Medicine. With the loss of two full faculty members and one joint faculty with expertise in mechanical engineering our department current has a deficiency in that area. Many of our students are interested in biomechanics and some faculty in MME are already mentoring BME students and involved in BME research. It is also critical that we take advantage of opportunities for collaboration with new faculty that are added to the College of Medicine.

2. Increase NIH Funding. Biomedical related research must be funded through the NIH. We have submitted grants through the MBRS SCORE program and faculty in the department currently have undergraduate and (at least two) graduate students supported through the program RISE. The MBRS SCORE program will help us establish our research with NIH. BME faculty currently have one SCORE SC1award (Tsoukias - PI) and one SC3 award (McGoron - Co-I).

3. Increase the number and amount of gifts received from foundations to support the Department's academic and research activities.

4. Coordinate with Community Colleges to better prepare their AA students to enter BME. Currently students are not being advised properly at the Community Colleges to allow them to easily transfer to the BME program after their AA. An articulation agreement will be developed with MDC to allow students from the MDC Biotechnolgy program to enter the FIU BS BME program. Articulation agreements will also be developed for MDC Engineering, Biology and Chemistry AA degrees.

5. Add to our Advisory Board membership and increase participation of all Advisory Board members. Develop new academic initiatives and research collaborations. Revamp the Collaborative Technology Innovation Program (CTIP).