

Vanderbilt International



Research  
AND  
Curriculum  
GRANTS



# Vanderbilt International



JOHN RICHARDS


## Vanderbilt International Office

# RESEARCH GRANTS

The Vanderbilt International Office (VIO) Research Grants Program provides seed funding to establish selective international research collaborations and exchanges aimed at building sustainable institutional partnerships overseas. Since its inception in 2007, the grants program has supported 66 new international research collaborations among all Vanderbilt schools, involving 30 partner institutions in 15 countries. These collaborations have led to over \$5 million in external funding, patent applications, new research and training opportunities for graduate students, as well as numerous joint publications in journals around the world.

Summaries of our recent projects are included on the following pages. For additional information on the grants, visit [www.vanderbilt.edu/vio/funding/viogrants](http://www.vanderbilt.edu/vio/funding/viogrants).


## Design of 65 nm CMOS Integrated Circuits for Evaluating Soft Errors



PRINCIPAL INVESTIGATOR: **Bharat Bhuvu**, Professor of Electrical Engineering and Computer Engineering  
DEPARTMENT/SCHOOL: Electrical Engineering and Computer Science, School of Engineering  
PARTNER: Universidade Federal do Rio Grande do Sul, Brazil

This grant encourages collaboration between U.S., European, and South American researchers working on issues of radiation and space exploration. The Radiation Effects and Reliability Group (RERF), one of the largest research groups at Vanderbilt, collaborates extensively with European universities. Through this grant, Vanderbilt will expand its research to South America and initiate a collaborative research effort with Professor Fernanda Kastensmidt of Universidade Federal do Rio Grande do Sul (UFRGS), Porto Alegre, in Brazil.


## Robotic Mastoidectomy



PRINCIPAL INVESTIGATOR: **J. Michael Fitzpatrick**, Professor of Radiology and Radiological Sciences; Professor of Neurological Surgery; Professor of Computer Engineering  
DEPARTMENT/SCHOOL: Electrical Engineering and Computer Science, School of Engineering  
PARTNER: Leibniz University Hannover, Germany

This project involves developing a computer-controlled, autonomously acting robot to perform a specified surgical procedure—a mastoidectomy. Mastoidectomy is a core surgical procedure in otolaryngology because of its high frequency (over 100,000 procedures performed annually in the United States), the unique anatomy involved (vital structure encased in bone which does not deform during surgical intervention), and the surgical technique (performed using a high-speed drill). This surgery removes an infection or growth in the bone behind the ear. The research team has significant expertise in computer guidance for general surgery and otologic surgery in particular.

## Improving Access and Effectiveness of Mental Health Services for Youth Through the Internet



PRINCIPAL INVESTIGATOR: **Leonard Bickman**, Associate Dean for Research; Professor of Psychology and Human Development; Director, Center for Evaluation and Program Improvement  
DEPARTMENT/SCHOOL: Center for Evaluation and Program Improvement, Peabody College of Education and Human Development  
PARTNERS: Universities of Melbourne and Queensland, Australia

This project addresses the barriers surrounding traditional community-based outpatient mental health services for youth, including geographic isolation, availability of specialists, and stigma. Service delivery using the Internet (e-therapy) has been shown to increase access and lower costs.

This grant partially funds the initial development of a project that integrates a Web-based data collection/clinician feedback system and Internet-based treatment. Researchers will integrate two online applications—a Web-based feedback system and an e-therapy protocol—and will conduct a pilot project and develop two grant applications designed to harness the power of technology to improve children's lives.



# Exploring Collaboration in International and Intellectual Property Law



PRINCIPAL INVESTIGATOR: **Daniel Gervais**, Professor of Law;  
Co-Director of Technology and Entertainment Law Program

DEPARTMENT/SCHOOL: Technology and Entertainment  
Law Program, Law School

PARTNER: The University of Melbourne, Australia

This project works to establish lasting institutional collaboration between Vanderbilt University Law School and the Institute for International Law and the Humanities (IILaH) and the Intellectual Property Research Institute of Australia (IPRIA) at the University of Melbourne. Working together, the two institutions will develop research projects in the areas of intellectual property law and international law, as well as explore possible collaboration in business and environmental law. Established in 2002, IPRIA is the largest intellectual property center in Australasia. It is a collaborative effort involving the Faculty of Economics and Commerce, Melbourne Law School and Melbourne Business School.



# Education Policy in Brazil and the United States



PRINCIPAL INVESTIGATOR: **Stephen Heyneman**,  
Professor of International Educational Policy


DEPARTMENT/SCHOOL: Leadership, Policy, and Organizations,  
Peabody College of Education and Human Development

PARTNER: University of São Paulo, Brazil

Brazil and the United States have federal education systems with many similar problems and dilemmas—achievement gaps between rich and poor, black and white, north and south, city and country; inefficiencies at both higher education and K–12 levels; problems of overlapping governance; curricular quality; dropouts and repetition; urban ghettos where students appear to lack a desire to learn. Both have multiple layers of education authorities—municipal, county, state, and national; both have high ambitions to overcome inherited impediments and improve efficiency, quality, and equity and hence improve prospects for economic growth.

This project involves collaboration on education policy between Peabody College of Education and Human Development at Vanderbilt University and the Faculty of Economics, Administration and Management at the University of São Paulo (USP), Brazil.

# Climate Change Adaptation: Flood Impacts and Perceptions



PRINCIPAL INVESTIGATOR: **George Hornberger**,  
University Distinguished Professor of Engineering;  
Director, Vanderbilt Institute for Energy and Environment

DEPARTMENT/SCHOOL: Civil and Environmental Engineering,  
School of Engineering


PARTNERS: National Building Research Organization (NBRO),  
Sri Lanka and University of Moratuwa, Sri Lanka

Vanderbilt is collaborating with the civil engineering department at the University of Moratuwa (UM), Sri Lanka, to assist the National Building Research Organization (NBRO) in exploring impacts of climate change and implement necessary action for effective adaptation involving stakeholders. NBRO is a multi-disciplinary research institute in the Ministry of Disaster Management and Human Rights, Sri Lanka.

NBRO's primary research domain includes risk assessment and reduction strategies. NBRO has been involved in developing standards, guidelines, and educational material to adapt to and prevent impacts from disasters (NBRO, 2010). The collaborative project primarily focuses on investigating flood and related impacts, and eliciting essential human dimensions related to adapting to climate change.



## New Research in Slavery and Atlantic World History in Brazil and the United States



PRINCIPAL INVESTIGATOR: **Jane Landers**,  
Professor of History

DEPARTMENT/SCHOOL: History, College of Arts and Science

PARTNERS: University of São Paulo, Universidade Federal  
Fluminense, Universidade Estadual de Campinas, Brazil

Building on Vanderbilt's long history of Brazilian studies, this grant examines new research in slavery and Atlantic history in Brazil and the United States. Researchers from University of São Paulo (USP), Universidade Federal Fluminense, and Universidade Estadual de Campinas will conduct workshops on "Slavery and the Atlantic World" at Vanderbilt and USP. The workshops are designed to share current research with interested faculty and graduate students from each of the contributing universities.



## Research Collaboration in NPY Receptors

PRINCIPAL INVESTIGATOR: **Jens Meiler**, Assistant Professor of Chemistry and Pharmacology  
 DEPARTMENT/SCHOOL: Chemistry, College of Arts and Science  
 PARTNER: Leipzig University, Germany



This grant supports workshops at Leipzig University and Vanderbilt involving five to seven visiting faculty from each institution. Research topics include the development of small molecule modulators of the Human Neuropeptide Y (NPY) 4 receptor as a novel strategy for the treatment of obesity and study of the structure, dynamics, and interactions of the Human Neuropeptide Y 2 receptor.

NPY is an abundant neuropeptide in the mammalian central nervous system regulating food intake, blood pressure, anxiety-related behaviors, and stress. NPY receptors are potential targets for treatment strategies against obesity or cancer. These workshops are a critical step in realizing the vision of this long-term collaboration, including application for external funding. Additionally, the partnership hopes to initiate a faculty exchange and short-term undergraduate exchange.

## Politics, Poetics, and Representation



PRINCIPAL INVESTIGATOR: **Vesna Pavlovic**, Assistant Professor of Art  
 DEPARTMENT/SCHOOL: Art, College of Arts and Science  
 PARTNER: University of São Paulo, Brazil

A group of faculty from art, anthropology, and philosophy are working with colleagues from the University of São Paulo (USP) School of Visual Art and Communications to establish a research collaboration and open possibilities for faculty, student, and curriculum exchange. They are looking at different ways to discuss the city and its positions in relation to the representation of history, place, culture, architecture, urban environment, and cultural and religious responses to climate change. The project includes workshops at USP and Vanderbilt.

## Study of Organizational Supports for Reforming Middle School Mathematics



PRINCIPAL INVESTIGATOR: **Thomas Smith**, Associate Professor of Public Policy and Education  
 DEPARTMENT/SCHOOL: Leadership, Policy, and Organizations, Peabody College of Education and Human Development  
 PARTNERS: Beijing Normal University, China; University of Melbourne, Australia

This collaboration extends an existing project conducted in four large urban school districts in three U.S. states. Cross-cultural comparisons of classroom practices support the project's capacity to address cultural difference in the goals, methods, and practices of reform. The primary goal of this research is to investigate, test, and refine a set of conjectures about support structures that enhance the impact of districts' adoption of a reform-oriented mathematics curriculum, as well as the professional development that supports the curriculum's implementation, on mathematics teachers' instructional practices, pedagogical content knowledge, and student achievement.



RUDI KUHN

## Discovery of Giant Planets Orbiting Bright Stars



PRINCIPAL INVESTIGATOR: **Keivan Stassun**,  
Associate Professor of Astronomy; Director,  
Vanderbilt Data-Intensive Astrophysics;  
Co-Director, Fisk-Vanderbilt MA-PhD Bridge Program

DEPARTMENT/SCHOOL: Physics and Astronomy,  
College of Arts and Science

PARTNER: University of Cape Town, South Africa

The discovery of planets around other stars in the mid-1990s ushered in a completely new field in astronomy. Most of the planets discovered to date have been detected by their gravitational influence. A more fruitful technique for learning more about the planets themselves is the transit method, in which millions of stars are monitored over the course of months or years, and astronomers search for stars whose light briefly dims in a way that indicates that it was periodically eclipsed by a planet. The power of the transit method is magnified in cases where the planet's host star is especially bright.

KELT-South, which stands for Kilodegree Extremely Little Telescope, will search the brightest stars for transiting planets, which will be the most scientifically valuable of all extrasolar planets. KELT-South was constructed at Vanderbilt and has been installed at its final location in Sutherland, South Africa. The placement of KELT-South in South Africa provides a vantage point for searching for planets around stars that are only seen from the Southern hemisphere. This grant supports a graduate student from the University of Cape Town and involves him directly in the data reduction and analysis side of the KELT-South project at Vanderbilt.

## Chemistry and Biology of Natural Products: Leads in Anticancer Drug Discovery



PRINCIPAL INVESTIGATOR: **Gary Sulikowski**,  
Professor of Chemistry

DEPARTMENT/SCHOOL: Chemistry, College of Arts and Science

PARTNER: University of Melbourne, Australia

This grant will bring Professor Mark Rizzacasa from the University of Melbourne to Vanderbilt to present a short course on organic synthesis to graduate students in chemistry and pharmacology as well as staff scientists in the Vanderbilt Program in Drug Discovery and the VICB Synthesis Core. Professor Rizzacasa has recently developed an efficient synthesis of silvestrol, a potent anticancer agent isolated from extracts of a woody plant found in Malaysia.

This natural product has generated considerable interest as a lead for the development of a new anticancer drug. It has shown excellent activity in vitro and in vivo against human breast and prostate cancer. Professor Rizzacasa's visit will allow in-depth exploration of collaborative opportunities with Vanderbilt faculty that could advance silverstrol and related compounds toward the status of a clinical candidate in cancer therapy.



FOREST AND KIM STARR

# Studies of the Effects of Irradiation-Induced Disorder in Diamond Novel Carbon-Based Materials and III-V Semiconductors

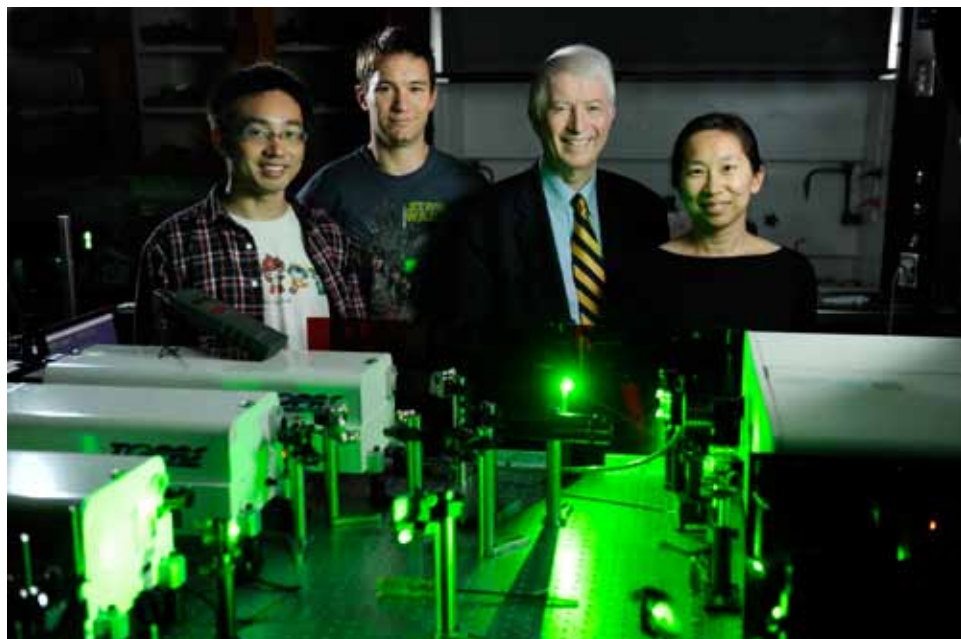


PRINCIPAL INVESTIGATOR: **Norman Tolk**, Professor of Physics;  
Director, Center for Molecular and Atomic Studies at Surfaces

DEPARTMENT/SCHOOL: Physics and Astronomy,  
College of Arts and Science

PARTNER: University of Melbourne, Australia

Physics faculty from Vanderbilt and Melbourne will study the effects of irradiation damage in novel electronic devices. Discussions on pump-probe techniques, irradiation effects, novel carbon materials growth, and nanoscale III-V semiconducting crystals are expected to lead to high impact research.



## Vanderbilt International Office

# CURRICULUM GRANTS

As part of the continuing effort to enhance the undergraduate learning experience, the VIO Curriculum Grants Program provides support for sustainable initiatives that integrate substantial global content into new or existing courses in the undergraduate curriculum. For more information about the grants, visit [www.vanderbilt.edu/vio/funding/curriculum](http://www.vanderbilt.edu/vio/funding/curriculum).

# Creation of a Brazilian Studies Concentration



PRINCIPAL INVESTIGATOR: **Jane Landers,**  
Professor of History  
DEPARTMENT/SCHOOL: History, College of Arts and Science

In recognition of Vanderbilt's historic ties to Brazil, at the recommendation of the Center for Latin American Studies' National Advisory Board, and with the support of CLAS Director Ted Fischer, the Brazilianist faculty is creating an interdisciplinary Brazilian studies concentration, and subsequently, a Brazilian studies minor. Both will build on a new core course, Introduction to Brazilian Studies, and will draw on existing courses with content on Brazil.

Two new courses, Race, Gender, and Nation in Latin America and African Religions in the Atlantic World, add new content to Brazilian studies and showcase the international expertise and perspectives of faculty from the College of Arts and Science and Peabody College's Department of Leadership, Policy, and Education. In addition, the project aims to enhance the publicity and recruitment for Brazilian studies through enhanced website visibility, a Brazilian studies speakers series and cinema series, and events during Brazil Week and Black History Month.



# Internationalizing American Studies at Vanderbilt



PRINCIPAL INVESTIGATOR: **Ifeoma Nwankwo,**  
Associate Professor of English  
DEPARTMENT/SCHOOL: American Studies,  
College of Arts and Science

This project aims to integrate international content into the American studies program curriculum through project-focused courses, scholarly research, and direct engagement with the multicultural communities of Nashville. In these new courses, students gain knowledge about the international roots and routes of Nashville's communities through hands-on, ears-on, and eyes-on learning. With guidance from course faculty, they conduct oral history interviews, undertake archival research, compile literature reviews, and produce research projects that will be made available to the rest of the Vanderbilt community and the public at the conclusion of the course.

Based on the information generated through the courses, teams of students, faculty, and media professionals will then create digital information packages that can be distributed to and utilized by other Vanderbilt faculty as well as by local and international K-12 teachers. As part of this new curricular framework, the American studies international courses will continue through 2011, and will include courses such as Black Nashville and Latino Nashville.



## Planning Project for International Biomedical Engineering Studies

PRINCIPAL INVESTIGATOR: **Cynthia Paschal**,  
Associate Professor of Biomedical Engineering  
DEPARTMENT/SCHOOL: Biomedical Engineering,  
School of Engineering

This planning project for international biomedical engineering studies (IBMES) examines focused, biomedical engineering (BME)-specific issues relevant to the development of a Vanderbilt University School of Engineering (VUSE)-wide international program. New international content will be added by including materials in key required core and targeted BME elective courses, developing recommendations for selection of electives such as foreign language or cultural competency courses, cultivating international foci for senior design projects, and examining how to increase the engineering impact of time BME students spend abroad.

This project is expected to yield a program by which students 1) experience functioning as or with an engineer while in a foreign culture; 2) complete a BME design project either involving collaboration with an international partner or focusing on a system or device for use in another (non-US) culture; 3) be able to articulate similarities and differences in the BME technology needs; 4) have knowledge of practices and infrastructure in at least one foreign culture versus the U.S.; 5) demonstrate competence in a foreign language.



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