FLORIDA 21st CENTURY TECHNOLOGY, RESEARCH AND SCHOLARSHIP ENHANCEMENT ACT PROGRAMS Annual Report:

CENTERS OF EXCELLENCE
RESEARCH COMMERCIALIZATION ASSISTANCE GRANTS
21st CENTURY SCHOLARS

December 2008

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I. Centers of Excellence

Centers of Excellence Authorization

In 2001 the Florida Legislature established the Florida Emerging Technologies Commission and began to focus its attention on the value of the State University System to the state's economy and on the critical role of the state universities in research discovery, business innovation, and job development. The 2002 Legislature appropriated $30 million to establish centers of excellence, and the Emerging Technology Commission recommended funding three centers at $10 million each:

- Center of Excellence in Biomedical and Marine Biotechnology - Florida Atlantic University - $10,000,000
- Florida Photonics Center of Excellence - University of Central Florida - $10,000,000
- Center of Excellence in Regenerative Health Biotechnology - University of Florida - $10,000,000

The 2006 Florida Legislature passed House Bill 1237 which created the 21st Century Technology, Research, and Scholarship Enhancement Act. This legislation built on the 2001 legislation by discontinuing the Emerging Technology Commission in favor of a Florida Technology, Research, and Scholarship Board to assist the Board of Governors in implementing the legislation; and by appropriating $30 million for new centers of excellence. Ultimately, the Board of Governors authorized six centers of excellence and distribution of the appropriation as follows:

- Florida Center for Excellence in Biomolecular Identification and Targeted Therapeutics – University of South Florida - $ 8,000,000
- Center of Excellence in Ocean Energy Technology – Florida Atlantic University - $ 5,000,000
- Florida Institute for Sustainable Energy, Energy Technology Incubator – University of Florida - $ 4,500,000
- Florida Photonics Center of Excellence, Laser Technology Initiative – University of Central Florida - $ 4,500,000
- Center for Nano-Bio Sensors - University of Florida - $ 4,000,000
- Center of Excellence in Advanced Materials – Florida State University – $ 4,000,000

This brought the number of centers of excellence to nine.

The 2007 Legislature appropriated $100 million to establish additional centers of excellence. As a part of budget reductions to the state budget, the Legislature, in special session, reduced that appropriation to $92.5 million. In the meanwhile, the Board of Governors and the Florida Technology, Research, and Scholarship

Board made numerous revisions to their processes, the most meaningful (and time-intensive) of which was to utilize an external review of proposals by nationally recognized consultants. Concurrent with the Florida Technology, Research, and Scholarship Board's recommendation for seven proposals, the appropriation was redirected in its entirety by the Legislature. Two of those same recommendations were then funded by the Legislature:

- Center of Excellence for Advanced Aero-Propulsion – Florida State University - $14,570,225
- Center of Excellence for Hurricane Damage Mitigation and Product Development – Florida International University - $10,006,955

Both of these centers were officially authorized as State University System Centers by the Board of Governors in 2008. This brings the number of centers of excellence to eleven, where it stands as of this annual report.

Centers of Excellence	Funding Awarded
2002 COE Awards	
FAU COE in Biomedical and Marine Biotechnology	$10,000,000
UCF Florida Photonics COE	$10,000,000
UF COE in Regenerative Health Biotechnology	$10,000,000
	$30,000000
2006 COE Awards	
USF COE in Biomolecular Identification & Targeted Therapeutics	$8,000,000
FAU COE in Ocean Energy Technology	$5,000,000
UCF Florida Photonics COE Laser Technology Initiative	$4,500,000
UF Institute for Sustainable Energy/ Energy Technology Incubator	$4,500,000
UF COE for Nano-Bio Sensors	$4,000,000
FSU COE in Advanced Materials	$4,000,000
	$30,000,000
2007 COE Awards	
FSU COE for Advanced Aero-Propulsion	$14,570,225
FIU COE for Hurricane Damage Mitigation and Product Development	$10,006,955
	$24,577,180
Total State COE Investment	**$84,577,180**

Centers of Excellence Accountability Measures

Legislation requires the Board of Governors to issue an annual report of Center

of Excellence activities conducted, including the accomplishments and overall economic benefits to the state, the number of Centers of Excellence created or expanded, the success of collaborations with related industries, and other success indicators.

During 2006, the Board of Governors requested and received an update of progress in the establishment of the three 2002 centers. In Spring 2007, the State University System Vice Presidents for Research participated in revising the set of accountability measures, and they remain as listed below:

CENTERS OF EXCELLENCE **Accountability Measures**
Research Effectiveness
1. Competitive Grants Applied For and Received
2. Total Research Expenditures
3. Publications in Refereed Journals From Center Research
4. Professional Presentations Made on Center Research
5. Invention Disclosures Filed and Issued
6. Technologies Licensed and Revenues Received
Collaboration Effectiveness
7. Collaborations with Other Postsecondary Institutions
8. Collaborations with K-12 Education Systems/Schools
9. Collaborations with Private Industry
10. Students Supported with Center Funds
11. Students Graduated
12. Job Placements of Graduates Upon Leaving the Center
Economic Development Effectiveness
13. Business Start-Ups in Florida
14. Jobs Created and Jobs Saved in Florida
15. Specialized Industry Training and Education
16. Dollars Acquired from Venture Capitalists and Other Investments

Center of Excellence Individual Accountability Reports

[Note: All Centers of Excellence are capable of providing, or have provided, voluminous materials with regard to their activities, especially those Centers that have been established for several years. This report focuses on the accountability measures as approved by the Board of Governors.]

Florida Atlantic University
Center of Excellence in Biomedical and Marine Biotechnology
($10,000,000; created in 2002)

- Departure of the second tenured professor who was directing the Center (the first left in 2006) as well as of the individual who was the Center's principal offerer initially.
- Re-scoping and rejuvenation process has proceeded more slowly than intended ; plans are to transition the COE to Harbor Branch Oceanographic Institute, which merged into FAU during the reporting period.
- This COE has been dormant for the past year. Next year should see a resolution with either the completed transition of the Center to HBOI and a path forward or with a close-out discussion.
- [No accountability measures were provided.]

University of Central Florida
Photonics Center of Excellence
($10,000,000; created in 2002)

- Establishment of an endowment of $1M to provide recognition and research funds to outstanding COE professors. (5 named and funded)
- Construction and occupancy of 21,000 ft building addition, leveraging COE funds with those of US Department of Commerce, Florida High Tech Corridor Council, UCF, private donations, and state matching funds. The new addition includes space for an extension of the UCF Incubator for optics/photonics companies.
- Addition of a unique Nanophotonics Systems Fabrication Facility (housing ~$15M of capital equipment) - a multi-user facility available to UCF faculty, industry, and organizations outside UCF.
- The Florida Photonics Cluster (FPC) was revived after several years of inactivity. A new board was formed and the membership developed to a total of 34 organizations.

Research Effectiveness

1. Competitive Grants Applied For and Received	Cumulatively over $37.8 M of external funding ($24.2M federal, $13.6M private) has been obtained, bringing the total funding for the COE including match to over $42.9M, a return on the state's initial $10M investment of over 429%
2. Total Research Expenditures	2007-08: $1,269,118 federal and $1,117,257 private. Cumulative: $25,704,812 federal, $5,083,442, state, and $8,315,813 private
3. Publications in Refereed Journals	Last year: 15; Cumulative: 112
4. Professional Presentations Made on Center Research	Last year: 12; Cumulative: 47

5. Invention Disclosures Filed and Issued	Last year: 31 filed, 17 issued; Cumulative: 74 filed and 31 issued
6. Technologies Licensed and Revenues Received	2, no revenue last year; 5 and $181,250 cumulative
Collaboration Effectiveness	
7. Collaborations with Other Postsecondary Institutions	No new last year; 29 cumulative
8. Collaborations with K-12 Education Systems/Schools	Last year: program with $500K NSF funding for 3 years to work with K-12 teachers to help improve math & science teaching skills; cumulative: 15
9. Collaborations with Private Industry	Last year: agreements were signed with 5 divisions of Northrop Grumman Corp; Cumulative: over 50, including 24 Partnership Projects with 5 Florida Univs, and with 20 company partners who brought $5.3M matching funding.
10. Students Supported with Center Funds	All COE students are supported by other funds.
11. Students Graduated	Last year: 3 Ph.D, 2 MS; Cumulative: 7 PhD, 5 MS
12. Job Placements of Graduates Upon Leaving the Center	Last Year: 1 post doc at FPCE, 1 at Princeton Optronics, NJ, 1 at Lightweave, Inc. San Jose, CA, 1 MS in Florida (Coastal Optical) and 1 MS in CA (L3Com). Cumulative: 3 placed at FL companies (Raydiance, Coastal Optical, Siemens), 1 at NY, 1 postdoc, 2 at other locations
Economic Development Effectiveness	
13. Business Start-Ups in Florida	Last year: Speckodyne; Cumulative: FemtOptics, Optigrate, CoSci Technologies, Light Processing Technologies, Raydiance, Speckodyne
14. Jobs Created and Jobs Saved in Florida	Last year: 1; Cumulative: over 60
15. Specialized Industry Training and Education	Last year: Laser Institute of America laser safety training; Cumulative: Worked with Northrop Grumman and Valencia CC to establish a training program for laser technicians
16. Dollars Acquired from Venture Capitalists and Other Investments	Last year: none; Cumulative: Raydiance received over $15M in funding.

University of Florida
Center of Excellence in Regenerative Health Biotechnology
($10,000,000; created in 2002)

- A new 23,500ft manufacturing facility was designed, built-out, outfitted, commissioned, and validated.
- The CERHB Education Center established.
- Hands-on curricula were developed in Industrial Biotechnology at the College and High School levels including student and teacher training (funded by NSF).
- Curriculum in industrial biotechnology approved by Florida DOE, and over 600 high school students now take the courses.
- Hands-on curricula in Industrial Biotechnology developed for entry-level and incumbent workers throughout the state (funded by Workforce Florida, Inc.).
- A four-year international cooperative agreement signed with three biomedical institutes in France.

Research Effectiveness	
1. Competitive Grants Applied For and Received	5 totaling $2,029,807
2. Total Research Expenditures	$3,661,495
3. Refereed Journal Publications From Center Research	36
4. Professional Presentations Made on Center Research	29
5. Invention Disclosures Filed and Issued	None
6. Technologies Licensed and Revenues Received	None
Collaboration Effectiveness	
7. Collaborations with Other Postsecondary Institutions	17
8. Collaborations with K-12 Education Systems/Schools	27
9. Collaborations with Private Industry	53
10. Students Supported with Center Funds	52
11. Students Graduated	41
12. Graduate Job Placements Upon Leaving the Center	8
Economic Development Effectiveness	
13. Business Start-Ups in Florida	1
14. Jobs Created and Jobs Saved in Florida	94
15. Specialized Industry Training and Education	8
16. Dollars Acquired from Venture Capitalists and Other Investments	None

Florida Atlantic University
Center of Excellence in Ocean Energy Technology
($5,000,000; created in 2006)

- Assisting regulatory agencies in developing rulemaking for testing and evaluating ocean energy feasibility.
- Five-year plan in development, research areas identified, with cross-discipline teams developing plans, test protocols, and milestones.
- Working to have the test site recognized as a National Open-ocean Energy Laboratory.
- Phase I test range instruments ready for deployment, awaiting approval from U.S. Army Corps of Engineers. Minerals Management Service approved deployment of standalone prototypes.
- Detailed design of the Phase II 3m prototype turbine and accompanying report in progress.
- Internal and external design reviews planned fall 2008. Completed fabrication of buoys to support the 3m ocean current turbine system.

Research Effectiveness	
1. Competitive Grants Applied For and Received	U.S. Dept. of Energy – Advanced Water Power Projects Funding Opportunity DE-PS36-08GO98030
2. Total Research Expenditures	State Expenditures: $2,141,495 expended to date ($1,163,398 FY'07), with additional $522,281 encumbered.
3. Refereed Journal Publication From Center Research	None - publications in development for FY'09.
4. Professional Presentations Made on Center Research	At least 13 in Florida, RI, NY, Washington DC, and UK (USACE, NOAA, MMS, USCG, EPA)

5. Invention Disclosures Filed and Issued	Hydrogen Generation Powered by the Hydrostatic Head of Ocean Water – filed and under review
6. Technologies Licensed and Revenues Received	None – too early at this stage.
Collaboration Effectiveness	
7. Collaborations with Other Postsecondary Institutions	SUS Florida Energy Consortium, Nova Southeastern U., Virginia Tech U., Broward CC, Tuskegee U., Heriot-Watt U. (UK), U. of Edinburg (UK), New and Renewable Energy Center (UK)
8. Collaborations with K-12 Education Systems/Schools	Communication plan in development. Numerous tours of the Center and presentations to schools during FY'08.
9. Collaborations with Private Industry	Oceaneering, Ocean Renewable Power Corp, Aquantis, Lockheed Martin Corp., Environment and Ecology Biosonics, Inc., Keys Hydro Power, Florida Power & Light, Suez Energy
10. Students Supported with Center Funds	10, undergraduate, 5 masters level, 1 Ph.D.
11. Students Graduated	None; however, approximately half of Ocean Engineering entering class indicated choosing FAU due to interest in the COE and the opportunity to work on ocean energy research.
12. Graduate Job Placement Upon Leaving the Center	Justin Sobol, Florida Power and Light
Economic Development Effectiveness	
13. Business Start-Ups in Florida	None; discussions in progress.
14. Jobs Created and Jobs Saved in Florida	The COE's submission listed 7 FAU faculty positions.
15. Specialized Industry Training and Education	Still developing relationships with colleges and industry
16. Dollars Acquired from Venture Capitalists and Other Investments	$25,000 - Outer Banks Ocean Energy Corporation $126,000 – Lockheed Martin Corporation

Florida State University Center of Excellence in Advanced Materials ($4,000,000; created in 2006)	
Research Effectiveness	
1. Competitive Grants Applied For and Received	Grants totaling $2,801,785 from Army Research Lab, NSF, Lockheed Martin, US Army, Office of Naval Research, Air Force Research Lab, Air Force Office of Scientific Research, General Dynamics, and Transformational Tech. Innovations. 22 grants worth $23,364,531 pending.
2. Total Research Expenditures	Sponsored research expenditures from 10/1/07 through 9/30/08 were $3,128,784.
3. Publications in Refereed Journals From COE Research	18
4. Professional Presentations Made on Center Research	8

5. Invention Disclosures Filed and Issued	9
6. Technologies Licensed and Revenues Received	0
Collaboration Effectiveness	
7. Collaborations with Other Postsecondary Institutions	Contract signed with Tallahassee Community College, January 2008 to develop engineering feeder program. Ongoing collaborations with Brevard Community College and Manatee Technical Institute.
8. Collaborations with K-12 Education Systems/Schools	Partnerships with Challenger Learning Center, Tallahassee, Learning Systems Institute, FSU, Tallahassee, National High Magnetic Field Laboratory Outreach Program, Tallahassee, Brevard CC outreach.
9. Collaborations with Private Industry	In the process of applying for a NSF ERC grant, the Center of Excellence in Advanced Materials established numerous relationships with entities in government and private industry to establish collaborative partnerships.
10. Students Supported with Center Funds	An average of 52 students supported per semester.
11. Students Graduated	2 Ph.Ds, 6 master's graduates
12. Graduate Job Placement Upon Leaving the Center	2 (H.F. Webster, Inc., M.C. Gill Corp.)
Economic Development Effectiveness	
13. Business Start-Ups in Florida	Established the Transformational Technology Innovations, which received a STTR from the Office of Naval Research.
14. Jobs Created and Jobs Saved in Florida	None specifically identified.
15. Specialized Industry Training and Education	Programs developed with 3 community colleges.
16. Dollars Acquired from Venture Capitalists	$250,000 offered from vision 20/20.

University of Central Florida
Photonics Center of Excellence, Laser Technology Initiative
($4,500,000; created in 2006)

- A planned major initiative in advanced medical laser technologies in concert with the new UCF medical school, Burnham, Scripps, Torrey Pines and Max Planck institutes, and the 21st Century Scholar award in Laser Medicine; advertised for the first 2 faculty positions; will appoint a candidate to the first new Townes Institute faculty position.
- Extensive plans and preparation to establish a world-class optical fiber fabrication facility; negotiating to take over the operations of a unique DoD laser ranging/satellite imaging facility at KSC on Merritt Island, including the transfer of some ~ $10M of state-of-the-art tracking/imaging equipment.
- Prof. J. Rolland won a $1M King Award for medical biophotonics research.
- Two new laser technology-related companies formed; a third from 2005 growing spectacularly; all benefited from UCF incubator and tech-transfer support; a new Atlantis US-European MS degree program in laser-materials interaction studies was created with federal funding.

Research Effectiveness	
1. Competitive Grants Applied For and Received	34 applications valued at $4,76,1961 27 awards valued at $2,244,144

	Value from Industry $587,019
2. Total Research Expenditures	Federal: $1,689,667, Private: $345,363
3. Refereed Journal Publications From Center Research	25
4. Professional Presentations Made on Center Research	10 (Egypt, Algeria, Australia, Germany, France and US)
5. Invention Disclosures Filed and Issued	7 filed, 2 issued
6. Technologies Licensed and Revenues Received	3 (Optigrate, BD Displays Inc., LP Photonics)
Collaboration Effectiveness	
7. Collaborations with Other Postsecondary Institutions	FSU, Bordeaux University, Fraunhofer ILT, Adelaide University, the African Laser Center, Clemson Univ.
8. Collaborations with K-12 Education Systems/Schools	None yet, but supporting FPCE collaborations
9. Collaborations with Private Industry	'Master Research Agreement' and 'Model License Agreement' signed with 5 divisions of Northrop Grumman.
10. Students Supported with Center Funds	All students supported but by other funds.
11. Students Graduated	4 Ph.Ds, 2 master's graduates
12. Graduate Job Placements Upon Leaving the Center	2 at local companies, 1 in National Lab: Resonetics (NH)
Economic Development Effectiveness	
13. Business Start-Ups in Florida	2 (LP Photonics, BD Displays)
14. Jobs Created and Jobs Saved in Florida	~10
15. Specialized Industry Training and Education	Laser Institute of America (LIA) laser safety training (with Northrop Grumman Laser Systems and Valencia CC)
16. Dollars Acquired from Venture Capitalists and Other Investments	LP Photonics about to receive several $M

University of Florida
Institute for Sustainable Energy Technology Incubator
Center of Excellence
($4,500,000; created in 2006)

- Two facilities (Biofuels Pilot Plant, and Prototype Development & Demonstration Lab) completed and all major equipment installed and operational. Advisory Board held first meeting; visits from Florida Legislature and Federal government hosted.
- Facility has encouraged the establishment of a local research lab, expansion of Verenium (formerly Celunol), and assignment of a full time VP for Business Development in Florida by Verenium. Celunol, based solely on UF technology for ethanol, was acquired for $150 million.
- Emissions & Power Solutions, Inc. contracted to fabricate exhaust sensor prototypes, based on IP licensed from UF, in the Prototype Lab with the intent to create a spin-off FL company. A Florida DEP Renewable Energy Technology Grant was awarded to demonstrate UF patented PoWER technology. Four fuel cell companies (Lynntech, Siemens, Nextech and ElectroScience, Inc.) contracted to utilize the Prototype Lab, and Lynntech is setting up a presence in the Incubator and will be receiving matching funds from the Florida High Tech Corridor.

Research Effectiveness	
1. Competitive Contracts and Grants Applied for and Received	Applied: $96.0M Received: $14.0M
2. Total Research Expenditures	$15.6M
3. Publications in Refereed Journals From Center Research Published	142
4. Professional Presentations Made on Center Research	62
5. Invention Disclosures Filed and Issued	4
6. Technologies Licensed and Revenues Received	N/A
Collaboration Effectiveness	
7. Collaborations with Other Postsecondary Institutions	30
8. Collaborations with K-12 Education Systems/Schools	N/A
9. Collaborations with Private Industry	33
10. Students Supported with Center Funds	57 and 17 post docs
11. Students Graduated	11
12. Job Placement of Graduates Upon Leaving the Center	11 at USDOE, DOE National Labs, industry
Economic Development Effectiveness	
13. Business Start-Ups in Florida	3
14. Jobs Created and Jobs Saved in Florida	9
15. Specialized Industry Training and Education (Outreach)	>10
16. Dollars Acquired from Venture Capitalists and Other Investments	$890K

University of Florida
Center of Excellence for Nano-Bio Sensors
($4,000,000; created in 2006)

- Active collaboration with Nanoscience Institute for Medical and Engineering Technology and with other units at UF, UC San Francisco, Univ. Washington, Moffit Cancer Center, USF, Florida High Tech Corridor Council, and Sandia National Laboratories.
- Collaboration with 2 Gainesville high schools and UF Science Quest program.
- Industry Advisory Council: Banyan Biomarkers Inc., Alachua, FL; Life Sciences Inc., St. Petersburg, FL; Nitronex, Durham, NC; Particle Technologies LLC., Fairfax VA; VaxDesign, Orlando, FL; Xhale Diagnostics, Gainesville, FL; Siloam Bioscience LLC, Cincinnati, OH; Florida High Tech Corridor Council, Heathrow, FL; Constellation Technology Corp. Largo, FL; Ecoarray, Alachua, FL.
- Startup companies in Florida: Banyan Biomarkers Inc., Alachua; Xhale Diagnostics Inc., Gainesville.

• Intro to Nanomaterials Science offered Fall 2008 at Santa Fe College; 130 served at PERC/CNBS Industry Advisory Board Meeting; 60 served at UF Center of Entrepreneurship and Innovation in which a selected group of business graduate students generate market studies and business plans for the technologies being developed in the COE.	
Research Effectiveness	
1. Competitive Contracts and Grants Applied for and Received	Applied for: 37 ($58,357,864) Received: 14 ($9,785,336) Pending: 20 ($23,152,528) Rejected: 3 ($25,420,000)
2. Total Research Expenditures	Salaries $937,811.92 Equipment $429,660.99 Materials $114,599.97 Travel $7,030.03 Other $74,834.94 TOTAL:$1,563,937.85
3. Publications in Refereed Journals From Center Research Published	60
4. Professional Presentations Made on Center Research	70
5. Invention Disclosures Filed and Issued	30
6. Technologies Licensed and Revenues Received	1 Arrowhead Research Corporation (Unidyme)
Collaboration Effectiveness	
7. Collaborations with Other Postsecondary Institutions	7
8. Collaborations with K-12 Education Systems/Schools	4
9. Collaborations with Private Industry	6
10. Students Supported with Center Funds	49 (6 post doc, 35 graduate, 8 undergrad)
11. Students Graduated	5 PhDs
12. Job Placement of Graduates Upon Leaving the Center	Gainesville: Post Doctoral Fellow, Research Assistant Scientist, Industry Program Manager; Washington, DC: Staff Scientist; 2 internships at Exxon Mobile and Teton Industrial Construction; Assistant Professioship, Taiwan
Economic Development Effectiveness	
13. Business Start-Ups in Florida	2
14. Jobs Created and Jobs Saved in Florida	11
15. Specialized Industry Training and Education (Outreach)	4
16. Dollars Acquired from Venture Capitalists and Other Investments	$6M

University of South Florida
Center of Excellence in Biomolecular Identification & Targeted Therapeutics
($8,000,000; created in 2006)

- Build-out started and will be operational by January 2009. The Molecular and Specialty Diagnostics Center (MSDC), a joint business venture between USF/FCoE-BITT and Tampa General Hospital is expected to be completed in early 2009.
- COE successfully hired a Proteomics Core Facility Director and an Identification Core Manager during FY2008, and is currently in the process of hiring an NMR Core Facility Director and Technician Specialists for these core facilities. An FCoE-BITT Associate Director, Administrative Specialist, Fiscal Assistant, and OPS Assistant were hired during the current reporting period. Dr. Gary Daughdrill, a structural/NMR biologist with over $1.2 million in funding from the National Science Foundation and American Cancer Society, was hired as an FCoE-BITT-dedicated Associate Professor this year. Recurring salaries for all of these hires come from USF funds provided as a match to the COE.
- Successful symposia held to promote interactions and collaborations between academic, government, and corporate scientists.
- COE was instrumental in attracting Draper Laboratory, a Cambridge-based not-for-profit laboratory involved in applied research, engineering development, education, and technology transfer, to the USF Research Park this year.

Research Effectiveness	
1. Competitive Grants Applied For and Received	Center: $3,415,793 (grants received FY2008, funding commences FY2009); $1,281,860 FY2008 (first Center-dedicated faculty); Center Co-PIs: $5,241,600; Center Members: $19,630,988
2. Total Research Expenditures	Center: $0 Center Co-PIs: $2,713,832 (cumulative: $5,171,753) Center Members: $14,954,177 (cumulative: $28,438,931)
3. Refereed Journal Publications From Center Research	45; cumulative 57
4. Professional Presentations Made on Center Research	45; cumulative 80
5. Invention Disclosures Filed and Issued	3; cumulative 7
6. Technologies Licensed and Revenues Received	Center Co-PIs: 2 licensed technologies (Jan 2007 – present) Center Co-PIs: $160,071 in licensed revenues (Jan 2007 – present)
Collaboration Effectiveness	
7. Collaborations with Other Postsecondary Institutions	6 community colleges, Univ. Pennsylvania, UF, UNF, UWF, Western Carolina Univ., Wayne State Univ., Karmonos Cancer Center. Portland State Univ., Univ. of Paris, Univ. of Oviedo (Spain), Univ. of Shiraz (Iran)
8. Collaborations with K-12 Education Systems/Schools	School District of Hillsborough County (Armwood High School, Buchanan Middle School, Middleton High School, Plant High School)
9. Collaborations with Private Industry	RMR Technologies, Inovio Biomedical Corp., VGX Pharmaceuticals, Research International, Hanson Technologies, Haller Industries, Romark Laboratories, Draper Laboratory
10. Students Supported with Center Funds	18.25 FTE (cumulative: 21.25 FTE)

11. Students Graduated	0 (one Ph.D. student on Center fellowship funds defended Ph.D. thesis on November 13, 2008)
12. Graduate Job Placements Upon Leaving the Center	0
Economic Development Effectiveness	
13. Business Start-Ups in Florida	0
14. Jobs Created and Jobs Saved in Florida	Center: 7 jobs in FY2008 Draper Laboratory: 165 jobs (average wage: $75,000) as its facilities are established; Molecular and Specialty Diagnostics Center (MSDC): 20 jobs as its facilities are established.
15. Specialized Industry Training and Education	Florida Advanced Technological Education Center and COE are assessing biotech workforce capability and capacity and establishing partnership relationships among NSF Biotech Centers of Excellence to develop curricula to match industry employee requirements.
16. Dollars Acquired from Venture Capitalists and Other Investments	0

Florida International University
Center of Excellence for Hurricane Damage Mitigation and Product Development
($10,000,000; created in 2007)

- Since the Center"s creation in July 2008, efforts and progress have been concentrated on three areas: a) finalization of WOW facility, b) hiring or placement of Center personnel, including executive director, and research/technology and outreach directors, and c) short-and-long-term planning for scientific personnel integration of the Hurricane Center with FIU's and Florida's hurricane mitigation science communities.
- WOW Facility Progress in testing and use of the facility indicated that a transition from gasoline-powered engines to electric engines that employ variable frequency drives (VFD) will be optimal in terms of efficiency and more accurate simulation of hurricane conditions during testing. Thus, the original plan to add fans was modified to electronic fans. This process will be completed by Summer 2009. Other areas of progress with the facility include updated plans for placement of cameras, modifications of fans to create wind patterns that better approximate hurricane conditions, and the addition of water to form a more realistic testing environment.
- Personnel Hiring The Vice President for Research assigned an Associate Vice President for Research to dedicate more time and effort in facilitating planning for the Center. Searches have commenced for all positions. The outreach director is in place, as well as engineers and the expectation is for all positions to be filled early in 2009.
- Long-Term Planning The Vice President for Research has worked with the International Hurricane Research Center and its advisory board to begin implantation of plans for the use of the WOW facility as it pertains to its use for: a) basic research, b) development and testing of construction materials, c) training and outreach, and d) entrepreneurial collaborations with business and Universities in the State of Florida. This planning has assisted in determining personnel hiring decisions.

Florida State University
Center of Excellence for Advanced Aero-propulsion

($14,570,225; created in 2007)
• The most significant early activity will be awarding of subcontracts and seed money grants to affiliated FSU and partner universities, targeting 4 major research areas: advanced gas turbine technology; active flow & noise control; alternative power systems; tools for next generation aircraft design and air traffic management. Proposals will also be judged on COE criteria of : (1) ability to establish sustainable research program by demonstrating the capacity to obtain funding from other agencies; (2) contribution to the long-term growth and health of the aerospace industry; (3) potential to create new technologies and IP; (4) collaborative research projects between the four member institutions of the COE; (5) education and training of undergraduate and graduate students. Basic framework for an industry advisory board established (interest from Boeing, Lockheed-Martin, Siemens, NASA, and the Air Force Research Laboratory); recruiting of industrial partners has begun.

[Note: The last two centers of excellence had their appropriation reduced by 25% in the 2009 special legislative session.]

State University
Research Commercialization Assistant Grant Program

The 2007 Legislature amended the 21st Century Technology, Research, and Scholarship Act to establish a Research Commercialization Assistance Grant Program to provide for early stage capital funding to develop products and services that result from university research including, but not limited to, securing patents, establishing startup companies, developing license agreements, and attracting private investment. The 2007 Legislature appropriated $4 million to fund this program, but, as a part of budget reductions to the state budget, the Legislature reduced the appropriation to $2 million in special session. The Florida Technology, Research, and Scholarship Board awarded commercialization assistance grants in three phases in early 2008.

The following table indicates State University Research Commercialization Assistant Grant Program awards made in the Spring of 2008, and the funding levels:

State University Research Commercialization Assistance Grant Program
Phase I, II, and III Awards

Phase I Awards		
Institution	**Proposal**	**Award**
University of West Florida	Tech Transfer	$50,000
Florida State University	Tech Transfer	$50,000
Florida International University	Tech Transfer	$50,000
University of South Florida	Early Stage RAID	$50,000
Florida A&M University	Tech Transfer	$41,000
University of Central Florida	Cellulosic Ethanol	$40,500
	My Case Space	$25,000
	Microfluidic Chips	$30,000
University of Florida	Cancer Detection	$38,000
	Neuromagentix	$40,000
	Oceanus	$25,000
	ASEDRA	$27,000
	Self-Sterilize	$15,000
	Kairos	$34,900
University of North Florida	Tech Transfer	$26,755
Phase II Awards		
Institution	**Proposal**	**Award**
Florida State University	Tech Transfer	$100,000
University of Florida	Fak Inhibitors	$75,000

University of South Florida	Platinum Compound	$50,000
University of Central Florida	Sim Vroom	$25,000
Phase III Awards		
Institution	**Proposal**	**Award**
University of Florida	Sharklet Technologies	$250,000
Florida State University	BuckyPaper Inc.	$250,000
Florida Atlantic University	CHS Resources	$184,294
University of Central Florida	LP Photonics	$184,294
University of Florida	Audigence	$184,293
Florida Research Consortium (External Consultant fees)		$ 73,964
Grand Total		**$1,920,000**

PHASE I AWARDS

University of West Florida
Phase I Tech Transfer
($50,000)

3/08 Notified of Intent to Fund SURECAG for Phase I Proposal.
4/08 Requested recommendations of potential consultants from the SUS Technology Transfer directors, AVPs for Research and members of the FTRSB for invitations to apply.
6/08 Received copy of final executed contract from FL BOG.
7/08 Draft of request for quotation for consultant services approved by UWF IP Committee.
7/08 UWF Sponsored Research Purchasing Exemption (SRPE) request process initiated for approval of UWF General Counsel, Provost, and President.
7/08 Requested responses from recommended consultants for proposals of services and cost quotations. Invitations sent to: (1) Mindforce Consulting (2) Research Corporation Technologies; (3) RTI International Consulting; (4) TreMonti Consulting, Inc.
8/08 Deadline for submission of proposals/cost quotations. Proposals received from Mindforce Consulting and TreMonti Consulting. Proposals evaluated, references verified.
8/08 SRPE approved by UWF President.
8/08 Proposals reviewed by UWF IP Committee. Additional information requested from TreMonti.
9/08 Telephone interview with TreMonti Consulting by UWF IP Committee. UWF IP Committee recommended engagement of TreMonti Consulting under terms and provisions in proposal.
9/08 Draft Letter of Engagement received from TreMonti Consulting.
9/08 Recommended modifications of UWF General Counsel submitted to TreMonti and initial consultation visit date of 9/30-10/1/08 scheduled.
09/08 Final terms of Letter of Engagement accepted.
9/08- Initial Consultation Visit by TreMonti with UWF IP Committee and faculty
10/08 Investigators held.
10/13/08 First Summary Report submitted by TreMonti Consulting.

Florida State University
Phase I Tech Transfer
($50,000)

FSU's Phase I award was to establish a process for identifying technologies that could support new business formation. Five prospects were identified in the proposal. One, for electrolytic production of hydrogen, has been licensed to a new Florida start-up company. A second, using a library of images as commercial art, is in the process of being licensed to a new local start-up company. A third, the H2O2 generator, is of interest to an existing Florida company.

Eight additional disclosures have been evaluated. Three of these have been granted FSU prototype funding. Two are likely to become Phase II candidates.

Remaining funds will allow us to continue this process through the Spring semester of 2009.

Florida International University
Phase I Enhancing Biomedical Technology Transfer
($50,000)

Intent of Funds: To help FIU to improve its process for identifying the best biomedical technologies for potential as startups, and to foster a collaborative environment for commercialization opportunities within various schools.

Activities to date: Identified three to four technologies, projects and technology portfolios, conducted assessments and developed marketing and business plans, in addition to requesting further patent protection.

1) **Intravascular Delivery System for a Catheter Deliverable Heart Valve Prosthesis, Catheter Deliverable Artificial Trileaflet Aortic Valve Prosthesis, Collapsible Heart Valve with Polymer Leaflets**: Submitted this portfolio of technologies in cardiac percutaneous market space to the SEBIO BIO Plan competition; placed as a semi-finalist. Developed an initial business plan for a cardiac medical device start up. The business plan was reviewed by venture capitalists, and attorneys in the medical device space. A synopsis of the portfolio and plan will be listed as one of the SEBIO BioPlan Semifinalists at the SEBIO Investor Showcase in early December 2008.
2) **Hand-held Optical Probe Based Imaging System, and related Automated Real Time Co-Registration Software:** Conducted a review of these technologies. Presently completing the draft of the non-confidential marketing document for presentation to investors and possible collaborators. Prepared and submitted a patent application for the Automated Real Time Co-Registration Software.
3) **Ellagitannins as Inhibitors of Bacterial Quorum Sensing**: Preparing non-confidential marketing materials which will assist with obtaining feedback as a potential start-up. The diagnostics space (one of the applications of the technology) is presently of great interest to pharmaceutical and biotech companies.
4) **DNA Profiling Kit and Lab:** Assessing the start up potential of technology from the lab and viability for collaborative partnerships and commercialization.

The business plan and synopsis for the cardiac technologies have greatly assisted in marketing this portfolio of technologies to potential investors, and in obtaining feedback. The non-confidential marketing materials/descriptions will enable us to do the same for the other technologies. We have preliminarily discussed them with a potential investor. The funds from the SURECAG grant used to date, have been toward assessment of technologies, development of the business plan and marketing/descriptive materials.

University of South Florida
Phase I Early Stage RAID
($50,000)

Program Setup and Selection:
Initial review of the USF portfolio was conducted to develop a short list of technologies to evaluate for inclusion in the program. The list was narrowed to 5 potential technologies. Interviews were conducted with faculty to discuss interest in participation, additional scientific considerations, and the process moving forward if their technology is selected.

Subcontractor Evaluation and Selection:
Several potential contractors for training and development of the RAID applications were contacted by phone, email, and in person. The contractors experience and expertise were evaluated. Process, cost, and scope of the project were discussed. Two applications should be possible based on these discussions if USF is actively involved in the process and dedicates a graduate student in the faculty lab who worked on the project to assist the outside contractors (in addition to faculty involvement as needed). The contractor has been narrowed to SRI.

Next Steps:
The goal is to have the applications ready for May 2009 RAID application deadline. Next steps are to finalize and execute the contract with the vendor, narrow the technology selection to two, and engage the graduate students.

Florida Agricultural and Mechanical University
Phase I Technology Transfer
($41,000)

Evaluation Completions: Metrics are being developed for overall project assessment.

Databases: Three market databases have been identified by Frost & Sullivan, Technology Insights, and Research for Libraries. A demonstration and a trial session were held with Frost & Sullivan. These were used to develop preliminary marketing projections for each targeted technology.

Business Plans: Consultants are being engaged to complete full market analyses and full business plans for each technology based on an outline of specific areas provided to them for each of the three technologies. A consultant is also being engaged to negotiate license agreements for the technologies.

Product Development: The staff has explored and identified Black Hagen Designs as a possible resource for developing a functional schematic of the VMonitor. This information was used to target viable licensees and to support the patent application for the VMonitor.

Patents Filed: VMonitor's patent application is in process; MRSA Patent Filed (Serial #11/169,165); VTTO Patent Application Filed (Serial # 11/049,265).

License Status: License agreements are in progress with VTTO and MRSA. Discussions are taking place for license possibility for the VMonitor.

Pre-grant Expenditures: $4,420.86 to date.

Status of Phase II Candidacy: Florida Agricultural and Mechanical University intends to make application for a Phase II SURCAG grant award.

University of Central Florida
Phase I Multi-projects
($95,500)

Cellulosic Ethanol ($40,500)

Evaluation Completion: Met with a number of groups interested in the cellulosic ethanol enzyme technology; identified one lead group and executed a non-binding Letter of Intent; negotiating a Sponsored Research Agreement and a License Agreement with this group.

Patents Filed: Filed a provisional patent application entitled "Production and Use of Plant Degrading Materials," February 2008, prior to the award of this grant; intend to seek both foreign and U.S. patent protection for this technology and will file the appropriate applications in February 2009.

License Status: In the process of negotiating a License Agreement with the lead group.

Expenditures: Expenditures to date total $9,950: $1,200 for Graduate Assistant position for assistance in reviewing technology and preparation of Technology Marketing Summaries; $8,750 on annual subscription to Knowledge Express, a proprietary database covering licensing opportunities, company profiles, royalty rates and contract details, domestic and international patents and applications, drug development pipeline, clinical trial results, industry news and market intelligence.

Establishment of an Institution-Wide Process: Established a Technology Review Committee to review and make recommendations concerning seeking protection for intellectual property.

My Space Case ($25,000)

National trademark and updated copyright protection secured; feasibility of patenting the engine of the product is being assessed; if feasible, then patent documentation will be prepared and submitted. Feasibility of potential sales markets and the impact on those markets has been completed and is being incorporated into the executive business plan. An additional assessment of technology needs and potential licensing opportunities has been initiated and will be completed shortly. Several new team members are in place and assisting with these development plans. Licensing agreements have been finalized for different specialties on copyright, royalties, and business development relationships for potential partners. Product has been presented at Las Vegas, NV; Raleigh, NC; Orlando and Jacksonville, FL; Nashville, TN; MD; San Antonio, TX; and Washington, DC conferences.

Microfluidic Chips ($30,000)

Lead consultant has been engaged, consultants' review of intellectual property is complete. Operational has been developed. Potential applications have been identified. Discussion with a potential industry partner is in formative stage. Gaps in the intellectual property and potential research collaborators to bridge gaps have been identified.

Budget:
Expense to date: $ 7,500
Anticipated Expenses: $7,500 Consulting
$ 5,000 Intellectual Property Protection & Strategy
$ 10,000 travel, sample development & project management

University of Florida
Phase I Multi-projects
($206,655)

Cancer Detection ($38,000): The Optical Diagnostics Inc. (now WiOptix) has initiated the early market research phase with the purchase of a comprehensive market analysis (Optical Coherence Tomography Technology, Markets, and Applications 2008-2012). This report, in conjunction with numerous conference calls with the author, has enhanced our understanding of the current market dynamics and size. In addition, we have initiated meetings with potential end customers (Lantis Laser) to identify the market for probes vs. systems. Our identification of potential end-user physicians has begun with the identification of Shands' personnel in key medical specialties targeted for OCT applications.

Neuromagnetix ($40,000): From the technology's initial conceptual form prior to the start of the SURCAG contract, Neuromagnetix, Inc. has now, created the primary structural framework for the technology's development. Included in this framework is a formal development task and timeline, and development cost assessment. The task and timeline is presently broken down into three milestones: the fundamental activities required to build and test each of the three functional/structural imaging prototypes. A proof-of-concept, simple 3-cell prototype I, a multi-cell wearable prototype 2, and a prototype 3 which the company expects to be a commercially-ready unit. Neuromagnetix, Inc. would expect that information presented at this time could be changed based upon the receipt of new relevant information. However, the key is the fundamental analysis that attempts to understand the economic viability of the technology. That analysis is roughly within range of a realistic outcome. Viability hinges upon two key points: proof of concept (Milestone I) and having a practical freedom to operate with respect to intellectual property. These points are being addressed now through the application of sound business principles involving proper planning and activity.

Oceanus ($25,000): To date Oceanus Engineering has used the grant money to create the corporate identity with logo, business cards, and stationary. They are also working with a market research company to interview companies in their targeted technology space, and to assess the viability of both the product and the market. Oceanus is also working on finalizing the business plan and investor presentation, and has identified a web designer to set up the site once the business plan and presentation are completed.

ASEDRA ($27,000): Funding was received in early November. Tasks to be executed were to 1) provide materials for the nuclear "borehole" oil well logging industry, including marketing materials, web site design, writing a press release, interactive CD, and market research; and 2) develop prototype modifications.

Note on Task 1: UF is in communication with First Place Marketing, Houston, TX, the hub of oil industry research. Options for marketing ASEDRA are being considered that make the most sense for the technology. First Place Marketing has identified two vendors who use borehole radiation equipment to survey oilfields, and is identifying others. First Place Marketing has been in communication with many energy companies, and they see a major push needed in algorithms to assist in new exploration and research--this is a plus for UF.

Note on Task 2: A meeting was held at NucSafe, Inc. (Oak Ridge, TN) and a strategy was proposed to integrate ASEDRA into a high end software tool for scintillator detectors called "NucVision". NucSafe agreed to put forward 50% of the necessary $25K. Also, NucSafe agreed to supply a detector/hardware and host a non-exclusive OEM license to sell this package with ASEDRA. A target of $800 per software license for ASEDRA (for HSWT) is pending approval. NucSafe remains positive on the ultimate use of ASEDRA, but it was noted that it will require time and effort to build a customer base.

Self-sterilize ($15,000): The first revision of the phase I business plan has been successfully crafted. It will be presented to potential investors within the next month. The money has been transferred to the project. Prototype development will commence immediately.

Kairos ($34,900):
In follow-on discussions with Exar, they have shown interest in embedding the OCRef technology for use in their USB semiconductor products. Combined with some complementary Motorola technology, the OCRef could enable a significant reduction in "flatnode" product costs; Motorola is evaluating.

The OCRef component opportunity is questionable for now. It has been found that the original OCRef performance and IP position are not as strong as original anticipated. So the OCRef architecture has been reworked and is expected to perform well enough to serve some interesting markets. However, it will need further improvement to achieve the more demanding performance requirements needed to compete in the highly competitive component reference market. An additional concern is that the capital investment needed to build a component IC company is much greater than that needed to establish an embedded IP licensing business and will require major venture capital investment of tens of millions of dollars. The recent economic decline and the likelihood of a lengthy recession are making it difficult to impossible to obtain this level of funding in the foreseeable future, particularly for a semiconductor company. Therefore, the OCRef component business is not an attractive option at this point.

Promising embedded reference and Zigbee network markets As stated earlier, the new OCRef technology does appear to address some interesting market opportunities. Exar's USB product mentioned above is a good example. The USB market is huge and serving just a portion of it will be very rewarding. A semiconductor opportunity recently studied is in the wireless Zigbee mesh network market. In this market, the OCRef technology could enable low-cost single chip solutions with a much flatter form factor. Another wireless Zigbee semiconductor application that can leverage the OCRef technology is enterprise asset tracking.

The OCRef technology at the heart of this market study does serve some interesting and valuable markets. This is in-spite of the fact that its application has narrowed due to the relaxation of its performance objectives. In particular, pursuit of the reference component opportunity described in the earlier SURCAG report of this study is now less likely due to the technical as well as funding limitations.

University of North Florida
Phase I Technology Transfer Infrastructure Enhancement
($26,755)

Grant funding was provided to support patent costs, pre-marketing activities and the development of marketing materials for existing technologies developed by the UNF Sensor Research Group.

Activities and Accomplishments from Grant Award Date to December 2008

1. Patent Activity: Invention disclosure processed and patent application for a sensor technology filed with the USPTO: "SENSING DEVICE AND METHOD FOR RAPIDLY DETERMINING CONCENTRATIONS OF MICROBIAL ORGANISMS USING INTERFACIAL PHOTO-VOLTAGES." July 15, 2008. A second patent application is in development: "A Method to Automatically Detect AND Report the State of a Light Source without Modification to the Existing Lighting Infrastructure."

2. Pre-Marketing Activities:
   - The PI and Dr. Gerald Merckel worked with the UNF Sensor Research Group to develop and implement plans for the marketing of technologies created by the Sensor Group.
   - Under the direction of Dr. Merckel, two engineering students were engaged to develop electronic demonstration marketing modules for one of the sensor platforms (UNF Sense All) created by the Sensor Group.
   - One of these modules was used for a pre-market demonstration presented to four members of the Springboard Capital Fund. The response from the members was encouraging and the PI was invited to a follow–up meeting to discuss how UNF and Springboard can work together to explore the market potential of UNF technologies.

- The PI met with Professor Diane Denslow of the UNF Coggin College of Business and Dr. Joseph McCann of the Davis College of Business, Jacksonville University to arrange for student involvement in developing a feasibility study and a marketing/business plan for UNF sensor technologies.

3. Estimated University Pre-Grant Expenditure: None.

4. Status of Phase II Candidacy: Our plan is to pursue a Phase II project as an outcome of this Phase I project, however, specific steps towards that objective awaits the completion of a feasibility study and further evaluation of our technologies by a local consultant for venture development purposes.

PHASE II AWARDS

Florida State University
Phase II Tech Transfer
($100,000)

FSU's phase II award was to establish a process to recruit entrepreneurs and develop fundable business plans for two previously identified opportunities, and any new business opportunities that emerged from Phase II.

At Dec. 1, we had developed initial plans and recruited entrepreneurs for four opportunities. One, RF inspection of shipping containers, was abandoned when we discovered an established competitor. A second, for development of flash storage, is expected to be licensed to a new start-up company. A local start-up company has been formed to evaluate a third technology, for active control of turbulence. A fourth technology, for cardiovascular treatment, is being licensed to a start-up company organized by a venture capital company.

Remaining funds will allow us to advance all known new opportunities from Phase I through Phase II.

University of Florida
Phase II Fak Inhibitors
($75,000)

There have been changes in personnel. A new contract has now been executed with the new management team. The scope of the work to be completed under the new contract remains the same as the work proposed under the grant.

University of South Florida
Phase II Platinum Compounds
($50,000)

Matching Funds and Compound Synthesis:
Contract is in place with external university to synthesize the primary compounds and matching funds are being expended. The first scientific report was received under the matching funds grant. Satisfactory quantity and quality of compounds has not yet been achieved for the next level of studies required. Additional interaction with former USF faculty members and contract scientists ongoing. We remain optimistic that there will be positive results from the synthesis experiments.

Next Steps:
The goal is to have the compounds synthesized over the next four months and initiate the business plan development at that point.

University of Central Florida
Phase II Sim Vroom
($25,000)

Simiosys has worked with a UCF computer science team since early summer to formulate a "promotype" of the SimVroom Product. The tasks listed below have been completed with the use of funds from the SURCAG Award.

- Key subject Matter Experts (SME) were consulted to investigate key industries to determine product design requirements and business models for Training Centers, Schools, Museums and Hospitals.
- Strategic partners have been identified to provide the product life cycle from design, fabrication, distribution and operations.
- An on-line survey has been developed to investigate a broad spectrum of industries based on Subject matter expert's recommendations.
- Target Alpha customers have been identified to work as strategic brand partners to assist in the infiltration of the cross markets.
- Multiple federal grants have been identified and some applied for to develop first-articles of the product.
- Conference attendance has provided critical assessment of the competitive landscape, which has proven promising.
- A growing need and demand has been identified for the product, unfortunately, economic development has slowed efforts.
- International partners have been identified to help provide both emerging and enabling technology, but also access to foreign markets.
- A more detailed report is planned for the beginning of the year with a demonstrable “promotype”.
- Face-to-Face interviews and site visits to alpha consumers is planned and have begun.
- Market research is on-going with a rough draft of the business model available with the next report.

Budget:
Expense incurred to date: $21,000 of which $6,500 remains to be disbursed
Anticipated expenses: $4,000 for the completion of the business plan
Pending Tasks:

1. Completion of the business plan
2. Licensing of Intellectual Property from UCF.

Next Steps:
Prepare and send STTR application to NSF in February. Simiosys intends to repay the state upon the successful completion of pending tasks.

PHASE III AWARDS

University of Florida
Phase III Sharklet Technologies
($250,000)

Sharklet has now successfully hired a Director of Business Development, Mr. Guy Hildebrand, and a bio-materials/chemical engineer, Dr. Shravanthi Reddy. SURCAG funding has been utilized to advance prototyping of the Sharklet pattern on various surfaces. SURCAG funds have also been used to prototype the placement of the Sharklet topography on the inside of intubation tubes and catheters. Lastly, Sharklet has contracted with Dr. Ken Rand's laboratory at the University of Florida to conduct a series of aerobic environment tests with various pathogens. These tests will be critical in providing lab data to sell the Sharklet technology to hospitals or other healthcare facilities where control of microorganisms in an aerobic environment is a key issue.

Florida State University
Phase III BuckyPaper Inc.
($250,000)

FSU's phase III award is to support the formation of a start-up company to develop products such as "buckypaper", based on technology from the FSU High Performance Materials Institute.

A start-up company has been formed. We anticipate that the company will begin operations on January 2009, using the $250,000 SURCAG award from the state, and $250,000 from local sources.

Florida Atlantic University
Phase III CHS Resources
($184,294)

Intellectual Property Development: Patent issued August 2008; Divisional Patent Application filed August 2008

Licensing of IP

- Currently, the following technology is licensed exclusively to CHS Resources LLC by FAU, per a license agreement completed October 17, 2005 as amended November 6, 2008.
  - FAU Case # 2005-07 *Enhanced Killing of Cancer Cells in a Topical Application*
  - Utility Patent #60/664,383 applied for March 3, 2005
- FAU and CHS are in the process of completing an Exclusive Option to CHS for the technologies listed below which will complement the currently licensed technologies.
  - FAU #200218 *Catalytic Antioxidants and Methods of Use* developed by Drs. Weissbach (FAU) and Brot (HSS) protected by the following patents and patent applications: 7,129,374 issued 10/31/06; 7,414,139 issued 8/19/08; CIP 12/115,331 filed 5/5/08; Divisional Patent Application 12/185,480 filed 8/8/08.

Initial Product Development

- CHS Pharma contracted with IGI for initial OTC product formulation; reviewed by team in 2008
- Outside consultant for OTC sunscreen product engaged
- International Nomenclature Committee (INCI) approval for Sulindac

Clinical Work Towards Product Development

- Western IRB clinical protocols filed 8/25/08

- Two proof of concept studies on AK
- Proof of concept study for sulindac protection in humans against UV damage.

- FDA consultant engaged
- Animal studies commenced to investigate sulindac's ability to protect mice against UVB damage.

Company Growth/Development

- Fund raising presentation by CHS at Emerging Technologies Showcase 11/5/08

University of Central Florida
Phase III LP Photonics
($184,294)

This Phase III SURCAG award was made to UCF to aid the establishment of a new company developing technology associated with next-generation lithography for mass computer chip fabrication. The Richardson laboratories in the College of Optics & Photonics has for many years been developing high power EUV light sources suitable for the generation of lithography steppers used for memory chip and microprocessor manufacture. Through this effort, supported by both federal and industrial funding, UCF has accumulated a large inventory of intellectual property and knowhow in laser-plasma-based EUV light sources. Under preferential licensing terms, this technology is being transferred to a new startup company, LP Photonics, which will be starting operations in 2009. The company is one of only four companies worldwide developing EUV light sources. This is a large new predictable market for a small number of high-value systems ($5M - $8M per system) to a limited number of customers, stepper manufacturers (3), chip manufacturers (~12) and the laboratories of a few chip industry consortia (Sematech, IMEC,etc). The technological approach being pursued by LP Photonics is based on proprietary UCF source technology, and is distinct relative to the other 3 competitors. Independent experts rate the UCF technology to be one of the two best technologies. Creating a new company in this arena presents very specific challenges, both in the engineering complexity of these sources, and the corporate need for major investment. The SURCAG Phase III funding was particularly effective. Most of the funds are intended for critical technical components. Although these represent only a small fraction of the equipment provided, the allocation of State funds for a new Florida-based company based on IP generated in the SUS, has been of significant impact in raising VC investment. LP Photonics is expecting major VC funding ($3-5M) in early 2009.

University of Florida
Phase III Audigence
($184,293)

UF has focused on three areas: Clinical trials for the Cochlear Implant and Digital Hearing Aids (DHA) domain, Protection of Audigence IP, and marketing the technology to secure license agreements. Audigence has spent $70,000 dollars in funding clinical studies; for the implant domain the clinical study showed statistical significance of the methods in a 20 patient study. For DHA a 10 patient clinical trial is being performed by Audigence, UF, and Unitron. A customer support engineer was hired to support the unique requirement for each of the clinical trials. Based on the success of the clinical trials the marketing team is presuming four license deals to close in the next few months. On the intellectual property front the following patent applications were completed which covers patent classification method, and techniques to reduce the time required to implement the Audigence method. (UF#12826, UF#12827). In addition to the $70,000 spent on the clinical study, around $20,000 on IP and IP engineering support, around $70,000 on customer engineering and around $30,000 on Sales and Marketing were also expended.

World Class Scholars

In 2006 the Legislature appropriated $20 million for a 21st Century World Class Scholars program designed and to recruit and retain the very best faculty in the STEM areas of science, technology, engineering, and mathematics. The Board of Governors awarded the $20 million to five state universities to recruit and employ 16 world class scholars for the State University System. The expenditure of those non-recurring dollars is presented in this annual report as an indication of what those scholars are producing.

University	World Class Scholar	Academic Field	Award Level
UF	Dr. Linda Bartoshuk	Behavioral Neuroscience	$3 M
UF	Dr. Martin Glicksman	Materials Science and Engineering	$1 M
UF	Dr. Grant McFadden	Molecular Genetics / Microbiology	$1 M
UF	Dr. Scott Perry	Materials Science and Engineering	$1 M
UF	Dr. Johannes Vieweg	Genetic and Cellular Immunology	$1 M
UF	Dr. Kirk Conrad	Functional Genomics	$1 M
FSU	Dr. David Larbalestier	Mechanical Engineering / Applied Superconductivity	$3M
FSU	Dr. Eric Hellstrom	Mechanical Engineering / Applied Superconductivity	$1M
FSU	Dr. David Gilbert	Biological Sciences / Molecular Biology	$1 M
USF	Dr. John Adams	Infectious Disease and Biodefense	$1M
USF	Dr. Thomas Unnasch	Infectious Disease and Biodefense	$1M
USF	Dr. James Mihelcic	Environmental Engineering	$1M
USF	Dr. Richard Gitlin	Pattern Recognition	$1M
UCF	Dr. Marwan Simaan	Electrical Engineering / Signal Processing	$1M
UCF	Dr. D.W.van der Weide	Optics and Photonics	$1M
FIU	Dr. Joleigh Simpson	Bionanotechnology	$1M

University of Florida
World Class Scholar: Dr. Linda Bartoshuk
($3,000,000)

For the period of time Professor Linda Bartoshuk has served as a beneficiary of the 21st Century Scholar Program, she was named the Bushnell Presidential Endowed Professor, was elected to the Council of the National Academy of Sciences and was also elected President-elect of the Association for Psychological Science.

From July 2008 to November 2008, Professor Bartoshuk discovered an association between a history of ear infections and obesity. Researchers from other academic institutions confirmed the discovery with data from three independent studies. Professor Bartoshuk reported study findings from health surveys establishing the link at the August 14, 2008 annual meeting of the American Psychological Association in Boston.

Professor Bartoshuk also gave a lecture on this material in Philadelphia at a meeting of the American Chemical Society on August 17, 2008. She plans to submit articles on the discovery and corroboration of this finding; the series of articles will be introduced by NIH Program officials.

At the meeting of the International Society of Smell and Taste (ISOT) that was held in San Francisco on July 26, 2008, the meeting provided a Symposium on Epidemiological Studies of Taste and Smell. Professor Bartoshuk was co-author on some of those articles as well as a discussant for the taste articles. Professor Bartoshuk was also co-author on two other presentations at the meeting.

During her term as a funded 21st Century Scholar, Professor Bartohuk co-authored the following refereed publication:

- Duffy, V.B., Lanier, S.A., Hutchins, H.L., Pescatello, L.S., Johnson, M.K., & Bartoshuk, L.M. (2007). Food preference as a screen for cardiovascular disease (CVD) risk within health risk appraisal. *Journal of the American Dietetic Association,* 107, 237-245.

Professor Bartoshuk's invited papers presented at meetings includes:

- Participant in workshop: Individual Differences in Pain and Analgesia: A Blessing not a Curse;" 5/5/07; American Pain Society; San Antonio, TX
- "Do you taste what I taste? Using genetic variation in taste to teach about taste, diet and health;" National Institute for the Teaching of Psychology;" 1/5/07; St. Petersburg Beach, FL.
- "Burning Mouth Syndrome: Disinhibition of Oral Pain by Damage to Taste. Second Annual Symposium on Advances in Pain Research; 5/1/07; NIH, Bethesda, MD. Podcast at: http://videocast.nih.gov/launch.asp?13797
- "Scales in clinical research – Pros and cons of scales: Example from taste;" 5/24/07; Schweizerisch Gesellschaft für Klinische Pharmakologie und Toxidologie meeting in conjunction with the 75th annual meeting of der Schweizerischen Gesellschaft für Innere Medicin; Basel, Switzerland.

In addition to her research accomplishments, Professor Bartoshuk mentored dental students in the summer research program and supervised a Ph.D. thesis at Yale. She served as Association for Psychological Science (APS) Secretary, and served on the National Academy of Sciences Board of Behavioral, Cognitive and Sensory Sciences and Nomination Committee for NAS Council members

Expenditures by Professor Bartoshuk from the 21sth Century Scholars funding include:

$278,282.95 (Faculty Earnings and Benefits)
$22,500 (TEAMS Earnings and Benefits)
$500 (Contracts)
$771 (Utilities and Communication)
$6,355.47 (Material)
$362 (Repairs and Maintenance)
$6,957.26 (Travel)
$35,208.84 (Equipment)

$20,720(Computer Software)
$71,151.30(Other Expenditures)
TOTAL: $442,808.82

Professor Linda Bartoshuk is employed by the University of Florida at a salary of $212,000 at 1.0 FTE and is a 12-month faculty member. For 2007, UF contributed $43,374.58 in employee benefits for Professor Bartoshuk. Professor Bartoshuk's total external research award amount as either PI or co-PI from October 2006 to the present is $2,094,335.76. In the period of time covering the past two years, Professor Bartoshuk did not file any invention disclosures and was not awarded any patents.

University of Florida
World Class Scholar: Dr. Martin Glickson
($1,000,000)

The 21st Century Scholar Program permitted Professor Glicksman to initiate new projects in the area of metallurgical research, teach graduate courses, support of advanced graduate research at UF, and provide interactions with Florida industry.

The program supports in part research and tuition costs of Mr. Ben Pletcher (Ph.D. expected 06/09). His research involves precipitation and microstructure evolution in Al-Li aerostructural alloys. Interest in his research and future employment of Mr. Pletcher were expressed recently by Siemens Power Generation, Orlando, FL. This research is a collaboration between Professors Glicksman at UF and K-G Wang at Florida Institute of Technology, Melbourne, FL. A major publication from this research is: K.G. Wang and M.E. Glicksman, "Ostwald Ripening in Materials Processing," in *Materials Processing Handbook*, edited by J. Groza et al., CRC Press, Boca Raton, FL, **Ch. 5**, 1-20, (2007).

Professor Glicksman, as a 21st Century Scholar, provides his assistance to GEC Instruments, Gainesville, FL, by consulting with J. Gaffney, Chief Engineer. Professor Glicksman developed and contributed to GEC accurate temperature standards (originally developed by Glicksman with NIST, Gaithersburg, MD) which are of commercial interest to this Florida company. The 21st Century Scholar Program makes this possible.

A second major area of research supported by the 21st Century Scholar Program is Professor Glicksman's development of deterministic dendritic growth theory—a theory of importance in casting and welding of metals. This research is a collaboration between UF and the University of California, at Irvine with Professor John Lowengrub, Dept. of Mathematics. A recent publication of their work appeared as: M.E. Glicksman, J. Lowengrub, and S. Li, "A deterministic mechanism for dendritic solidification kinetics", *J. Metals*, **59**, 27-34 (2007).

The third area of research supported by the 21st Century Scholar Program is in the area of grain growth kinetics in polycrystalline materials. This materials science research is a collaboration with P.R. Rios, Federal University of Volta Redonda, Brazil, and D.L. Lewis, Rensselaer Polytechnic Institute, Troy, New York. Some recent publications resulting from this collaborative effort include:
• M.E. Glicksman, P.R. Rios, and D.J. Lewis, "Mean width and caliper characteristics of network polyhedra", *Phil. Mag*., Accepted (in press 2008).
• P.R. Rios and M.E. Glicksman, "Polyhedral model for self-similar grain growth", *Acta Mat.*, **56**, 1165-1171 (2008).
• M.E. Glicksman and P.R. Rios, "Minimal network partitions using average N-hedra", *Phil. Mag*., **87**, 189–208 (2007).

Invited lectures by Professor Glicksman on research supported by 21st Century Scholar Program include:
- "3D Microstructure Theories and Techniques", in *Materials Characterization, Computation and Modeling*, **2**, 167, TMS 2008 Annual Meeting, CD-ROM, Warrendale, OH (2008).
- *Limit Cycles in Dendritic Growth*, Chemical Engineering Dept., U. Florida, Gainesville, FL, September 24, 2007.

- *Grain Boundaries and Grain Network Kinetics*, Lawrence Livermore National Laboratory, Livermore, CA, December 4, 2007.
- *Limit Cycles in Dendritic Growth*, Dept. of Materials Science and Metallurgy, Pontifical Catholic University, Rio de Janiero, Brazil, August 30, 2007.
- *Capillarity and Phase Coarsening*, Federal University of Volta Redonda, Volta Redonda, Brazil, August 27, 2007.
- *Topological and Metrical Properties of 3-D Isotropic and Non-isotropic Polycrystals*, Symposium on Characterization of Structure across Length Scales, 2007 TMS Annual Meeting, Orlando, FL, February 26, 2007.

Expenditures by Professor Glicksman from the 21sth Century Scholars funding include:

$325,039 (Salary and Benefits)
$54,325 (Graduate Student Support Expenditures)
$23,840 (Laboratory and Equipment costs)
$23,562 (Travel)
$28,810 (Other Expenditures)
TOTAL: $455,576

Professor Martin Glicksman is employed by the University of Florida at a salary of $118,656 at .60 FTE and is a 9-month faculty member. For 2007, UF contributed $29,940.06 in employee benefits for Professor Glicksman. Professor Glicksman's total external research award amount from October 2006 to the present is $200,000. In the period of time covering the past two years, Professor Glicksman did not file any invention disclosures and was not awarded any patents.

University of Florida
World Class Scholar: Dr. Grant McFadden
($1,000,000)

Professor Grant McFadden received the following scholarships and awards during the period of time when he served as a 21st Century Scholar: Royal Society of Canada, Fellow; Canadian Academy of Health Sciences, Fellow; Howard Hughes Medical Institute International Scholarship; American Academy of Microbiology, Fellow; University of Florida, tenure received 2008

Professor McFadden served on the following editorial boards: Associate Editor for *Virology; Viral Immunology* (Editorial Board); *J. Virology* (Senior Editor); *J. Virology* (Member, Editorial Board); *PLoS Pathogens* (Section Editor for Viral Pathogenesis) 2006-2007; *PLoS Pathogens* (Deputy Editor-in-Chief); *Recent Patents on Anti-Infective Drug Discovery* (Editorial Board); *Journal of Infection in Developing Countries* (Editorial Board); *The Open Immunology Journal* (Editorial Board)

During this time, Professor McFadden maintained the following committee memberships: Virology Image Library, board member; Emerging Pathogens Architect/Engineer Selection Committee; Emerging Pathogens Construction Manager Selection Committee; Emerging Pathogens Building Selection Committee; National Biodefense Analysis & Countermeasures Center "Expert Team on the Development of Animal Models for Human Orthopoxvirus Infections"; Scientific Advisory Board, Int. Consortium of Anti-Virals; Int. Com. Taxonomy of Viruses (ICTV), committee member (poxviruses); WHO Advisory Committee on Variola Virus Research; Search Committee member, UF Dept of Microbiology & Cell Science; External Advisory Board member, Midwest Regional Center of Excellence; Scientific Advisory Board, Oregon National Primate Research Center;

In addition, Professor McFadden held the following Grants Panel memberships: UF Research Opportunity, Incentive Seed Fund Competition; National Institute of Allergy & Infectious Diseases (NIAID) Biodefense Grant Panel; National Institute of Allergy & Infectious Diseases Special Emphasis Grant Panel (U19); Organizer/Chairmanships for Scientific Conferences; Co-moderator, 5th American Society of Microbiology Biodefense Mtg, Washington, D.C.; Co-chair, 107th American Society of Microbiology Meeting, Toronto, Canada; Co-organizer, Oncolytic Virus Conference, Banff, Alberta, Canada.

In this period of time, Professor McFadden generated 52 Publications.

Professor McFadden applied for and/or obtained the following patents:

- 2007 (Provisional filed June 21, 2006)
  Optimization of Codon Usage of Poxvirus Genes Allows for Improved Transient Expression in Mammalian Cells (jointly with Dr. J. Barrett)
- 2008 (U.S. Provisional filing pending)
  Using Poxviruses for Hematopoietic Cell Rescue and Cancer Therapy (jointly with Dr. C. Cogle, Dr. E. Scott, Dr. G. Madlambayan and Dr. M. Kim)

Professor McFadden presented at 45 Conference Proceedings

Expenditures by Professor McFadden from the 21sth Century Scholars funding include:

$587, 271 (Salary and Benefits)
$1,100,573 (Other Personnel Research Support Expenditures)
$441,885 (Laboratory Supplies)
$40,243 (Travel)
$135,407 (Other Expenditures)
TOTAL: $2,647,734

Professor Grant McFadden is employed by the University of Florida at a salary of $239,200 at 1.0 FTE and is a 12-month faculty member. For 2007, UF contributed $38,161.21 in employee benefits for Professor McFadden. Professor McFadden's total external research award amount as either PI or co-PI from October 2006 to the present is $780,144.

University of Florida
World Class Scholar: Dr. Scott Perry
($1,000,000)

For the period of time Professor Scott Perry has served as a beneficiary of the 21st Century Scholar Program, he has taught three courses, supervised 7 Ph.D. students and 1 MS student and served on 26 graduate committees in 2008 and 17 graduate committees in 2007.

Professor Perry published seven refereed technical articles as follows (percentage of Professor Perry's contribution provided):

- Zhao, Xueying; Hamilton, Matt; Sawyer, W. Gregory; Perry, Scott S. Thermally activated friction. Tribology Letters (2007), 27(1), 113-117. 75%

- Burris, David L.; Perry, Scott S.; Sawyer, W. Gregory. Macroscopic Evidence of Thermally Activated Friction with Polytetrafluoroethylene. Tribology Letters (2007), 27(3), 323-328. 25%

- Limpoco, F. T.; Advincula, Rigoberto C.; Perry, Scott S.. Solvent Dependent Friction Force Response of Polystyrene Brushes Prepared by Surface Initiated Polymerization. Langmuir (2007), 23(24), 12196-12201. 90%

- Jang, Inkook; Burris, David L.; Dickrell, Pamela L.; Barry, Peter R.; Santos, Catherine; Perry, Scott S.; Phillpot, Simon R.; Sinnott, Susan B.; Sawyer, W. Gregory. Sliding orientation effects on the tribological properties of polytetrafluoroethylene. Journal of Applied Physics (2007), 102(12), 123509/1-123509/7. 20%

- Liang, Tao; Sawyer, W. Gregory; Perry, Scott S.; Sinnott, Susan B.; Phillpot, Simon R. First-principles determination of static potential energy surfaces for atomic friction in MoS2 and MoO3. Physical Review B: Condensed Matter and Materials Physics (2008), 77(10), 104105/1-104105/6. 20%

- Heo, Seong Jun; Jang, Inkook; Barry, Peter R.; Phillpot, Simon R.; Perry, Scott S.; Sawyer, W. Gregory; Sinnott, Susan B. Effect of the sliding orientation on the tribological properties of polyethylene in molecular dynamics simulations. Journal of Applied Physics (2008), 103(8), 083502/1-083502/6. 20%

- Barry, Peter R.; Jang, Inkook; Perry, Scott S.; Sawyer, W. Gregory; Sinnott, Susan B.; Phillpot, Simon R. Effect of simulation conditions on friction in polytetrafluoroethylene (PTFE). Journal of Computer-Aided Materials Design (2007), 14(Suppl. 1), 239-246. 10%

Professor Perry's Society memberships include:: American Chemical Society, Materials Research Society, AVS

Professor Perry also served on the Editorial Board for *Tribology Letters.* And his Journal Reviews include: *Tribology Letters, Surface Science, J. Chem. Phys., J. Phys. Chem, Langmuir,* and *Precision Engineering*

Professor Perry was awarded the MSE Faculty Excellence Award, served as organizer of the 2007 AFOSR Surface Chemistry Program Review, served as chair of the Gordon Conference, Chemistry at Interfaces in 2008, and served as a reviewer for ACS, PRF and NSF.

Expenditures by Professor Perry from the 21sth Century Scholars funding include:

$31,767 (Salary and Benefits)
$45,500 (Graduate Student Support Expenditures)
$888,272 (Laboratory and Equipment Costs)
$1,935 (Travel)
$9,992 (Other Expenditures)
TOTAL: $977,466

Professor Scott Perry is employed by the University of Florida at a salary of $126,906 at 1.0 FTE and is a 9-month faculty member. For 2007, UF contributed $34,985.36 in employee benefits for Professor Perry. Professor Perry's total external research award amount as either PI or co-PI from October 2006 to the present is $805,185.21. In the period of time covering the past two years, Professor Perry did not file any invention disclosures and was not awarded any patents.

University of Florida
World Class Scholar: Dr. Johannes Vieweg
($1,000,000)

Professor Vieweg has had the following editorial/review responsibilities:

- Appointed to serve as co-Program Director for the Society of Urologic Oncology/Society for Basic Urologic Research Program in September, 2008.
- Appointed Editor of Current Opinion in Urology in March, 2008.
- Editorial Board: Prostate Cancer and Prostatic Diseases
- Ad hoc Reviewer for more than 18 journals including Blood, Journal of Urology, Urology, Cancer Research, Immunology, Gene Therapy, and Nature Biotechnology

Professor Vieweg is a permanent member on the NCI SPORE review panel. The following reviews were performed between October 1, 2006 and November 30, 2008:

- National Cancer Institute SPORE Grant Review [Bladder, Skin, Breast, Prostate], Bethesda, MD (6/2008)
- National Cancer Institute SPORE Grant Review [Bladder, Skin, Prostate], Bethesda, MD (2/2008)
- National Cancer Institute SPORE Grant Review [Lymphoma, Prostate, Breast, Skin], Bethesda, MD (6/2007)
- Clinical Oncology Study Section, Bethesda, MD (3/2007)
- National Cancer Institute SPORE Grant Review [Bladder, Skin, Prostate], Bethesda, MD (2/2007)

During this period of time, Professor Vieweg served on 10 committees and advisory boards and published the following original research publications:

- Kubler, H., Tsent, T.Y., Sun, L., Vieweg, J**.,** Harris, M.J., Dahm, P.: Impact of Nerve Sparing Technique on Patient Self-Assessed Outcomes after Radical Perineal Prostatectomy. J Urol 2007;178:488-492.
- Tseng, T.Y., Cancel Q.V., Fesperman, S.F., Kuebler, H.R., Sun, L., Roberston, C.N., Polascik, T.J., Moul, J.W., Vieweg, J**.,** Albala, D.M., Dahm, 7 P.: The Role of Early Adopter Bias for New Technologies in Robot Assisted Laparoscopic Prostatectomy. J Urol 2007;177:1318-1323.
- Smith, W.A., Cancel, Q.V., Tseng, T.Y., Sultan, S., Vieweg, J., Dahm, P. Factors Associated with the Full Publication of Studies Presented in Abstract Form at the Annual Meeting of the American Urological Association. J Urol 2007;177:1084-1088.
- Scales, C.D. Jr., Norris, R.D., Keitz, S.A., Peterson, B.L., Preminger, G.M., Vieweg, J**.,** Dahm, P.: A Critical Assessment of the Quality of Reporting of Randomized, Controlled Trials in the Urology Literature. J Urol 2007;177:1090-1094.
- Yang, B.K., Gan, T.J., Salmen,, C.R., Cancel, Q.V. Vieweg, J**.** & Dahm, P.: Radical Perineal Prostatectomy for Treatment of Localized Prostate Cancer in Obese and Nonobese patients: A Matched Control Study. Urology 2006;67:990-995.

In addition, he has 3 publications in press, and one publication submitted.

Professor Vieweg had 8 poster presentations, 9 invited lectures, 6 presentations, 3 video sessions, a moderated poster, 2 poster sessions, and served as a visiting professor at Mt. Sinai School of Medicine

During time period, Professor Vieweg filed 4 patent applications through UF's Office of Technology Licensing.

Expenditures (including grant expenditures) by Professor Vieweg from the 21sth Century Scholars funding include:

$993,630 (Salary and Benefits – Professor Vieweg)
$1,755,697 (Graduate Student Support Expenditures)
$3,995,669 (Other Personnel Research Support Expenditures)
$1,062,169(Laboratory Supplies)
$336.604 (Equipment Costs)
$323,015 (Travel)
$1,311,037 (Other Expenditures)
TOTAL: $9,777,821

Professor Joannes Vieweg is employed by the University of Florida at a salary of $400,000 at 1.0 FTE and is a 12-month faculty member. For 2007, UF contributed $47,801 in employee benefits for Professor Vieweg. Professor Vieweg's total external research award amount as either PI or co-PI from October 2006 to the present is $7,276,280.96. In the period of time covering the past two years, Professor Vieweg filed three invention disclosures and was not awarded any patents.

University of Florida
World Class Scholar: Dr. Kirk Conrad
($1,000,000)

During the period of time Professor Kirk Conrad was a 21st Century Scholar, he published 24 articles, has submitted one, and has four in press.

Professor Conrad had two provisional patents filed in 2008:

- U.S. Provisional Patent filed for *"Gene Expression Related to Preeclampsia"* First Named Inventor: CONRAD, KIRK P.
- U.S. Provisional Patent filed for *"PREDICTION AND PREVENTION OF PREECLAMPSIA"* Inventor: CONRAD, KIRK P.

Additionally, he provided the following seminars and invited lectureships:

- Vascular Adaptations to Pregnancy. Aspen Perinatal Biology Symposium. Given Institute. Aspen, August 2007.
- Maternal vascular adaptations to pregnancy—hormonal and molecular mechanisms, and therapeutic implications. Reproductive and Perinatal Biology Research Seminar. University of Florida, Gainesville, February 2008.
- In search of the elusive vasodepressor agents of pregnancy. 5th International Conference on Relaxin and Related Peptides 2008. Maui, May 2008.
- Relaxin: The elusive vasodilatory of pregnancy. Lilly Research Seminar. Indianapolis, September 2008.
- Vascular gelatinase is vasodilatory in normal pregnancy. XVI International Society for the Study of Hypertension in Pregnancy. Washington DC, September 2008.

Professor Conrad also served on the Editorial Board for the American Journal of Physiology: Endocrinology and Metabolism. 2007-present, served as an Ad hoc reviewer for MRC UK, served as Councilor for the Society of Gynecological Investigation, Chaired the SGI Communications Committee, served as co-director of the Reproductive and Perinatal Biology Research Program at UF, and co-chaired the workshop: Matrix Metalloproteinases, International Society for the Study of Hypertension in Pregnancy, Washington DC, September 2008.

Expenditures by Professor Conrad from the 21sth Century Scholars funding include:

$222,844 (Salary and Benefits)
$71,559 (Other Personnel Research Support Expenditures)
$284,373(Laboratory and Equipment Costs)
$24,890(Travel)
TOTAL: $603.667

Professor Kirk Conrad is employed by the University of Florida at a salary of $182,000 at 1.0 FTE and is a 12-month faculty member. For 2007, UF contributed $38,715 in employee benefits for Professor Conrad. Professor Conrad's total external research award amount as either PI or co-PI from October 2006 to the present is $882,692. In the period of time covering the past two years, Professor Conrad filed two invention disclosures and was not awarded any patents.

Florida State University
World Class Scholar: Dr. David Larbalestier
($3,000,000)

Renovation Expenditures

The State funds were expended to provide most of the ~$4 million of remodeling of the Shaw Building needed to turn it from an office building to one with advanced laboratory capability. Remodeling funds enabled the digging of a vibration-isolated pit for a Zeiss 1540 eSB state-of- the-art field emission, high resolution scanning electron microscope, as well as, for special trenches and other special features needed for the 6 very powerful superconducting magnet systems of the Applied Superconductivity Center (ASC), two of which were purchased with ~$0.5 million of Dr. Larbalestier's startup funds. Another ~$1.1M of Dr. Larbalestier's startup funds paid for the microscope which also has a focused ion beam (FIB) for atomic scale surgery.

State's Return on Investment

The move of ASC to FSU to become a division of the NHMFL has enabled various strategic successes. Amongst these we cite collaborations that enabled the generation of the world's highest field superconducting magnets (26.8T in 2007, 33.8T in 2008), the first very high field characterizations of the new class of iron-arsenic superconductors discovered in early 2008 (Hunte *et al.* Nature **453,** 903 2008), presentation of the Lifetime Achievement Award of the International Cryogenic Materials Conference to Dr. Larbalestier in 2007 and of the

Distinguished Lectureship of the Institute of Electrical and Electronic Engineering (IEEE) Council on Superconductivity for 2009-2010.

In 2007-2008, Dr. Larbalestier published 35 peer reviewed papers, gave 26 invited conference talks and seminars, raised his H factor to 44, and exceeded 7000 citations, including more than 520 in 2007 and ~480 so far in 2008.

As PI or co-PI he has support from DOE with separate grants from High Energy Physics, Office of Fusion Energy Science, and the Office of Electricity, as well as direct support from Fermilab and Oak Ridge National Laboratory, the Air Force Office of Scientific Research, the National Science Foundation (Focused Research Group), the International Tokomak Experimental Reactor (ITER), SuperPower, Inc. and American Superconductor Corporation, as well as from the NSF core grant awarded to the NHMFL. These annualized totals (not including core NSF support) are at present about $1.7 million per year.

All of Dr. Larbalestier's 5 Wisconsin students came with him to FSU. Three have graduated (one is at Samsung Central Research Lab, Seoul Korea, one at US Steel, Pittsburgh, one about to take up an ITER fellowship at Cadarache France), a fourth defends in mid November and the 5th will defend in late 2009. He now has 4 FSU graduate students, 3 in Mechanical Engineering and one in Physics, as well as, 5 undergraduates working in his labs. He has attracted 4 postdocs, one from the U. of Minnesota, one from Kyoto University Japan, one from the U. of Tokyo (Japan Society for the Promotion of Science Fellow) and one from the University of Genoa, Italy. Professor Marina Putti of the University of Genoa, Department of Physics, is spending her sabbatical year with Dr. Larbalestier in ASC.

He has also been active in encouraging a start up company Tai-Yang Engineering which occupies incubator space in the ASC laboratories and has won SBIR awards from DOE, NASA and DOD.

Florida State University
World Class Scholar: Dr. Eric Hellstrom
($1,000,000)

Renovation Expenditures
The State funds were expended to provide some of the $4+ million required for remodeling the Shaw Building needed to turn it from an office building to one with advanced laboratory capability. The Shaw renovation transformed most of the building into laboratory space for the new Applied Superconductivity Center which moved to FSU in 2006.

State's Return on Investment
Dr. Hellstrom, a professor of Mechanical Engineering, has worked on high-temperature superconductors since the mid-1980s when they were discovered and came to FSU as part of the Applied Superconductivity Center (ASC) within the National High Magnetic Field Laboratory, where he works with other materials people and magnet designers on the next generation of high-field magnets. This infusion of new faculty including Dr. Hellstrom, who has joined ASC at FSU, has facilitated strategic successes.

External Research Funding Received
Since 2006, ASC has received in excess of $5.2 million dollars in external research funding. Of that external support, Dr. Hellstrom serves as PI or Co-PI on grants from the U.S. Department of Energy and Supercon, Inc. in award amounts totaling over $416,000.

Peer-Reviewed Publications
In 2007 and 2008, Dr. Hellstrom has published 7 peer-reviewed articles in *Superconductor Science and Technology; Applied Physics Letters,* and the *Journal of Applied Physics.*

Collaborations
Dr. Hellstrom has developed collaborations with 19 individuals at the National Institute of Standards and Technology; Fermi National Accelerator Laboratory; Agronne National Laboratory; Oak Ridge National Laboratory; Pennsylvania State University, Department of Physics; University of Kansas, Arizona State University; University of Wisconsin; University of Puerto Rico, Mayaguez; Oxford Instruments—Superconducting Technology; National Institute for Materials Science, Japan; American Superconductor Corporation; and Nexans.

Florida State University
World Class Scholar: Dr. David Gilbert
($1,000,000)

The State dollars received has provided all around support for Dr. Gilbert's research-- funding costs for personnel, supplies, equipment, animals and students.

Expenditures 7/1/2006 – 10/30/2008

Personnel Costs	$ 360,071
Lab Supplies	$ 365,934
Publications/Printing/Subscriptions	$ 4,134
Travel	$ 25,486
Computer Software & IT supplies	$ 10,358
Animals	$ 528
Equipment	$ 202,734
Misc supplies	$ 20,861
Student Tuition	$ 9,894
Total	$1,000,000

External Research Funding Received – 7 awards totaling $1,527,921 from the following entities: Leukemia & Lymphoma Society, Stem Cell Research Foundation, Rett Syndrome Research Foundation, Florida Department of Health, National Institutes of Health, and the University of Georgia.

Publications – 2 in 2008 and 4 in 2007
In the last two years, Dr. Gilbert has published several articles in peer-reviewed journals -- The Journal of Cell Biology, Current Protocols in Cell Biology, Chromosoma, Current Opinion in Cell biology, Public Library of Science Biology and Cell Cycle.

Workshops/Conferences – 2 in 2008
Dr. Gilbert spearheaded "*The 2nd Annual Integrating Genotype and Phenotype (IGP) Workshop*" held in January 2008, where speakers discussed a broad and provocative range of topics in epigenetics and evolution. Topics included the effect of experience and environment on behavior, genome-wide studies on chromatin marks in yeast, genomic imprinting and maternal effects in mice, and RNA silencing systems in plants. In addition, Dr. Gilbert was an invited speaker at the "*National Cancer Institute Symposium on Chromosome Biology*" in October 2008.

Individuals who came to Tallahassee to work and be trained by Dr. Gilbert – A number of students and post docs from around the globe have sought out Dr. Gilbert to be able to work with and be trained in Dr. Gilbert's laboratory. These include post docs from Israel and Japan; and graduate students from the U.S. and Japan,

Patents – U.S. Provisional Patent Application was filed on 8/28/2008, titled "*Replication Timing Profiles to Provide an Epigenetic Fingerprint of Functional Cellular States*"

University of South Florida
World Class Scholar: Dr. John Adams
($1,000,000)

The 21st Century Scholar program for Dr. John Adams, Infectious Disease and Biodefense, was opened at the end of the 2007-08 fiscal year. The expenditures to date have focused on the development and support of the infectious disease and biodefense research and training program in the USF College of Public Health. It is estimated that this initiative will have spent an estimated $959,869 by December 1, 2008, including projected payroll expenditures.

Since the release of these funds, the majority of these resources, $873,252, were used towards the costs of construction of an insectary and BSL-2 suite, a critical component to the laboratory infrastructure required to recruit Dr. Adams and his team. Through December 1, 2008, it is estimated that $84,896 will have gone to support the salary and benefits of Dr. Adams' research faculty and staff. To date, Dr. Adams and his team have also spent $1,688 in laboratory related expenses and an additional $33 in other related expenses. The remaining $40,131 is designated for faculty and staff payroll as well as laboratory support expenses.

Dr. Adams' Return on Investment during the reporting period included total grant awards of $3,766,585 with $467,657 funding from the Gates Foundation to support the first international conference on vivax malaria. This program will bring top researchers from around the world together to discuss one of the developing world's most devastating infectious diseases. The conference, to be held in Panama, will highlight USF's prominence as a presence in the field of global infectious disease work. The remainder of his funding came from the National Institutes of Allergy and Infectious Disease (NIAID). Dr. Adams is chair of the NIAID Pathogenic Eukaryotes Study Section. Dr. Adams had ten publications with five in high impact journals (Nature, PLoS Med, PLoS ONE, PLoS Pathog, Blood). He made 9 presentations at national and international scientific meetings and received a joint appointment in Internal Medicine at USF Health.

Dr. Adams joined the USF College of Public Health from the University of Notre Dame, where he was a Professor in the Department of Biological Sciences since 1991. Dr. Adams' research program is directed towards translation research in gene discovery for therapeutic intervention strategies. His laboratory studies the biology of the infective stages of malaria parasites. Projects are focused on the merozoite and sporozoite ligands, their function in host cell invasion, their development as targets for therapeutic development, and the factors controlling their expression. The goal is to understand the biology of these ligands with the expectation that this will enable the development of new ways to control malaria. Professor Adams' research projects utilize methods in molecular genetics, functional genomics, bioinformatics, mass spectrometry, and *in vitro* functional assays. As a teacher, he has been active in the classroom as a lecturer for undergraduate and graduate courses.

University of South Florida
World Class Scholar: Dr. Thomas Unnasch
($1,000,000)

The 21st Century Scholar program for Dr. Thomas Unnasch, Infectious Disease and Biodefense, was opened at the end of the 2006-07 fiscal year. The expenditures to date have focused on the development and support of the infectious disease and biodefense research and training program in the USF College of Public Health. It is estimated that this initiative will have spent an estimated $743,545 by December 1, 2008, including projected payroll expenditures.

Since the inception of this program, the majority of these expenses, $562,282, have been invested in the purchase of laboratory equipment, supplies, and related operational expenses. Through December 1, 2008, it is estimated that $119,444 will have gone to support the salary and benefits of program research faculty and staff. From the original award, $50,336 was used to cover moving and relocation expenses for Infectious Disease and Biodefense faculty and staff, including Dr. Unnasch's laboratory from the University of Alabama-Birmingham. The team has spent $9,619 in travel expenses, as well an additional $1,864 in other related expenses. The remaining $271,246 is to be used for faculty and staff payroll as well as additional new equipment purchases.

Dr. Unnasch's Return on Investment during the reporting period included grant awards of 5,716,930.00 from the National Institutes of Allergy and Infectious Disease, Department of the Army and the Carter Center. Dr. Unnasch is a grants reviewer for Ecology of Infectious Diseases, National Science Foundation, Scientific Advisor, WHO Multi-Disease Research Centre, Ouagadougou, Burkina Faso, Scientific Consultant, Carter Center Global 2000 River Blindness Program Review and Member, Uganda Elimination Committee for Onchocerciasis, Ugandan Ministry of Health. He was recently appointed as Director of the USF Center for Biological Defense. He had 15 publications during the reporting period to include high impact journals (Science and N Engl J Med) and made 10 presentations at national and international scientific meetings.

Dr. Unnasch joined USF after spending 18 years on the faculty at the University of Alabama at Birmingham. He has extensive collaborations with investigators in the developing world, including individuals in Ecuador, Ghana, Guatemala, Mexico and Burkina Faso. Dr. Unnasch serves as a mentor for students interested in vector borne infectious diseases. The students associated with Dr. Unnasch will be offered the opportunity of conducting research ranging from basic questions regarding gene structure, regulation and RNA maturation in the human filarial parasites to studies of the ecology of arbovirus transmission in Florida, to development of methods to assess the progress of onchocerciasis elimination programs in six Latin American countries.

University of South Florida
World Class Scholar: Dr. James Mihelcic
($1,000,000)

James R. Mihelcic, Ph.D., is leading many projects as a 21st Century Scholar at the University of South Florida. The projects began in mid-August 2008 upon Dr. Mihelcic's full-time employment at USF and continue to present. The expenditures to date total $116,070 and include salaries/benefits ($76,638), graduate student support ($26,915), personnel research support ($7,614), laboratory and equipment costs ($4,903) and other start-up costs for the projects ($6,857).

Dr. Mihelcic's instructional achievements are noted in the formation of a graduate program in conjunction with the Peace Corps in civil and environmental engineering with a focus on sustainable healthy communities and globalization of an engineering workforce. A framework was also developed for graduate courses in a new certificate program in Water, Health, and Sustainability. In collaboration with other USF faculty members, Dr. Mihelcic is developing large university education and research activities that integrate water/energy/manufacturing-materials. He was also invited to host an international conference in Tampa every other year with plans to host the first conference in December 2009.

Dr. Mihelcic will hold a workshop at a national conference with Dr. Qiong Zhang, who will be joining the USF engineering faculty in Fall 2009, as one of four leaders of the workshop. Dr. Mihelcic was one of 10 U.S. participants chosen to attend the Strategic Initiatives for University Internationalization in Japan (December 2008). Dr. Mihelcic's upcoming publications include two textbooks to be published in Spring 2009 with USF affiliation and contribution to a UNESCO report. Dr. Mihelcic obtained approval to transfer external funds to USF for two National Science Foundation funded projects ($59,271 and $43,377). Dr. Mihelcic has submitted several proposals in collaboration with other USF faculty members and faculty at other institutions: National Cooperative Highway Research Program ($500,000), NSF Pan American Studies Institute (multi-million dollar potential), and the National Science Foundation ($122,040).

Dr. Mihelcic's research focus is the biological processes applied to natural and engineered systems, green engineering and sustainability, and humanitarian engineering for the developing world. He comes to USF from Michigan Technological University where he co-founded the university's Sustainable Futures Institute and D80 Center for Engineering Development for Humanity. Dr. Mihelcic is currently involved in over $4.7 million in research funding from national, state, and industry entities and serves as president of the Association of Environmental Engineering and Science Professors. He is also a member of the U.S. Environmental Protection Agency's Science Advisory Board on Environmental Engineering. He has committed much of his personal and professional time to work on community-based water and sanitation projects in developing nations.

University of South Florida
World Class Scholar: Dr. Richard Gitlin
($1,000,000)

Richard D. Gitlin, Sc.D., is leading three projects as a 21st Century Scholar at the University of South Florida. The projects began in mid-August 2008 upon Dr. Gitlin's full-time employment at USF and continue to present. The expenditures to date total $127,884 and include salaries/benefits ($114,957), travel ($4,254), and other start-up costs for the projects ($8,672).

Dr. Gitlin and USF faculty collaborators Shekhar Bhansali, Ph.D., Associate Professor of Electrical Engineering; Craig Lusk, Ph.D., Assistant Professor of Mechanical Engineering; and Alexander S. Rosemurgy, II, M.D., Professor of Surgery and Medicine and Director of General Surgery; are investigating the use of controllable and networked devices to enable in-vivo non-invasive surgical procedures. The project is directed to the use of devices such as imaging devices, sensors, power sources, "cutting" tools (physical, optical, ultrasound, etc.), and other ancillary devices. These devices are electronically addressable and controllable so they can be managed by a surgeon or some other entity such as an expert system with powerful pattern recognition capabilities.

Dr. Gitlin and Ravi Sankar, Ph.D., Professor of Electrical Engineering at USF, are collaborating on a cross-layer platform for wireless ad hoc and sensor network applications. This project will research and develop a universal cross-layer framework that will be simple, efficient, stable, adaptive and capable of optimizing performance in multiple wireless network applications.

In collaboration with USF faculty Vijay K. Jain, Ph.D., Distinguished Professor of Electrical Engineering, and Huseyin Arslan, Ph.D., Assistant Professor of Electrical Engineering, Dr. Gitlin is researching an Orthogonal Wavelet Spread Spectrum (OWSS), a technology that could form the basis for 5G wireless systems.

A provisional patent has been filed on the non-invasive surgical procedures, and National Science Foundation proposals were submitted for both the cross-layer platform and the OWSS.

Dr. Gitlin is a world renowned researcher in the fields of digital communication, broadband networking, and wireless systems. Most recently, Dr. Gitlin was chief technology officer of Hammerhead Systems, a venture-backed company in the telecommunications equipment space focus on MPLS and Ethernet technologies. He spent the majority of his career with Bell Labs where he held several executive positions, including Senior Vice President of Research. He holds 43 patents and was the co-inventor of the digital subscriber line (DSL) while at Bell Labs. Dr. Gitlin held teaching positions at Columbia and Princeton universities and earned his doctorate from Columbia. He is a National Academy of Engineering member, an Institute of Electrical and Electronics Engineers (IEEE) Fellow, and a Bell Laboratories Fellow.

University of Central Florida
World Class Scholar: Dr. D.W. van der Weide
($1,000,000)

The 21st Century Scholar in Laser Medicine is linked to the Florida Photonics Center of Excellence – Laser Technology Initiative, now renamed as the Townes Laser Institute, and is critical to our vision of central Florida being the future epicenter of advanced laser and photonics-based medicine and clinical therapy. None of the aspiring life science centers in the nation other than the Lake Nona Medical has the unique proximity of the UCF cluster of laser/photonics centers associated with the College of Optics & Photonics. This 21st Century Scholar, jointly tenured in the College of Engineering will lead initiatives in key areas of advanced laser therapy and imaging technologies. Following a national search, UCF selected Prof. Daniel van der Weide from the University of Wisconsin. He is an expert in the field of THz radiation imaging and applications to biological systems, a field expected to offer transformational improvements to neurosurgery and focused disciplines of the new UCF Medical School. Dr van der Weide joined UCF in January 2008 at the 25% level, taking into account his obligations at Wisconsin arising from a sabbatical leave in 2006-7, and the complexities of his research program. Unexpected

additional issues, both of a personal and technical nature, led UCF to determine that it would be more appropriate to fund Dr. van der Weide with other than 21st Century Scholar award dollars until such time in the near future when his status is clarified. It is important, as one of several reasons, that the State not invest 21st Century Scholar dollars in the equipment, laboratory, and start-up costs associated with a researcher of this level and stature if there is more than normal reason to believe that the university and the scholar's relationship may not be of longstanding. As a result, the 21st Century Scholar award dollars have yet to be expended; at the earliest time possible the University of Central Florida will expend those dollars for the purpose for which they were awarded: to soundly invest in recruiting and retaining world-class faculty and research talent in the area of photonics, optics, and lasers.

University of Central Florida
World Class Scholar: Dr. Marwan Simaan
($1,000,000)

No state dollars received in support of the 21st Century World Class Scholar have been expended. UCF funds expended in support of Dr. Simaan's efforts: relocation expenses $17,000, Summer 2008 salary/fringe $102,000, Start-up package - Spring 2008 release $39,000 and travel $2,000. In regards to the State's return on the investment, Dr. Simaan received funding from the National Science Foundation in the amount of $193,328 for a project entitled "Patient Adaptive Feedback Control of Rotary Heart Assist Devices". Between January and December 2008 Dr. Simaan published papers in the International Journal of Communication Systems; IEEE Transactions on Biomedical Engineering; ASME Journal of Dynamic Systems, Measurements and Control; and the Journal of Optimization Theory and Applications. Additionally, he presented at the following Conferences: SPIE Conference on Defense and Security, Unmanned Systems Technology, Orlando, FL; 2008 American Control Conference, Seattle, WA; 54th Conference of the American Society for Artificial Internal Organs, San Francisco, CA; 17th World Congress of the International Federation of Automatic Control, Seoul, Korea; and the 2008 IEEE Industry Applications Society Annual Meeting, Edmonton, Alberta, Canada. Additionally, in May 2008, he received the Distinguished Service in Engineering Award from the College of Engineering at the University of Illinois in Champaign, Urbana for his "Interdisciplinary Contributions to Automatic Control and Signal Processing in Theory and Practice and Contributions to Engineering Education and the Profession". In 2008, Dr. Simaan served and represented UCF on numerous National and International professional committees within the National Academy of Engineering, the National Science Foundation, the American Association for the Advancement of Science, the Institute of Electrical and Electronics Engineers and others. He also successfully nominated several UCF faculty members to Fellowship in the American Association for the Advancement of Science and membership in the Frontiers of Engineering Program of the National Academy of Engineering.

Florida International University
World Class Scholar: Dr. Joe Leigh Simpson
($1,000,000)

Joe Leigh Simpson, M.D. has developed infrastructure at FIU to leverage 21st Century Scholar funds for its stated purpose. The overall goal of the Scholar's program involves developing a world-class Center for Advanced Diagnostics Devices that focuses on the interface of life sciences, bioengineering, and overall human health.

The program will address assessment of exposures to environmental and occupational hazards. There is no automated, reproducible, way of assessing workers or military personnel exposed to sites contaminated with unknown agents. The current approach relies on cytogenetic scoring for chromosomal abnormalities, a laborious largely manual method. The program first will construct a health-related world-class "gold-standard" reference genetics lab, the first in the region that would be able to monitor toxin exposure. This lab would be used to test validity of novel biosensors constructed using nanotechnology or optical imaging methods. These will be constructed in FIU's Nanofabrication core. The first devices will involve nanoscale DNA detection based on perturbed hybridization, miniaturized electrical sensors to assess DNA damage, and suspended carbon-nano electro-mechanical system to capture protein DNA-interaction. Each device could serve as a platform for

developing a variety of economically attractive products. Mass-produced utilization of these novel devices could enable public policy decisions to be better focused, based on valid exposure data rather than conjecture.

Dr. Simpson has recruited Renee Martin, Ph.D. a world-renown cytogeneticist to oversee the "gold-standard" biology laboratory. Helen Tempest, Ph.D. will have this project as her primary responsibility, beginning in 2009 after immigration arrangements are completed. $500,000 will be used for equipment for this new cytogenetic facility. FIU will renovate 800 sq. ft. lab space plus a second smaller microscopy room. Necessary ancillary collaborators and equipment have been identified and are at FIU. CV Rao, Ph.D. will oversee mitochondrial/endocrine work requiring $80,000 equipment. FIU nanotechnology facilities are already equipped with major instruments. Additional funding from federal sources has been approved and awaits appropriations. This will allow comparative testing nanoscale biosensors and optical devices at an accelerated rate, thus shortening time prior to field-testing a device and generating return on investment.