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## Jump-Starting New Directions in Research

### Thirteen USC engineers awarded Zumberge interdisciplinary grants

October 30, 2007 — Thirteen USC engineers with full or joint appointments in the Viterbi School of Engineering have been awarded 2007 Zumberge interdisciplinary research grants by the Office of the Vice Provost for Research Advancement.

The winning projects, submitted by teams of faculty from different schools and disciplines, focus on subjects ranging from quantum computing and the development of new educational technologies to ultrasonic image-guided surgery.

The James H. Zumberge Research and Innovation Fund, established by the former university president and renamed in his honor in 1991, promotes research at USC through two types of awards: individual and interdisciplinary.

The interdisciplinary awards were expanded in 2007 thanks to an infusion of funds from the Office of the Provost. The awards, funded by a total of \$560,000 this year, now include smaller awards that range in value up to \$10,000 and larger grants worth up to \$50,000.

“The Academic Senate’s University Research Committee carefully reviewed the Zumberge program in light of revisions to the USC Strategic Plan,” said Randolph Hall, vice provost for research advancement, who is also a member of the Viterbi School faculty. “We now have a program that invests in faculty ideas for creating and building research centers and initiatives, especially those focused on issues of great societal import, such as heart disease, aging and urban violence.”

The smaller awards, Hall noted, are a new feature of the program that can be applied for year-round. “With these, we can respond much more quickly, often within a month, to faculty ideas. I’ve found that the smaller grants are often all the faculty need to jump-start an effort,” he said.

Competition for the large grants was intense, with only about one out of four proposals receiving funding in 2007. But about two out of three of the small award proposals were funded this year, a strong success rate based in part on the fact that most faculty discussed the proposals with Hall’s group before submitting them, he said. Some of the grants were given out in January, while a second set was announced in fall.

In the most recent funding round, \$50,000 was granted for the “Interdisciplinary Technology Center for Child-Centric Societal Applications” led by Shrikanth Narayanan, a professor of electrical engineering and computer science at the USC Viterbi School of Engineering with joint appointments in linguistics and psychology at USC College. The USC Rossier School of Education’s Robert Rueda and Gayla Margolin and Jo Ann Farver, both of the USC College psychology department, serve as co-principal investigators.

“This award will support the work required to submit a major proposal to the National Science Foundation for the creation of a technology center focused on urban youth at USC,” Narayanan said. “It will enable us to do initial application designs and pilot studies as well as link faculty research on topics like urban education, urban health and urban violence.”



Shrikanth Narayanan



Jesse Yen

Other newly funded projects include a center for quantum information processing, a center for digital arts and humanities scholarship, a project on the relationship between aging and cancer, and one on novel techniques for image-guided surgery.

A key feature of the award program is a requirement that applicants provide a detailed plan for seeking future external funding to sustain and expand their efforts.

"A Zumberge award is not a substitute for writing proposals to outside agencies," Hall said. "It is a resource for helping already successful faculty move their research in innovative, new interdisciplinary directions."

### Award Winners in Engineering

#### Large Grants: Up to \$50,000

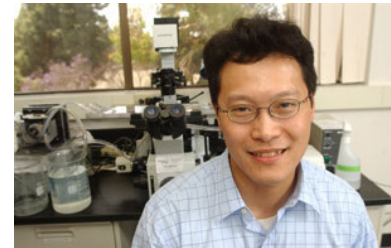
Beth Fisher, biokinesiology and physical therapy, School of Dentistry; University Professor **Michael Arbib**, computer science and biomedical engineering, USC Viterbi School of Engineering; and **Richard Leahy**, electrical engineering and biomedical engineering, USC Viterbi: "Exercise-Induced Neuroplasticity in Individuals with Parkinson's."

**Tzung Hsiai**, biomedical engineering, USC Viterbi; Fengzhu Sun, biological sciences, USC College; Enrique Cadenas, pharmacology and pharmaceutical sciences, USC School of Pharmacy; Kelvin Davies, gerontology and molecular biology, USC Davis School of Gerontology; Howard Hodis, medicine and preventive medicine, Keck School; and Mark Barr, surgery, Keck School: "Cardiovascular Research Core at USC."

**Daniel Lidar**, chemistry, USC College; Stephan Haas, physics, USC College; and **Todd Brun**, electrical engineering, USC Viterbi: "Center for Quantum Information Science and Technology."

**Shrikanth Narayanan**, electrical engineering and computer science, USC Viterbi School; Robert Rueda, educational psychology and technology, USC Rossier School of Education; Gayla Margolin, psychology, USC College; and Jo Ann Farver, psychology, USC College: "Interdisciplinary Technology Center for Child-Centric Societal Applications."

**Jesse Yen**, biomedical engineering, USC Viterbi; Brent Liu, radiology, Keck School; and Shirin Towfigh, surgery, Keck School: "Use of Ultrasound for Image-Guided Surgery."



Tzung Hsiai

#### Small Grants: Up to \$10,000

Anne Balsamo, interactive media, Cinematic Arts; Doug Thomas, communication, USC Annenberg School for Communication; and **Milind Tambe**, computer science, USC Viterbi: "Cultivating Interdisciplinary Technology Innovation: Collaboratory for Technology and Culture at USC."

**Henryk Flashner**, aerospace and mechanical engineering, USC Viterbi; **Jill McNitt-Gray**, kinesiology and biological sciences, USC College; Xiaoming Wang, biological sciences, USC College; and Reyes Enciso, craniofacial sciences and therapeutics, Dentistry: "Computation of Loads on the Musculoskeletal Systems of Humans and Animals Using 3-D Modeling."

**Tomlinson Holman**, production, Cinematic Arts and USC Viterbi, and Joanna Demers, music history and literature, USC Thornton: "Center for Sound at USC."



Toke Hoppenbrouwers, clinical pediatrics, Keck School, and **Michael Khoo**, biomedical engineering, USC Viterbi: "Late Emergence of Circadian Heart Rhythm in Indonesian Infants."

**Gerard Medioni**, computer science, USC Viterbi, and Scott Fisher, interactive media, Cinematic Arts: "USC Games Institute."

Robert Seeger, oncology, Keck School; Anat Erdreich-Epstein, pediatrics, Keck School; and **Antonio Ortega**, electrical engineering, USC Viterbi: "Biology and Therapy of Pediatric Brain Tumors."

Michael Khoo