During the 2013/2014 fiscal year, the USF Matching Grants Research Program awarded 21 new projects with 18 companies. The awards totaled $1,233,086 from the Florida High Tech Corridor Council with industry partners providing cash of $1,092,683. Additionally, industry sponsors provided $1,449,955 worth of in-kind support for a total investment of $3,775,724 in the program. The match ratio was more than $2:$1. The average total project value was $175,796 with an average award of $58,718. These projects supported 52 students and 32 faculty members.
Projects were awarded to the College of Engineering (13), College of Arts & Sciences (2), USF Health (4), College of Business (1) and Mote Marine Laboratory (1).

Acevedo-Duncan, Mildred, “Validation of breast tumor biomarker PKC-zeta”
Department: Chemistry
Sector: Life Sciences/ Medical Technology
Partner: Novel Biospectrum Technologies, Inc.
Location: Tampa/Hillsborough County
FHTCC Award: $25,000  Cash Match: $25,000
Total Project Value: $50,000
Students: 1
Faculty: 1
Abstract: The company will subcontract Dr. Acevedo-Duncan to validate the newly discovered breast tumor biomarker (PKC-zeta) in 120 breast tissue specimens.

Bhethanabotla, Venkat, “Development of a novel process for converting landfill gas to liquid hydrocarbon fuels”
Department: Chemical and Biomedical
Sector: Sustainable Energy
Partner: Trash2Cash Energy, LLC
Location: Tampa/Hillsborough County
FHTCC Award: $12,903  Cash Match: $12,903  In-Kind Match: $13,000
Total Project Value: $38,806
Students: 1
Faculty: 1
Abstract: Development of a novel process for converting landfill gas to liquid hydrocarbon fuels

Bickford, Paula, “Development of a natural weight management product”
Department: Molecular Pharmacology and Physiology
Sector: Life Sciences/ Medical Technology
Partner: Natura Therapeutics, Inc.
Location: Tampa/Hillsborough County
FHTCC Award: $50,000  Cash Match: $101,713  In-Kind Match: $101,713
Total Project Value: $151,713
Students: 2
Faculty: 2
Abstract: Gather data to support that NT-020 (NutraStem) plus innoslim are additive in both effects on stem cells in culture and to improve cellular metabolism.

Ghansah, Tomar, “Insulin Effects of Glufosamide Antitumor Activity in Murine Pancreatic Cancer”
Department: Molecular Medicine
Sector: Life Sciences/ Medical Technology
Partner: Eleison Pharmaceuticals, Inc.
Location: St.Petersburg/Pinellas County
FHTCC Award: $25,105    Cash Match: $25,105    In-Kind Match: $24,104
Total Project Value: $74,314
Students: 1
Faculty: 1
Abstract: This project will establish a tissue culture and murine model using pancreatic cell line Panc02 and C57BL/6 mice, and test whether insulin (glucose modulators) block or increase antitumor effects of glufosfamide (GF).

Gitlin, Richard, “Improving the Communications Performance and Reliability of In Vivo Wireless Medical Devices”
Department: Electrical
Sector: Life Sciences/Medical Technologies
Partner: Innovatia Medical Systems, LLC
Location: Tampa/Hillsborough County
FHTCC Award: $9,000    Cash Match: $9,000    In-Kind Match: $9,000
Total Project Value: $27,000
Students: 2
Faculty: 1
Abstract: This project has the goal of advancing novel wireless communications technologies that enable high performance, reliable communications, and the ability to overcome link and/or power failures among networked in vivo medical devices. The Phase IB project is directed towards the design of a high-performance antenna for the Miniature and Anchored Remote Videoscope for Expedited Laparoscopy (MARVEL) Camera Module (CM).

Gitlin, Richard, “Miniature Wireless High Definition Video Imaging Devices for In Vivo Minimally Invasive Surgery”
Department: Electrical
Sector: Life Sciences/ Medical Technology
Partner: Innovatia Medical Systems, LLC
Location: Tampa/Hillsborough County
FHTCC Award: $50,000    Cash Match:        In-Kind Match: $50,000
Total Project Value: $100,000
Students: 1
Faculty: 2
Abstract: Significantly increase the project’s credibility and fundability by demonstrating fully operational prototypes of the illumination, video imaging, and mechanical subsystems.

Gitlin, Richard, “Vector Cardiac Rhythm Monitoring”  
Department: Electrical  
Sector: Life Sciences/ Medical Technology  
Partner: Jabil Circuits, Inc.  
Location: St. Petersburg/Pinellas County  
FHTCC Award: $135,000  Cash Match: $135,000  In-Kind Match: $135,000  
Total Project Value: $405,000  
Students: 5  
Faculty: 1  
Abstract: The Vector Cardiac Rhythm [VCG] Monitoring project will investigate technologies directed towards a novel form of cardiac rhythm management so that a patient can comfortably wear a compact device that wirelessly streams VCG information to a database or a physician.

Goswami, Yogi, “Field Testing Gas Heat Pumps”  
Department: Chemical  
Sector: Sustainable Energy  
Partner: Associated Gas Distributors of Florida, Inc.  
Location: Tampa/Hillsborough County  
FHTCC Award: $150,000  Cash match: $181,499  In-Kind Match: $224,000  
Total Project Value: $555,499  
Students: 5  
Faculty: 2  
Abstract: The objective of this project is to evaluate the emerging natural gas based technologies. Towards this, Gas Heat Pump systems will be tested for equipment functionality and track their performance for a period of one year. In order to evaluate the performance of the natural gas based heat pump we have identified two sites in consultation with AGDF and TECO where the units would be tested. Based on the data from these two sites, model will be developed to estimate the performance at other sites.

Department: Electrical  
Sector: Microelectronics/Nanotechnology  
Partner: WavesinSolids LLC  
Location: Tampa/Hillsborough County  
FHTCC Award: $15,000  Cash match: $15,000  In-Kind Match: $25,000  
Total Project Value: $55,000  
Students: 4  
Faculty: 2  
Abstract: We aim to investigate MEMS acoustic emission sensors while correlating stress intensity factor to acoustic emission activity.
Highsmith, Jason, “A Clinical Trial Comparing Functional Performance of Voluntary Opening and Closing Body-Powered Prosthetic Terminal Devices”
Department: School of Physical Therapy and Rehabilitation Sciences
Sector: Life Sciences/ Medical Technology
Partner: TRS, Inc.
Location: Tampa/Hillsborough County
FHTCC Award: $24,999  Cash match: $24,999  In-Kind Match: $80,600
Total Project Value: $130,598
Students: 1
Faculty: 2
Abstract: This study will compare the functional performance of voluntary opening and voluntary closing body powered prostheses. We hypothesize that the ability to sense cable tension and produce progressively higher pinch from periscapular force will result in advantages for the VC terminal device (TRS, Grip 2S) in terms of proprioception, grip strength, overall function, and quality of life.

Kumar, Anand, “Studying of perceptions barriers and transitional comments for smokers moving to the potentially less harmful alternative of electronic cigarettes”
Department: Marketing
Sector: Life Sciences/ Medical Technology
Partner: Whitecloud
Location: Tarpon Springs/Pinellas County
FHTCC Award: $132,337  Cash Match: $132,337  In-Kind Match: $132,337
Total Project Value: $397,011
Students: 3
Faculty: 3
Abstract: To carry out qualitative and quantitative consumer research studies to (a) understand barriers to traditional cigarette smokers switching to less harmful alternative of e-cigarettes and (b) gain insights into a new segment of consumers who are adopting “vaping” behaviors. This involves studying behavioral changes accompanying smokers' transition from traditional cigarettes to e-cigarettes.

Labrador, Miguel, “HeartMApp, an information system to help treatment of Heart Failure patients”
Department: Electrical
Sector: Life Sciences/ Medical Technology
Partner: The Charles Stark Draper Laboratory, Inc.
Location: Tampa/Hillsborough County
FHTCC Award: $19,626  Cash Match: $19,725  In-Kind Match: $20,709
Total Project Value: $60,060
Students: 1
Faculty: 2
Abstract: This project is a collaborative effort between Draper, the USF College of Engineering and the College of Nursing to build an information system to help patients with heart failure (HF) conditions. The system includes an Android-based application, internal and external
sensors, and a backend computer with a database to store and visualize patient’s information over time.

Luer, Carl, “Tumor Cell Inhibitory Activity of Compounds Isolated from Culture Medium of Shark Immune Cells”  
Department: N/A  
Sector: Life Sciences/ Medical Technology  
Partner: MOTE Marine Laboratory  
Location: Sarasota/Sarasota County  
FHTCC Award: $50,000 Cash Match: $50,000 In-Kind Match: $50,000  
Total Project Value: $150,000  
Students: 1  
Faculty: 2  
Abstract: Advanced resources (i.e., technology and instrumentation) available through USF and Moffitt Cancer Center will be utilized in collaboration with ongoing shark immunology research at Mote Marine Laboratory to isolate compounds from cultures of shark immune cells. Compounds will be assayed at Mote for anti-tumor cell activity, and compound(s) with bioactivity will be returned to Moffitt for structural characterization.  

Mohapatra, Subhra, “Fibrous Scaffold-Induced Spheroids Mimicking Tumor Microenvironment”  
Department: Molecular Medicine  
Sector: Life Sciences/ Medical Technology  
Partner: Transgenex NanoBiotech, Inc.  
Location: Tampa/Hillsborough County  
FHTCC Award: $93,456 Cash Match: $93,457 In-Kind Match: $96,890  
Total Project Value: $283,803  
Students: 6  
Faculty: 1  
Abstract: This project will conduct a series of gene expression analyses to compare various tumoroids developed with different combinations of breast cancer cells and stromal cells. Such analyses are expected to lead to identification of tumor biomarkers that uniquely appear in different tumoroids.  

Tejada-Martinez, Andres, “Meshfree Modeling in Laminated Composites – Modification No. 1”  
Department: Civil and Environmental  
Sector: Aviation and Aerospace, Information Technology, Modeling, Simulation and Training  
Partner: Applied Composites Modeling, LLC  
Location: Winter Garden/Orange County  
FHTCC Award: $15,000 Cash Match: $15,000 In-Kind Match: $15,000  
Total Project Value: $45,000  
Students: 4  
Faculty: 1  
Abstract: This project focuses on the research and development of computer modeling techniques applicable to laminated composites in aerospace applications and the development of three-dimensional analytical models of human anatomy for medical applications.
Turos, Edward, “KeriCure Nanoparticles for Drug Delivery”
Department: Chemistry
Sector: Life Sciences/ Medical Technology
Partner: KeriCure, Inc.
Location: Wesley Chapel/Pasco County
FHTCC Award: $50,000   Cash Match: $70,500
Total Project Value: $120,500
Students: 5
Faculty: 1
Abstract: This project involves two very important aspects to further the research and product
development for KeriCure products, as well as promote diverse interdisciplinary education for
those involved academically. The first portion involves the product characterization of existing
KeriCure products, including validation of product designs via chemical, mechanical, and
analytical procedures. The second portion of this project deals with the synthetic design and
implementation of drugs or bioactive molecules into the KeriCure technology.

Wang, Jing, “Research and Training Internship for Enhanced Microwave and Millimeter-Wave
Circuit Design, Characterization and Modeling”
Department: Electrical
Sector: Modeling, Simulation and Training
Partner: Modelithics, Inc.
Location: Tampa/Hillsborough County
FHTCC Award: $23,558   Cash Match: $23,558   In-Kind Match: $25,000
Total Project Value: $72,116
Students: 3
Faculty: 1
Abstract: The area of interest for this work includes large signal non-linear electro-thermal
modeling, switch FET modeling, treatment of large high power devices, diode measurements,
phase noise measurements and dynamic load line (waveforms) measurements.

Weller, Thomas, “Additive Manufacturing Technologies - Phase 1”
Department: Electrical
Sector: Microelectronics/ Nanotechnology
Partner: Jabil Circuit, Inc.
Location: St. Petersburg/Pinellas County
FHTCC Award: $150,000   Cash Match: $150,000   In-Kind Match: $150,000
Total Project Value: $450,000
Students: 2
Faculty: 1
Abstract: The use of digital manufacturing for printing high frequency electronic devices will be
investigated. A 3D-printed cell phone antenna will be produced and compared against a
commercial handset antenna.
Weller, Thomas, “Conformal Antennas for Autonomous Supply Tracking”
Department: Electrical
Sector: Microelectronics/Nanotechnology
Partner: The Charles Stark Draper Laboratory, Inc.
Location: Tampa/Hillsborough County
FHTCC Award: $53,064  Cash Match: $53,064  In-Kind Match: $53,064
Total Project Value: $159,192
Students: 1
Faculty: 2
Abstract: In this project broadband, electronically-steerable antenna arrays will be investigated. Form factors that allow for compact stowage will be studied so that the arrays are easily transported.

Weller, Thomas, “Direct Printing of 3D Structural RF Electronics”
Department: Electrical
Sector: Life Sciences/Medical Technology
Partner: Innovatia Medical Systems, LLC
Location: Tampa/Hillsborough County
FHTCC Award: $50,000  Cash Match: $50,000  In-Kind Match: $50,000
Total Project Value: $100,000
Students: 2
Faculty: 1
Abstract: Significantly increase the project’s credibility and fundability by demonstrating fully operational prototypes of the illumination, video imaging, and mechanical subsystems.

Weller, Thomas, “Task Order 1 – Antenna and Multiplexer Design”
Department: Electrical
Sector: Microelectronics/Nanotechnology
Partner: Technology and Communication Systems, Inc.
Location: Oldsmar/Pinellas County
FHTCC Award: $8,038  Cash Match: $8,038  In-Kind Match: $8,038
Total Project Value: $24,114
Students: 1
Faculty: 1
Abstract: The University shall perform engineering services to select existing antenna and multiplexer designs for prototype fabrication by Sponsor. The University shall model and optimize the selected antenna designs and measure the antenna patterns of the prototype in an anechoic chamber.