Research Accomplishments

To understand both the research and educational achievements of this IGERT, it is important to understand the overarching integrative multidisciplinary theme. The program developed with the IGERT award, Technological Innovation: Generating Economic Results (TI:GER), was designed to address two critical needs if society is to benefit from technological discoveries: 1) Preparation of a professional workforce with the knowledge and skills needed to facilitate innovation (2) to promote and improve doctoral level research to improve the understanding of how business organizations and economic, regulatory, and legal mechanisms promote or impede innovation. Innovation in this context, thus, goes far beyond invention or discovery and involves a wide range of activities and decisions ranging from the recognition of a need or a problem through research, development, and commercialization to the diffusion and adoption of the inventions by users. The targeted students were doctoral students across programs in science, engineering, management, and economics. The context of research for these PhD programs are quite different, so the specific goals for science and engineering students are framed together and those for the management and economics students are together.

Specific research goals were (R1) to produce science and engineering dissertation research with both scientific and market relevance, and (R2) to encourage management and economic PhD student research on the determinants of technological innovation. All of the students were encouraged to supplement traditional research methods in their respective disciplines with direct observation from multidisciplinary team projects which addressed the intersection of technical, business, and legal aspects of innovation. For students from science and engineering disciplines, the point was for them to explore market and legal issues involved in technology commercialization in the context of the students? doctoral level research. Operationally, this was accomplished by participating on teams with law (JD students) and MBA students, and led the investigation of the legal and economic issues involved in practical application of their research. For the management and economics students, the idea was to expose them to doctoral level research in science and engineering, as well as a broad range of unsolved problems in innovation than those that would be apparent from the usual literature searches. Operationally, this was accomplished by their acting as team resources for the multidisciplinary teams. The basic tenet of the program for all of the doctoral students was that introducing students to issues at the intersection of technology, business, and law before they conduct their disciplinary research will significantly enhance both the scientific contribution of the research and the students? career opportunities.

R1 Programmatic Level Achievements: Fifty seven science and engineering PhD students in this program come from many disciplines across science and engineering, including many areas which are, in themselves interdisciplinary such as bioengineering and biomedical engineering, as well as
more traditional disciplines such as electrical engineering, mechanical engineering. Research in
these areas has enormous potential for socially and economically important applications of
fundamental research, but realization of this potential hinges on the ability to identify applications
and predict market impact, as well as practical issues in transferring research to industry For
science and engineering PhD students, three program achievements stand out. First, the students
uniformly reported the program led them to ?view? their research in a broader perspective. From
my perspective as a Principal Investigator, this means that the program successfully gave the
students a new view of factors to consider, not only in their research as students, but as they
progress in academic or industry research.

Second, depending on the year, 20-30 percent of the students discovered new research directions,
per se, from their participation in the multidisciplinary teams. As evidenced by select examples in 3
(below), the resulting achievements ranged from discovery of new material properties to
discoveries in areas of higher industrial value-added than the original research trajectory. Changes
in research direction occurred, for example, when teams found blocking patents in their upfront
intellectual property searches, so that the student switched his research in a non-infringing
direction. In other cases, market interviews with potential downstream users made the PhD student
aware that her/his original research was of less interest to industrial users than originally thought.
Third, one of the objectives behind R1 was to potentially speed up and/or increase applicability of
doctoral student research. Again, as evidenced by the examples in (3), a number of students were
able to license their results and several started companies to allow their results to reach the market
in a timely fashion. Not surprisingly, this was more common in the electronics and software areas
of research than biomedical, but we do have an example of such in the bioengineering area.

R2 Programmatic Level Achievements. Nine PhD students from management (6) and economics
(3) were IGERT fellows. All of these students wrote dissertations related to innovation. Two of the
students collected data from the TI:GER teams, contributing to the academic literature on the
factors that affect multidisciplinary team function. One of these won a Best Paper in Management
prize. The other students derived novel results specifically related to the diffusion of inventions
coming from universities. One of the most highly cited and influential result came from the IGERT
supported original data collection and suggests that universities contribute much more to industrial
innovation than previously thought. Most recently, student research has indentified factors
affecting nanotechnology productivity of incumbent firms in the semiconductor industry. Prior to
this IGERT none of the students in either of these PhD programs conducted research in this area.

**Educational Accomplishments**

This IGERT project had two educational goals E1 to graduate technically proficient science and
engineering PhDs with the skills and multidisciplinary perspective needed to succeed in
innovation-related careers, and E2 to expose MBA and JD students to career goals in technology,
R&D management, patent, or intellectual property law to the challenges in fundamental research
and its commercialization.

Programmatically, this IGERT project has had, and promises to continue to have, exceptional value
added for the three targeted graduate education programs targeted (Science and Engineering PhD
programs, the MBA, and JD programs). This is evidenced by the result of an external assessment of
perceived student skills (vis à vis a matched control group of students) summarized in Thursby et al. (2009) as well as the institutionalization of the core courses for the TI:GER certificate program created by the IGERT.

A number of achievements stand out. First, a two year graduate certificate program was created in which PhD, MBA, and JD students take three core classes, as a community of students, in issues related to technological innovation. The majority of exercises in each class are completed in multidisciplinary teams and the exercises involve applications of principles learned in the context of the PhD student’s research. It is this multidisciplinary team structure which essentially integrates both the cross disciplinary learning and explains the heavy reliance of the research achievements on team functioning. This should be apparent from examples given in 3 below. In their first year, students take Fundamentals of Innovation I and II which are open only to TI:GER students and cover a variety of topics in a typical sequence of activities in technology commercialization. Topics in the first semester include: issues in university-industry technology transfer, an introduction to experimental research methods in science and engineering, identification of entrepreneurial opportunities in technological environments, the role of balanced teams in technology commercialization, legal ways to protect intellectual property (including marks and secrets as well as patents) and how their effectiveness varies across industrial sectors as well as an introduction to capabilities needed to succeed in particular industries. Early in the semester, team selection and teambuilding exercises are a major focus. The major semester deliverables are (i) an intellectual property assignment related to the doctoral students’ research, and (ii) a preliminary industry analysis relevant to commercial application of that research. The intellectual property assignment includes a disclosure of an invention the PhD student expects to result from his/her research as well as a search of prior art (all publicly available information related to the inventions claims of originality, which includes patented and non-patented publications). The industry analysis focuses on an industrial application of the research including a justification of the chosen industry as the best initial application of the work. The analysis is based on projected market size and growth, industry trends using tools such as the PEST (Political Economic Social Technological) Model, and an analysis of the competition using Porter’s Five Forces Model.

The second semester covers such topics as: licensing vs. venturing, market analysis, entrepreneurial finance including a real options framework, and business association (and securities) law. The key team deliverable is a commercialization plan evaluating alternative strategies for getting research into the marketplace. The plan covers the market opportunity, value proposition, potential target customers and the technology development cycle. In addition to an industry analysis (which often changes significantly from that developed in the first semester) the commercialization plan provides: a product description, recommendations for protection of the intellectual property and the alternatives considered, competitive advantages provided by the technology, potential customers and partners in the market, and financial feasibility which can include a valuation using both discounted cash flow and real option pricing models. Towards the end of the semester a summary presentation of the commercialization plan is made to an audience that includes members of the TI:GER industry advisory board, industry mentors (including entrepreneurs and venture investors) and university faculty members.

Various faculty members from Georgia Tech, including the College of Management, and the Emory School of Law teach the TI:GER innovation course modules. Outside speakers include the leadership of the Georgia Tech Office of Technology Licensing, patent and technology attorneys, venture capitalists, and technology entrepreneurs.
The third core course, Topics in Technology Commercialization, is a capstone structured much like a consulting course. Teams evaluate business opportunities and help develop business plans and strategic licensing plans for early-stage technologies being developed in the Georgia Tech incubator. This work gives students more hands-on experience, not only in the process of technology commercialization, but also in consulting with small businesses. Additionally, depending on the progress (or lack thereof) of the PhD student's research, students build on the work in the first year by either developing a full business plan for technology based on this research, writing an SBIR application, or writing a detailed case study of their team experience.

With regard to institutionalization, all three core classes have been added to the Georgia Tech permanent course catalogue. Furthermore, Georgia Tech has agreed to fund the continuation of the program for 5 years beyond the IGERT grant end date. Operationally this means that the Provost's office has agreed to supply stipends for 10 doctoral students to participate in the program each year along with the College of Management supplying scholarships for MBA participation and funding for staff support over the period. The TI:GER program is a part of the Georgia Tech capital campaign, with the idea being that by year 5 the program will be self-supporting.

Second, the Principal Investigator leveraged the IGERT award to obtain funds from the Kauffman Foundation to support the TI:GER faculty to write a text for use in Fundamentals of Innovation I and II. This text has an exceptional value added, not only for the Georgia Tech/Emory TI:GER but also for the community at large. One of motivating factors behind the IGERT proposal in 2002 was that PhD students (and graduate students in general) represented an underserved population in terms of innovation education. This was a severe problem because these are the students who once they graduate are destined to operate either as inventors or facilitators and managers in innovation. There were several roadblocks to providing such an education—one being the institutional difficulties providing multidisciplinary education—but the other was a lack of curriculum materials appropriate for the targeted students. In particular, these students come from disparate backgrounds and rarely have knowledge of fundamental principles of disciplines other than their own. To be more specific, science and engineering students are unlikely to have taken courses in law, economics, or business. Similarly, the law students may not have studied business or economics, and business students are unlikely to have taken law courses. This presents challenges for both course delivery and curriculum materials. One solution would have been to require students to take background courses in the other disciplines but, as outlined earlier, this is rarely feasible for graduate students. The approach we took was to produce a text, which has not only benefited our students, but those at other institutions. A third major achievement, enabled by the Kauffman Grant, has been the development of multiyear workshops for faculty from other research universities on the TI:GER curriculum.

A fourth major achievement is the creation of the Roundtable on Engineering Entrepreneurship Research (REER) workshop. The REER's purpose is to bring together leading scholars from a variety of disciplines to exchange research on technology entrepreneurship. Among the topics of interest are the commercialization of technology developed from industrial or university research, as well as the university/industry interface, organizational forms (e.g. incubators, venture firms, banks, associations, industry groups), and legal and regulatory factors in technology entrepreneurship. The REER has been held 7 times since the inception of the IGERT project, and in keeping with the goal of promoting doctoral student research among management and economics PhD students has had a student session which supported the participation of 28 doctoral students.
Major Trainee Accomplishments

Numerous trainee examples support the three overarching research achievements described in part one.

The first achievement is that many trainees begin to view their research in a broader view which leads to new experiments and discoveries for pursuing different applications. Described below is an example of the first achievement of how the trainee in polymer and fiber engineering viewed her research in a broader perspective. While undergoing the process of electrospraying polymer onto linerboard facings of pulp and paper corrugated containers her preliminary findings discovered sorption of moisture vapor under refrigeration conditions was greater among the electrosprayed than even untreated paper. This work was being pursued as an alternative to current processes for waterproofing similar containers used to transport nondurable food crops. This suggested the ability to achieve barrier selectivity, preferring the transport of water vapor while inhibiting liquid water. These results pose potential for preserving food and other plant crops requiring moist air. Her exploration of the marketability concepts learned in the TI:GER program provided this broader perspective leading to new research results.

Another similar experience involved a PhD student who was working with high performance polymer nanocomposites for processing the material and characterizing the composite for aerospace applications. Initially the focus for these nanocomposites was for optimizing thermal and mechanical properties, to understand the temperatures in which the material could operate and how strong it could be. Through the industry interviews required for the TI:GER program, the student discovered a critical issue in the aerospace industry called Structural Health Monitoring (SHM) for monitoring the health and integrity of an aircraft. Current SHM methods cause a significant amount of costly downtime. However, the certain electrical properties of nanocomposites that are not present in traditional metal or polymer composites can be used as indicators of damage. The PhD's work now has a heavy focus on understanding these properties to define an alternative SHM mechanism.

The second achievement mentioned in section one involves students discovering new research directions from their participation in multidisciplinary teams. Frequently trainee research projects involve materials or technologies that can be applied in numerous applications and multiple industries. With this type of platform technology generally the student's research focuses on one application to produce the desired experimental results to form their proof of concept. With the TI:GER curriculum they are taught to look at the marketability of their application to ensure that there is a true need for the solution created. The program encourages their multidisciplinary teams to scope numerous applications and to look at issues related to marketability. This industry and market research often leads them back to the laboratory to add experiments on features required for a different application. Below are examples: A trainee project centered on shape memory polymers has the potential to be applied in numerous markets. The research is based in the Department of Material Science and Engineering and is centered on shape memory polymers and their acoustic properties. Shape-memory polymers (SMPs) have the ability to be deformed from a set shape, stored in a temporary shape and return to this ?remembered? shape upon reheating to a set temperature. The shape memory effect is an entropy-driven phenomenon that causes materials to ?remember? their original shape. The chains between the cross links untangle rapidly above the glass transition temperature of the polymer, causing mechanical deformation when a stress is
applied. To achieve the shape memory effect, this stress must be applied above this critical temperature, facilitating an unwinding of the chains of the cross-linked polymer and allowing the initial deformation. As the material cools, stereo-chemistry dictates new intermolecular interactions and locks the material into a new shape. When the material returns to a state above or near the critical temperature, random vibrations shepherd the material back to its unstressed, minimum free energy shape. SMPs have primarily been used in high cost, niche markets, such as in the field of biomedical implants, due to the high direct costs associated with them. The initial application focused on plastic bottles, however the high costs involved in their manufacturing of the new polymer material eliminated this market. The team’s market research determined that there would be a limited cost advantage to justify such a radical change in the bottle formation. They then pursued a new market opportunity for developing a tightly sealed earpiece for use in headsets and hearing aids to provide a more comfortable and closely sealed fit. Since manufacturing costs would also impact this market opportunity their research took on new dimensions causing them to find unique manufacturing processes to eliminate some of the cost barriers to market. This path also added new dimensions to do additional research on the material’s noise dampening ability. Both the manufacturing process and the noise dampening research led to led to new research publications and patent application for the new process.

? As an example, a trainee in Human-Computer Interaction (HCI), had a research project involving collaborative multimedia authoring and tagging (i.e. social media), and information visualization of video content. It does this by providing a semi-structured manual analysis system for a video, its transcript, and its annotations allowing for detailed tagging of quality issues such as validity, relevancy, and bias. The discussion arising from this complex interplay of tagging, commenting, and sourcing leads to a better contextualized and more comprehensive video for users. Additional experiments to ensure its ability to scale for real applications, such as video content used by bloggers and journalists, to analyze the quality of online political video and then aggregate and share these analyses.

? Another example is a doctoral student in electrical and computer engineering whose research is on the development of indoor localization systems, which can be thought of as ?indoor GPS?. Since the signal from GPS satellites is very weak and easily blocked by building walls and ceilings, an alternate way of determining location indoors is needed. This usually consists of generating an RF signal inside the building and using some feature of this signal (amplitude, angle of arrival, time of arrival) as a feature to determine location. In order to produce enough information in the signal to determine location, usually numerous RF emitters are required throughout the space. This student’s research is on techniques to minimize the amount of equipment needed for these types by reusing existing infrastructure. The current project he is doing uses the existing in-wall electrical wiring of a building to distribute the RF signal needed for localization.

The following quote is his answer to the question?how has TI:GER affected your research? ?The program has definitely had an impact on the direction of my research. I see problems not just as research questions now, but from the perspective of an end-user or customer for this type of system. This has driven me towards some questions that I might not have pursued before, such as how to maintain the accuracy of indoor localization systems over time without requiring user intervention for calibration.?

The third achievement involves research changes that either increasing the applicability of the research or speed up the process. Some examples follow: ? Initially a PhD student focused on developing software tools to aid the fuel cell industry without much input from industry. His initial
software tool, focused only on the various physical phenomena (i.e. electrochemistry, heat transfer, and mechanics of materials). However, after conducting market research and listening to the needs of potential consumers related to modeling and design, his team discovered that insights on certain physical phenomena (e.g. transient heat transfer inclusive of radiation) were more important than others and that a tool that indicated the economic impact of the technical innovation was needed. Based on this he changed the path of his research in two ways. First, by focusing on the radiation impact in SOFCs and abandoning the stress analysis portion of the research. Secondly, by adding a system analysis aim to his dissertation wherein he demonstrated the cost saving (or increase) of modifying components of the SOFC and/or the balance of plant. These changes have directly impacted the research resulting in a more marketable product.

Another PhD student developed a computer vision software algorithm which was very sensitive to movement. Initially the team targeted the automotive industry to integrate the software into a smart air bag product. After the team's market research they determined that this feature had limited marketability and changed their direction. The new path integrated his computer vision algorithms into a medical device designed to significantly improve the process of wound area measurement. After capturing an image of the wound the device immediately processes the image and reports the area of the wound. By using a computer vision approach, the device removes the factor of human error and greatly improves the repeatability of the measurement. Having a precise repeatable measurement is crucial in quickly determining if a wound is responding appropriately to interventions and allows wound care to be adapted if healing does not begin. This trajectory resulted in a purchase of the rights to the intellectual property by a small local investment company who has found a licensee to market this product.

The shape memory polymer research described above has resulted in a company formation with the original team members as the principals. They have secured $75,000 in grants from the Georgia Research Alliance, were awarded $100,000 National Science Foundation Phase I SBIR grant in late 2009. These grants will allow them to continue the research beyond the proof of concept and experimental stages into a marketable product in the near term.

A 2009 graduate of the TI:GER was selected as one of 13 out of 115 applications, leading scientific postdoctoral researchers by the Ewing Marion Kauffman Foundation to enter the first class of Kauffman Postdoctoral Fellows program. The program mission is to teach the Fellows how to become scientist-founders and serve as a springboard into the market, helping these innovators fulfill their potential. This trainee has already formed a company and this highly competitive fellowship will help support his efforts to take his discoveries in biomedical engineering from the lab to the market.

Below are examples meeting one of the educational goals discussed in part 2 which is to graduate technically proficient science and engineering PhDs with the skills and multidisciplinary perspective needed to succeed in innovation related careers. An example of TI:GER meeting this goal involves two of the PhDs in the Electrical and Computer Engineering (2007 and 2009 class) are currently employed by McKinsey, a prestigious management consulting company as technical consultants. Both graduates report that their TI:GER curriculum uniquely qualified them for these coveted positions in the firm where they will perform due diligence on small technology companies for mergers and acquisitions by larger firms and vet technology projects for funding opportunities.

Another example is from a company called Accelereyes whose CEO is a 2008 TI:GER PhD graduate. During his tenure in the TI:GER program this Electrical and Computer Engineering PhD candidate?s team explored many avenues for commercialization of his technology. The team won
numerous business plan competitions at Georgia Tech and across the US. The education they received in the program accelerated their ability to explore and subsequently reject a multitude of market opportunities before settling on a very successful path. Last year they won a state wide business launch completion and received $100,000 from the Georgia Research Alliance along with $250,000 of in-kind services. They are considered one of the most successful new start ups in the Atlanta community and are currently in residence at the nationally recognized ATDC, Georgia’s start up incubator. They have 14 employees and have just received a round of investment capital.

Accomplishments from the International Component

This cohort of IGERT projects did not have an international component. Nonetheless, we can report that in 2005 we put together a team of students (two biomedical engineering PhD students, an MBA, and a JD student) who conducted a project in Argentina. The inventor had two US patents on large molecules and was interested in student assessment of worldwide market opportunities.

IGERT Project Personnel and Trainees

Principal Investigator(s)

Name: Marie C. Thursby

Co-Principal Investigator(s) or Trainee/Associate Advisor(s)

Name: Margo A. Bagley
Role in Project: Trainee/Associate Advisor

Name: Margi Berbari
Role in Project: Trainee/Associate Advisor

Name: Terry C. Blum
Role in Project: Co-PI

Name: William J. Carney
Role in Project: Co-PI and Trainee/Associate Advisor

Name: Carolyn D. Davis
Role in Project: Trainee/Associate Advisor
Name: Alan D. Flury  
**Project Years Active:** 2002-2003, 2003-2004, 2007-2008  
**Role in Project:** Trainee/Associate Advisor

Name: Ben Hill  
**Project Years Active:** 2007-2008  
**Role in Project:** Trainee/Associate Advisor

Name: Kathleen Kurre  
**Project Years Active:** 2007-2008  
**Role in Project:** Trainee/Associate Advisor

Name: Anne Rector  
**Role in Project:** Trainee/Associate Advisor

Name: George Shepherd  
**Role in Project:** Co-PI and Trainee/Associate Advisor

Name: Anderson D. Smith  
**Role in Project:** Co-PI

Name: William J. Wepfer  
**Role in Project:** Co-PI

**Trainees**

Name: Ibrahiim Z. Bayaan  
**Total number of months funded:** 21  
**Project Years Active:**  
- 2004-2005 Project Year - Trainee supported for 9 months  
- 2005-2006 Project Year - Trainee supported for 12 months  
- 2006-2007 Project Year - Trainee supported for 0 months

Name: Bryan F. Bell  
**Total number of months funded:** 21  
**Project Years Active:**  
- 2004-2005 Project Year - Trainee supported for 9 months  
- 2005-2006 Project Year - Trainee supported for 12 months  
- 2006-2007 Project Year - Trainee supported for 0 months

Name: Pamela Bowlan  
**Total number of months funded:** 18  
**Project Years Active:**  
- 2007-2008 Project Year - Trainee supported for 10 months  
- 2008-2009 Project Year - Trainee supported for 8 months
Name: Lynn A. Capadona  
Total number of months funded: 5  
Project Years Active:  
2002-2003 Project Year - Trainee supported for 5 months  
Date Ph.D. Received: 05/2004

Name: Jeffrey M. Caves  
Total number of months funded: 9  
Project Years Active:  
2006-2007 Project Year - Trainee supported for 9 months

Name: Christopher R. Clark  
Total number of months funded: 21  
Project Years Active:  
2004-2005 Project Year - Trainee supported for 9 months  
2005-2006 Project Year - Trainee supported for 12 months  
2006-2007 Project Year - Trainee supported for 0 months

Name: Isaac P. Clements  
Total number of months funded: 21  
Project Years Active:  
2006-2007 Project Year - Trainee supported for 9 months  
2007-2008 Project Year - Trainee supported for 12 months

Name: Luis Jose Cruz-Rivera  
Total number of months funded: 9  
Project Years Active:  
2004-2005 Project Year - Trainee supported for 9 months  
Date left the IGERT project: 08/2005  
Left IGERT with a terminal master's degree: No  
Reason for stopping the pursuit of the Ph.D.:

Name: Cleon E. Davis  
Total number of months funded: 17  
Project Years Active:  
2002-2003 Project Year - Trainee supported for 5 months  
2003-2004 Project Year - Trainee supported for 12 months  
Date left the IGERT project: 05/2004  
Left IGERT with a terminal master's degree: No  
Reason for stopping the pursuit of the Ph.D.:

Name: Tracy A. Denison  
Total number of months funded: 18  
Project Years Active:  
2007-2008 Project Year - Trainee supported for 10 months  
2008-2009 Project Year - Trainee supported for 8 months

Name: Nicholas A. Diakopoulos  
Total number of months funded: 18  
Project Years Active:
Name: Tarek Elshazy  
Total number of months funded: 17  
Project Years Active:  
2002-2003 Project Year - Trainee supported for 5 months  
2003-2004 Project Year - Trainee supported for 12 months  
Date left the IGERT project: 04/2004  
Left IGERT with a terminal master's degree: No  
Reason for stopping the pursuit of the Ph.D.: 

Name: Virginia K. Emery  
Total number of months funded: 5  
Project Years Active:  
2002-2003 Project Year - Trainee supported for 5 months  
Date left the IGERT project: 05/2004  
Left IGERT with a terminal master's degree: No  
Reason for stopping the pursuit of the Ph.D.: 

Name: Marco G. Fernandez  
Total number of months funded: 21  
Project Years Active:  
2003-2004 Project Year - Trainee supported for 9 months  
2004-2005 Project Year - Trainee supported for 12 months  
2005-2006 Project Year - Trainee supported for 0 months  
2006-2007 Project Year - Trainee supported for 0 months  

Name: James C. Ford  
Total number of months funded: 18  
Project Years Active:  
2007-2008 Project Year - Trainee supported for 10 months  
2008-2009 Project Year - Trainee supported for 8 months  

Name: Elizabeth D. Gadsby  
Total number of months funded: 9  
Project Years Active:  
2002-2003 Project Year - Trainee supported for 5 months  
2003-2004 Project Year - Trainee supported for 4 months  
Date Ph.D. Received: 12/2004  

Name: William P. Galle III  
Total number of months funded: 18  
Project Years Active:  
2007-2008 Project Year - Trainee supported for 10 months  
2008-2009 Project Year - Trainee supported for 8 months  

Name: Christopher V. Gemmiti  
Total number of months funded: 9  
Project Years Active:  
2004-2005 Project Year - Trainee supported for 9 months
2005-2006 Project Year - Trainee supported for 0 months
2006-2007 Project Year - Trainee supported for 0 months

**Name:** Jeff Gross  
**Total number of months funded:** 12  
**Project Years Active:**  
- 2005-2006 Project Year - Trainee supported for 12 months  
- 2006-2007 Project Year - Trainee supported for 0 months

**Name:** Nimisha Gupta  
**Total number of months funded:** 21  
**Project Years Active:**  
- 2005-2006 Project Year - Trainee supported for 9 months  
- 2006-2007 Project Year - Trainee supported for 12 months

**Name:** Matthew J. Higgins  
**Total number of months funded:** 12  
**Project Years Active:**  
- 2003-2004 Project Year - Trainee supported for 12 months  
**Date Ph.D. Received:** 08/2004

**Name:** Dimitri O. Hughes  
**Total number of months funded:** 21  
**Project Years Active:**  
- 2006-2007 Project Year - Trainee supported for 9 months  
- 2007-2008 Project Year - Trainee supported for 12 months

**Name:** Ryan W. Johnson  
**Total number of months funded:** 5  
**Project Years Active:**  
- 2002-2003 Project Year - Trainee supported for 5 months  
**Date left the IGERT project:** 05/2003  
**Left IGERT with a terminal master's degree:** No  
**Reason for stopping the pursuit of the Ph.D.:**

**Name:** Ericka N. Johnson Ford  
**Total number of months funded:** 18  
**Project Years Active:**  
- 2007-2008 Project Year - Trainee supported for 10 months  
- 2008-2009 Project Year - Trainee supported for 8 months

**Name:** Brad A. Kairdolf  
**Total number of months funded:** 21  
**Project Years Active:**  
- 2006-2007 Project Year - Trainee supported for 9 months  
- 2007-2008 Project Year - Trainee supported for 12 months

**Name:** Yash M. Kolambkar  
**Total number of months funded:** 10  
**Project Years Active:**
2007-2008 Project Year - Trainee supported for 10 months
2008-2009 Project Year - Trainee supported for 0 months

Name: Kelli F. Lanier
Total number of months funded: 12
Project Years Active:
2007-2008 Project Year - Trainee supported for 12 months

Name: Shawn M. Lankton
Total number of months funded: 18
Project Years Active:
2007-2008 Project Year - Trainee supported for 10 months
2008-2009 Project Year - Trainee supported for 8 months

Name: John Melonakos
Total number of months funded: 21
Project Years Active:
2006-2007 Project Year - Trainee supported for 9 months
2007-2008 Project Year - Trainee supported for 12 months

Name: Gregory M. Mocko
Total number of months funded: 21
Project Years Active:
2003-2004 Project Year - Trainee supported for 9 months
2004-2005 Project Year - Trainee supported for 12 months
2005-2006 Project Year - Trainee supported for 0 months
2006-2007 Project Year - Trainee supported for 0 months

Name: Bryan Morris
Total number of months funded: 21
Project Years Active:
2003-2004 Project Year - Trainee supported for 9 months
2004-2005 Project Year - Trainee supported for 12 months
2005-2006 Project Year - Trainee supported for 0 months
2006-2007 Project Year - Trainee supported for 0 months

Name: Ashley W. Palmer
Total number of months funded: 21
Project Years Active:
2003-2004 Project Year - Trainee supported for 9 months
2004-2005 Project Year - Trainee supported for 12 months
2005-2006 Project Year - Trainee supported for 0 months
2006-2007 Project Year - Trainee supported for 0 months

Name: John K. Perng
Total number of months funded: 18
Project Years Active:
2007-2008 Project Year - Trainee supported for 10 months
2008-2009 Project Year - Trainee supported for 8 months

Name: Matt N. Rhyner
Total number of months funded: 21
Project Years Active:
   2005-2006 Project Year - Trainee supported for 9 months
   2006-2007 Project Year - Trainee supported for 12 months

Name: John M. Richardson

Total number of months funded: 21
Project Years Active:
   2005-2006 Project Year - Trainee supported for 9 months
   2006-2007 Project Year - Trainee supported for 12 months

Name: William Rooker

Total number of months funded: 5
Project Years Active:
   2002-2003 Project Year - Trainee supported for 5 months
   2003-2004 Project Year - Trainee supported for 0 months

Date left the IGERT project: 05/2003
Left IGERT with a terminal master's degree: No
Reason for stopping the pursuit of the Ph.D.: 

Name: Laura E. Rowe

Total number of months funded: 21
Project Years Active:
   2003-2004 Project Year - Trainee supported for 9 months
   2004-2005 Project Year - Trainee supported for 12 months
   2005-2006 Project Year - Trainee supported for 0 months
   2006-2007 Project Year - Trainee supported for 0 months

Name: Paul D. Salo

Total number of months funded: 21
Project Years Active:
   2005-2006 Project Year - Trainee supported for 9 months
   2006-2007 Project Year - Trainee supported for 12 months

Name: Todd H. Stokes

Total number of months funded: 21
Project Years Active:
   2006-2007 Project Year - Trainee supported for 9 months
   2007-2008 Project Year - Trainee supported for 12 months

Name: Sean P. Sullivan

Total number of months funded: 21
Project Years Active:
   2004-2005 Project Year - Trainee supported for 9 months
   2005-2006 Project Year - Trainee supported for 12 months
   2006-2007 Project Year - Trainee supported for 0 months

Name: Luke Ulrich

Total number of months funded: 21
Project Years Active:
2003-2004 Project Year - Trainee supported for 9 months
2004-2005 Project Year - Trainee supported for 12 months
2005-2006 Project Year - Trainee supported for 0 months
2006-2007 Project Year - Trainee supported for 0 months

Name: Leslie H. Vincent
Total number of months funded: 21
Project Years Active:
- 2003-2004 Project Year - Trainee supported for 9 months
- 2004-2005 Project Year - Trainee supported for 12 months
- 2005-2006 Project Year - Trainee supported for 0 months
- 2006-2007 Project Year - Trainee supported for 0 months

Name: Walter E. Voit
Total number of months funded: 24
Project Years Active:
- 2007-2008 Project Year - Trainee supported for 10 months
- 2008-2009 Project Year - Trainee supported for 8 months
- 2009-2010 Project Year - Trainee supported for 6 months

Name: Christopher B. Williams
Total number of months funded: 21
Project Years Active:
- 2003-2004 Project Year - Trainee supported for 9 months
- 2004-2005 Project Year - Trainee supported for 12 months
- 2005-2006 Project Year - Trainee supported for 0 months
- 2006-2007 Project Year - Trainee supported for 0 months

Name: Sebastien J. Wolff
Total number of months funded: 21
Project Years Active:
- 2003-2004 Project Year - Trainee supported for 9 months
- 2004-2005 Project Year - Trainee supported for 12 months
- 2005-2006 Project Year - Trainee supported for 0 months
- 2006-2007 Project Year - Trainee supported for 0 months

Associates

Name: Andrew Adams
Project Years Active: 2008-2009, 2009-2010

Name: Eileen M. Adams

Name: Jaimie Anderson
Project Years Active: 2008-2009, 2009-2010
Name: Scott Anderson  

Name: Irene Anestis-Richard  
**Project Years Active:** 2008-2009, 2009-2010

Name: Nick J. Ayres  

Name: Daniel Baker  
**Project Years Active:** 2007-2008, 2008-2009, 2009-2010

Name: Steven Balcof  
**Project Years Active:** 2008-2009, 2009-2010

Name: Tracy Barton  

Name: Brian Baum  
**Project Years Active:** 2008-2009, 2009-2010

Name: David Beck  

Name: Amy Beyer  

Name: Lisa Beyer  

Name: Brian Boone  

Name: Elke H. Braeutigam  

Name: Bradley M. Burman  
**Project Years Active:** 2007-2008, 2008-2009, 2009-2010

Name: Christy M. Cantwell  

Name: Natalie Christensen  
Name: Ray Cirone

Name: Ian C. Clarke

Name: Meadow Clendenin

Name: Jacob Cohen
**Project Years Active:** 2008-2009, 2009-2010

Name: Carrie Coker

Name: Michael Considine

Name: Shari J. Corin

Name: John D. Costa
**Project Years Active:** 2007-2008, 2008-2009, 2009-2010

Name: Truman J. Costello Jr
**Project Years Active:** 2007-2008, 2008-2009, 2009-2010

Name: Kristina Crockett

Name: Joshua A. Davis

Name: Betty DeLos Reyes
**Project Years Active:** 2008-2009, 2009-2010

Name: Marco Desousa

Name: Richard Driftmeier
**Project Years Active:** 2008-2009, 2009-2010

Name: Anurag Dugar

Name: P B. Duncan
**Project Years Active:** 2007-2008, 2008-2009, 2009-2010

Name: William J. Dunlay

Name: Matt d. Durell

Name: Roshal L. Erskine

Name: Janel Fadrigo

Name: Nathan L. Feld

Name: Ken S. Franklin

Name: Anne Fuller

Name: Richard H. Gaddis

Name: Mark E. Galvez

Name: Carey Gaughan

Name: Chris Gentry

Name: Kristin Gerdelman

Name: Dev A. Ghose

Name: Crystal Gilpin

Name: Kimberly R. Gordon

Name: Drew V. Greene

Name: Angela M. Gulino
Name: Jyoti Gupta

Name: Swasti Gupta-Mukherjee

Name: Laura Hall

Name: Nova Harb

Name: Justin Harper
Project Years Active: 2008-2009, 2009-2010

Name: Justin D. Helsby

Name: Shannon C. Hook

Name: Nedra Howard

Name: Sara J. Howell

Name: Laura S. Huffman

Name: James H. Hutchinson

Name: Aakash B. Jariwala
Project Years Active: 2008-2009, 2009-2010

Name: Amit S. Jariwala
Project Years Active: 2008-2009, 2009-2010

Name: Meliss Johnson
Project Years Active: 2008-2009, 2009-2010

Name: Richard Jucks

Name: Michael Kang
Name: Payal Keshvani  
**Project Years Active:** 2008-2009, 2009-2010

Name: Fawad Khan  

Name: James Kim  
**Project Years Active:** 2008-2009, 2009-2010

Name: Sandra Kim  

Name: Adam Klein  

Name: Rishi Kotiya  
**Project Years Active:** 2007-2008, 2008-2009, 2009-2010

Name: Jennifer Kwon  
**Project Years Active:** 2007-2008, 2008-2009, 2009-2010

Name: Alden K. Lee  

Name: Jeong-Ah J. Lee  
**Project Years Active:** 2007-2008, 2008-2009, 2009-2010

Name: Sharon Lee  
**Project Years Active:** 2008-2009, 2009-2010

Name: Amanda K. Leech  

Name: Jennifer Liotta  

Name: Jason M. Litowitz  

Name: Michelle Louie  
**Project Years Active:** 2008-2009, 2009-2010

Name: Jessica Lunney  

Name: Vivian Luo  

Name: J R. MacKenna
Name: David Madden
**Project Years Active:** 2007-2008, 2008-2009, 2009-2010

Name: David Magier

Name: Sonette Magnus
**Project Years Active:** 2007-2008, 2008-2009, 2009-2010

Name: Kristie Mahone

Name: Rohan U. Mandrekar

Name: Shelly E. Manning

Name: Adam Martinez
**Project Years Active:** 2008-2009, 2009-2010

Name: Adam Masarek
**Project Years Active:** 2008-2009, 2009-2010

Name: Yoshi Matsuzawa

Name: Brett Matthews
**Project Years Active:** 2008-2009, 2009-2010

Name: Patricia A. Mazini

Name: James F. McDonough

Name: Meghan K. McIntee
**Project Years Active:** 2008-2009, 2009-2010

Name: Douglas McKay
**Project Years Active:** 2008-2009, 2009-2010

Name: Christopher C. Meeks

Name: Rohit Merh
**Project Years Active:** 2008-2009, 2009-2010
Name: Ivan I. Mihailov  

Name: Jawad B. Muaddi  

Name: Mikey Mulford  

Name: Jeffrey Murray  
Project Years Active: 2008-2009, 2009-2010

Name: Deepa Nayini  

Name: Matt Nesbitt  

Name: Christopher C. Nygren  

Name: Michael S. Owens  

Name: Anil Patel  

Name: Nikhil Patel  
Project Years Active: 2008-2009, 2009-2010

Name: Elizabeth Patz-Skola  

Name: Ryan M. Payne  

Name: Blake Perdue  

Name: John Phelps  
Project Years Active: 2008-2009, 2009-2010

Name: Chris Picket  

Name: Barclay Pollard  

Name: Horace R. Priester
Name: Jozef Purdes

Name: Zhe Qu

Name: Tom Rafferty

Name: John W. Ramseur

Name: Sam B. Ransbotham

Name: Linda Ray

Name: Arvind R. Reddy

Name: Gavon A. Renfroe

Name: Jack C. Roberts

Name: R Q. Robinson

Name: Daniel Rollman

Name: Katie Rose

Name: Nancy Rosenberg
Project Years Active: 2008-2009, 2009-2010

Name: Aaron J. Rugh

Name: Jihan A. Rush

Name: Kankindi Rwego
Name: Benay Sager  

Name: Piyush Saggi  

Name: Kamran Salour  

Name: William R. Samuels  

Name: Michelle R. Schlea  
Project Years Active: 2008-2009, 2009-2010

Name: Christopher M. Scott  

Name: Jordan C. Scott  

Name: Jill V. Segal  

Name: Stephen P. Selfridge  

Name: Adam Severt  

Name: Christopher Shen  
Project Years Active: 2008-2009, 2009-2010

Name: Greg Sheridan  
Project Years Active: 2008-2009, 2009-2010

Name: Tim Shippy  

Name: David L. Silver  

Name: Jarrett Silver
Name: Jake Sisley  

Name: Edward Sloan  
**Project Years Active:** 2008-2009, 2009-2010

Name: Bernis N. Smith  
**Project Years Active:** 2007-2008, 2008-2009, 2009-2010

Name: Antoinette South  
**Project Years Active:** 2008-2009, 2009-2010

Name: Shaina Stahl  
**Project Years Active:** 2007-2008, 2008-2009, 2009-2010

Name: Joseph Staley  

Name: John L. Stallworth  

Name: Jeff H. Stewart  

Name: Ree'L Street  

Name: Andrew Strickland  
**Project Years Active:** 2008-2009, 2009-2010

Name: Erich Stuntebeck P. Stuntebeck  
**Project Years Active:** 2008-2009, 2009-2010

Name: Edward Sumner  

Name: Sohel Surani  
**Project Years Active:** 2007-2008, 2008-2009, 2009-2010

Name: Dominika D. Szreder  

Name: Elizabeth Thomas  

Name: Khalil Thomas

Name: Wayne Thompson

Name: Puja Vadodaria

Name: Andres Velarde
Project Years Active: 2008-2009, 2009-2010

Name: Varadraj N. Vernekar

Name: Mark J. Wakim

Name: Robert R. Walling III

Name: Brandon Walts

Name: Ashley H. Wilkes

Name: Branston Williams
Project Years Active: 2008-2009, 2009-2010

Name: Jamal Wilson

Name: Calvin Wingfield

Name: Ryan Witkowski

Name: Stephen Yang

Name: Jonathan Ziglar


*Melonakos, John; Pichon, E; Angenent, S; and Tannenbaum, A. (2007) Finsler Active Contours, IEEE Transactions on Pattern Analysis and Machine Intelligence, TBD, TBD.


FAucher, K M.; Wannant, S; Sun, X L.; Apkarian, R P.; and Chaikof, EL. (2006) Fabrication of a Phospholipids Membrane-Mimetic film on the Luminal Surface of an ePTFE Vascular
Graft, Biomaterials, 27(18), 3473-3481.


Wang, L; Zhao, G; Olivares-Navarrete, R; *Bell, Bryan F.; Wieland, M; Cochran, D L.; Schwartz, Z; and Boyan, B D. (2006) Integrin Beta-1 Silencing in Osteoblasts Alters Substrate Dependent Responses to 1,25-Dihydroxy Vitamin D3, Biomaterials, 27(20), 3716-25.

Wu, X; Sallach, R; Haller, C A.; Nagapudi, K; Conticello, V P.; Levenston, M E.; and Chaikof, E L. (2005) Alterations in physical cross-linking modulate mechanical properties of two-phase protein polymer networks, Biomacromolecules, 6(6), 3037-44.


Smith, A M.; Duang, H; *Rhyner, Matt N.; Ruan, G; and Nie, S M. (2006) A systematic Examination of Surface Coatings on the Optical and Chemical Properties of Semiconductor Quantum Dots, Physical Chemistry Chemical Physics, 8(33), 3895-3903.


Stokes, T. H.*, Torrance, J. T., Li H., & Wang, M. D. ArrayWiki: an enabling technology for sharing results of microarray meta-analyses and mash-ups. BMC Bioinformatics. (Accepted for Publication)


http://www.opticsinfobase.org/ol/abstract.cfm?URI=ol-34-7-962


Journal Articles in Refereed Publications


**Journal Articles in Refereed Publications**


**Journal Articles in Non-Refereed Publications**

Vikrant Chauhan, Pamela Bowlan*, Edward Miesak, Steve Kane, and Rick Trebino (2009), Single grism pulse compressor. Proc. SPIE 7203, 72030Z

Pamela Bowlan*, Ulrike Fuchs, Rick Trebino, and Uwe D. Zeitner (2009), Measuring the spatiotemporal electric field of tightly focused ultrashort pulses with submicron spatial resolution Proc. SPIE 7203, 72030X

The Carbonate Fuel Cycle. Oral presentation at The First International Forum on Multidisciplinary Education and Research for Energy Science, Tokyo Institute of Technology Global COE Program, Nikko, Japan


**Journal Articles in non-Refereed Publications**


**Journal Articles in non-Refereed Publications**

Books


Book Chapters


Patent Applications

DiMilla, PA; Halych, R; Romito, L; *Gemmiti, Christopher V.; and Odlum, K. Chamber with Adjustable Volume for Cell Culture and Organ Assist. United States Patent #6,855,542, filed February 15, 2005.


Murthy, Niren; Hao, J; Guinn, A R.; Yang, Stephen; Heffernan, M J.; and Pulendran, B. Methods and Compostions for Imaging and Biomedical Applications. US11/578,261, filed April 12, 2005.

Patent applications


This is a provisional patent and not a final patent acceptance.
Patent Applications


Conference Publications


Yang, Stephen; Lee, Sungmun; Khaja, Siraj; and Murthy, Niren. "ALiphatic Polyketals: A New Family of Polymers that Degrade into Biocompatible Diols." In Polymer Preprints, 2007 3-4.

Wilson, Jamal and Rosen, D. "Design for rapid Manufacturing under Epistemic Uncertainty." In 10th Design for manufacturing Conference, 2005 DETC.


Conference Publications


Communications Society Conference on Sensor, Mesh, and Ad Hoc Communications and Networks.


Conference Publications

Published proceedings, published contribution to a symposium, article or chapter in an edited book


Proceedings published regularly


Conference Publications

*Published proceedings, published contribution to a symposium, article or chapter in an edited book*


Proceedings published regularly


Conference Presentations

*Richardson, John M. "Does entrapment of palladium lead to "leach proof" catalysts for the Heck Reaction?." Paper presented at 18th Annual Georgia Institute of Technology Chemical & Biomolecular Engineering Graduate Student Symposium, Atlanta, GA, United States. March 23, 2006, Georgia Institute of Technology.


*Bell, Bryan F.; Majdi, N; Jo, H; Cochran, DL; and Boyan, B D. "VDR(-/-) Osteoblasts Lack Responses to Substrate-Microarchitecture Typical of Wild-type Cells." Paper presented at 35th Annual Meeting of the American Association of Dental Research, Orlando, FL, United States. March 08, 2006, American Association of Dental Research.

*Bell, Bryan F.; Majdi, N; Schwartz, Z; and Boyan, B D. "The Response of Osteoblasts to 1?,25(OH)2D3 is Regulated by the Nuclear Vitamin D Receptor." Paper presented at 13th Annual Vitamin D Workshop, Victoria, FO, Canada. April 08, 2006, Vitamin D Workshop.


*Melonakos, John; Gao, Y; and Tannenbaum, A. "Tissue Tracking: Applications for Brain MRI Classification." Paper presented at SPIE Medical Imaging, San Diego, CA, USA. February 17, 2007, SPIE.

*Kairdolf, Brad A. "Development of new Surface Coatings for Overcoming Nonspecific Binding of Quantum Dots." Paper presented at Emory-Georgia Tech CCNE NCI Site visit, Atlanta, GA, USA. March 20, 2007, CCNE NCI.


Peister, A; *Gemmiti, Christopher V.; Delo, D M.; Soker, S; Atala, A; and Gulberg, R E. "Amniotic Fluid Stem Cell Differentiation Into Osteoblasts And Chondrocytes." Paper presented at 52nd Annual Orthopaedic Research Society, Chicago, IL, USA. March 01, 2006, Orthopaedic Research Society.


*Bell, Bryan F.; Majdi, N; Jo, H; Wieland, M; Schwartz, Z; and Boyan, B D. "Osteoblast Response to Surface Microtopography is Modulated by Caveolin-1." Paper presented at 31st Annual Meeting of the Society of Biomaterials, Pittsburgh, PA, United States. April 26, 2006, Society of Biomaterials.

*Bell, Bryan F.; Majdi, N; Jo, H; Wieland, M; Schwartz, Z; and Boyan, B D. "Osteoblast Response to Surface Microtopography is Modulated by Caveolin-1." Paper presented at 52nd Annual Meeting of the Orthopaedic Research Society, Chicago, IL, United States. March 19,
Wang, L; Olivares-Navarrete, R; *Bell, Bryan F.; Majdi, N; Wieland, M; Turner, J; Cochran, DL; Boyan, B D.; and Schwartz, Z. "Integrin \(


*Rhyner, Matt N.; Smith, A M.; Agrawal, A; Ansari, D; Gao, X; Sathe, T; Ruan, G; Li, Y K.; and Nie, S M. "Biomolecular Engineering and Nanotechnology for Translational Cancer Research." Paper presented at Winship Cancer Institute Symposium, Atlanta, GA, USA. September 15, 2003, .


Conference Presentations
Kolambkar YM*, Dupont KM, Huebsch ND, Mooney DJ, Hutmacher DW, Guldberg RE (2009), Effect of Nanofiber Mesh Design on BMP-mediated Segmental Bone Defect Repair. Podium presentation at the 55th Annual Meeting of the Orthopaedic Research Society, Las Vegas, NV
Kolambkar YM*, Dupont KM, Mooney DJ, Hutmacher DW, Guldberg RE (2008), Repair of Segmental Bone Defects Using Electrospun Nanofiber Meshes. Podium presentation at the 2008 Tissue Engineering and Regenerative Medicine Conference and Exhibition, San Diego, CA
Expression in Growth Plate Chondrocytes. Abstract and Poster Presentation - Hilton Head Tissue Engineering Conference. Hilton Head, SC.


**Conference Presentations**

**Unpublished contribution to a symposium**

Fuller, A.W. (2007, June). Dynamic model of strategy formation. Atlanta Competitive Advantage Conference (ACAC) conducted at Emory University, Atlanta, GA.


Unpublished paper presented at a meeting


Thursby, M. C. (2007, July). In or out? Faculty research and consulting. Paper presented at


Thursby, M. C., Jensen, R., & Thursby, J. (2007, October). In or out? Faculty research and consulting. Paper presented at the Technology Transfer Society Meetings, Palm Desert, CA.


Trebino, R., Bowlan, P.*, & Gabolde, P. (2007). Measuring everything you've always wanted to know about an ultrashort pulse, but thought couldn't be done. Presentation at Frontiers in Optics, San Jose, CA.


Ford, E. N. J.*, Popil, R., & Kumar, S. (2008, March). Water contact and transmission properties of electrosprayed coatings, Poster session presented at the Georgia Tech Technical Symposium GT^2, Atlanta, GA.


Unpublished contribution to a symposium


Unpublished paper presented at a meeting


Poster session


Outreach Activities

Title: Article in a biotechnology trade publication
Media Outlet/Organization: Genetic Engineering and Biotechnology News
Activity Date: 05/08/2008
Description: Pam Bowlan's research on a device to directly measure complex ultrashort light pulses at and near focus was highlighted in an article.
Title: Article in a medical news publication  
Media Outlet/Organization: Medical News Today  
Activity Date: 05/11/2008  
Description: Pam Bowlan's research on a device to directly measure complex ultrashort light pulses at and near focus was highlighted in an article.

Title: Article in an independent electronic news organization  
Media Outlet/Organization: Huliq.com  
Activity Date: 05/09/2008  
Description: Pam Bowlan's research on a device to directly measure complex ultrashort light pulses at and near focus was highlighted in an article.

Title: Article in an online comprehensive source of photonics information  
Media Outlet/Organization: Photonics.com  
Activity Date: 05/12/2008  
Description: Pam Bowlan's research on a device to directly measure complex ultrashort light pulses at and near focus was highlighted in an article.

Title: Article in an online encyclopedia/resource  
Media Outlet/Organization: Azo Optics  
Activity Date: 05/09/2008  
Description: Pam Bowlan's research on a device to directly measure complex ultrashort light pulses at and near focus was highlighted in an article.

Title: Article in an online forum for science, industry, and economy  
Media Outlet/Organization: Innovations Report  
Activity Date: 05/09/2008  
Description: Pam Bowlan's research on a device to directly measure complex ultrashort light pulses at and near focus was highlighted in an article.

Title: Article in an online resource for professionals in photonics industry  
Media Outlet/Organization: Photonics Online  
Activity Date: 05/13/2008  
Description: Pam Bowlan's research on a device to directly measure complex ultrashort light pulses at and near focus was highlighted in an article.

Title: Article in an online science magazine  
Media Outlet/Organization: Science Daily  
Activity Date: 05/08/2008  
Description: Pam Bowlan's research on a device to directly measure complex ultrashort light pulses at and near focus was highlighted in an article.
Title: Article in an online science news source
Media Outlet/Organization: Physorg.com
Activity Date: 05/08/2008
Description: Pam Bowlan's research on a device to directly measure complex ultrashort light pulses at and near focus was highlighted in an article.

Title: Article in an online science news source
Media Outlet/Organization: Science Centric
Activity Date: 05/09/2008
Description: Pam Bowlan's research on a device to directly measure complex ultrashort light pulses at and near focus was highlighted in an article.

Title: Article on website containing nanotechnology & nanoscience resources
Media Outlet/Organization: Nanowerk
Activity Date: 05/08/2008
Description: Pam Bowlan's research on a device to directly measure complex ultrashort light pulses at and near focus was highlighted in an article.

Title: Article on website providing information for nanotechnology & research
Media Outlet/Organization: Nanotechwire.com
Activity Date: 05/08/2008
Description: Pam Bowlan's research on a device to directly measure complex ultrashort light pulses at and near focus was highlighted in an article.

Title: Hosted Roundtable for Engineering Entrepreneurship Research
Media Outlet/Organization: Scholars researching technological innovation
Activity Date: 11/09/2007
Description: Marie Thursby organized a conference bringing together leading scholars from a variety of disciplines to exchange research on technology entrepreneurship. Thirty individuals from five countries presented and discussed work and networked.

Title: Inside Georgia Tech's TI:GER Program
Media Outlet/Organization: StartUpLounge
Activity Date: 02/10/2008
Description: StartUpLounge is a venue for new companies and investors. Kathleen Kurre was a guest on one of their podcasts talking about TI:GER and entrepreneurship at Georgia Tech.

Title: Kauffman TIGER Workshop
Media Outlet/Organization: Multiple Institutions Including Harvard, MIT, Michigan, Arizona, Duke, and Berkeley faculty
Activity Date: 02/09/2007
Description: This was a 1.5 day seminar for faculty from other institutions focused on the benefits and challenges of the NSF IGERT TIGER. Thursby and student teams as well as faculty participated.
Title: Magazine Article Publication  
Media Outlet/Organization: Fortune Small Business  
Activity Date: 04/09/2008  
Description: Richard Gaddis, Kristina Crockett, Laura Huffman, Brad Kairdolf, and Eric Galvez were featured in an article about the 2008 Rice Business Plan Competition.

Title: Magazine Publication  
Media Outlet/Organization: R&D Magazine  
Activity Date: 05/12/2008  
Description: Pam Bowlan's research on a device to directly measure complex ultrashort light pulses at and near focus was highlighted in an article.

Title: Periodical Publication  
Media Outlet/Organization: National Science Foundation News  
Activity Date: 05/08/2008  
Description: Pam Bowlan's research on a device to directly measure complex ultrashort light pulses at and near focus was highlighted in an article.

Title: Professional Conference Presentations  
Media Outlet/Organization: Georgia Life Sciences Summit 2007  
Activity Date: 10/03/2007  
Description: TI:GER teams gave poster presentations, and Matt Rhyner and Nimisha Gupta spoke in general sessions.

Title: Story on CNN Headline News  
Media Outlet/Organization: CNN Headline News  
Activity Date: 11/17/2007  
Description: Joyti Gupta's research on a microneedle flu vaccine was highlighted on CNN. The video clip can be reached via the following link: http://warehouse.icpa.gatech.edu/microneedles-11-07.wmv

Title: Syzygy- Walter Voit  
Media Outlet/Organization: Congressional Special Session  
Activity Date: 01/28/2009  
Description: ? Congressional Special Session ? 1/28/09 o Walter Voit of Syzygy presented for the Higher Education Subcommittee

Title: Team Accelereyes  
Media Outlet/Organization: Podcast Feature  
Activity Date: 11/05/2008  
Description: ? Team Accelereyes - Podcast Feature o John Melonakos, CEO of Accelereyes o Featured in podcast produced by Startup Lounge 11/5/2008
Title: Team Accelereyes
Media Outlet/Organization: webinar
Activity Date: 02/05/2009
Description: Team Accelereyes webinar on Using Jacket and GPUs to speed up MatLab - Inside HPC February 5, 2009

Title: Team Accelereyes
Media Outlet/Organization: News Release
Activity Date: 01/30/2009
Description: Team Accelereyes News Release on AccelerEyes Announces Jacket v1.0, DE Online January 30, 2009

Title: Team CartiMesh
Media Outlet/Organization: Magazine Article Publication
Activity Date: 09/24/2008
Description: Yash Kolambkar, Ivan Mihailov, Anil Patel, and Jordan Scott were featured in an article about their presentation at the Georgia Life Sciences Summit 2008

Title: Team CartiMesh
Media Outlet/Organization: Magazine Article Publication
Activity Date: 10/02/2008
Description: Medical Devices Daily: CartiMesh may be next best knee repair on the horizon, October 2, 2008, Vol.12, No.192, Page 1

Title: Team CartiMesh and DiagNano
Media Outlet/Organization: Professional Conference Presentations
Activity Date: 09/24/2008
Description: Teams CartiMesh and DiagNano - Professional Conference Presentations at Georgia Life Sciences Summit 2008 presented in general sessions

Title: Team Diagnano
Media Outlet/Organization: Magazine Article Publications
Activity Date: 09/24/2008
Description: Richard Gaddis, Kristina Crockett, Laura Huffman, Brad Kairdolf, and Eric Galvez were featured in an article about their presentation at the Georgia Life Sciences Summit 2008

Title: Team Diagnano
Media Outlet/Organization: Magazine Article Publications
Activity Date: 10/03/2008
Description: Medical Devices Daily, DiagNano?s quantum dots offer more accurate disease detection, October 3, 2008, Vol. 12, No. 193
Title: Team Diagnano
Media Outlet/Organization: Magazine Article Publications
Activity Date: 06/01/2008
Description: Emory Lawyer, Summer 2008, TI:GER teams win big in recent competitions

Title: Team MudTadpole
Media Outlet/Organization: News Release
Activity Date: 09/05/2008
Description: Team MudTadpole Pam Bowlan News release o Measuring everything there is to know about an ultrashort laser pulse o September 5, 2008, SPIE Newsroom

Title: Workshop on Graduate Education in Technology Commercialization
Media Outlet/Organization: Law, Business, and Engineering faculty from multiple universities
Activity Date: 04/17/2009
Description: Marie Thursby, Anne Rector, and other participating TI:GER faculty presented teaching notes and best teaching practices from their respective chapters in Advances in the Study of Entrepreneurship, Innovation and Economic Growth, Volume 18

Title: Workshop on Graduate Education in Technology Commercialization
Media Outlet/Organization: Law, Business, and Engineering faculty from multiple universities
Activity Date: 05/02/2008
Description: Marie Thursby, Margi Berbari, and Anne Rector presented details of our program and encouraged participants to share best practices from their interdisciplinary programs. Faculty from other schools also presented details of their programs.

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