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## SASHA DEVORE, JIANPING FU, AND DARREN WHITEN NAMED RECIPIENTS OF 2007 PEAKE AWARDS

For Immediate Release

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Contact: William Smith, Assistant

Director for Finance and Sponsor Relations

Phone: +1.617.253.5621

Email: [whs@mit.edu](mailto:whs@mit.edu)

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The Research Laboratory of Electronics (RLE) at the Massachusetts Institute of Technology (MIT) announces that Ms. Sasha Devore has been awarded the first Helen Carr Peake Research Assistantship, while Mr. Jianping Fu and Dr. Darren Whiten have won Helen Carr Peake Research Prizes for 2007.

Ms. Devore, a doctoral student in the Harvard-MIT Speech and Hearing Science Bioscience and Technology Program (SHBT), has been awarded the Helen Carr Peake Research Assistantship for September 2007 through August 2008. Ms. Devore's doctoral research is conducted at the Eaton-Peabody Laboratory (EPL), under the supervision of [Dr. Bertrand A. R. Delgutte](#) of RLE and EPL.

Ms. Devore's research concerns the neural mechanisms for hearing in reverberant rooms. She is the first to systematically examine neural responses in environments that include realistic reflections. Understanding these mechanisms may lead to better assistive technology for hearing impaired listeners, who often have trouble in reverberant environments, and to better automatic speech recognition systems, for which reverberation is also a major problem. Ms. Devore's neural-response data—from anesthetized cats—have been correlated with human behavioral studies, through a collaboration with Dr. Barbara Shinn-Cunningham's group at Boston University. She presented this work at the 2006 International Symposium on Hearing. Ms. Devore is currently establishing an experimental setup to make measurements on unanesthetized rabbit preparations, which will obviate any concerns about the effects of anesthesia on neural responses.

Mr. Fu is a Mechanical Engineering doctoral student whose research has been supervised by Prof. Jongyoon Han in RLE's Micro / Nanofluidic BioMEMS Group. Mr. Fu's work addresses the design and construction of nanofluidic molecular filter devices that allow efficient size separation of proteins and DNA samples. In addition, he studied the molecular sieving processes that are used in these systems, connecting their performance to first-principles physical theories. Mr. Fu's Anisotropic Nanofilter Array, which allows continuous-flow size separation of proteins and other small molecules, is expected to be useful in the fractionation of complex protein mixtures. His research has been published in Physical Review Letters, Applied Physics Letters, and Nature Nanotechnology. Professor Robert Austin of Princeton University, in his introduction to Mr. Fu's Nature Nanotechnology article on the Anisotropic Nanofilter Array, wrote that this process "can be used to separate a vastly wider range of materials than previous techniques... There is significant potential for further development... This is a powerful idea."

Dr. Whiten completed his doctorate in Health Sciences and Technology (HST) in February 2007, with a dissertation that was supervised by Dr. Donald Eddington of RLE and MEEI. Dr. Whiten's research was aimed at understanding—and predicting—

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the variability in cochlear implant performance experienced across a population of patients. His dissertation developed techniques to formulate a computational model of deceased patients' peripheral auditory system, based on their histologically-processed temporal bone. Using a four-step modeling approach, he successfully predicted the electrically-evoked compound action potential waveforms—measured during the patient's lifetime—with his patient-specific model. Dr. Whiten's research has, as its long-term goal, developing patient-specific models for living patients that will relate their anatomy/physiology to their performance with a cochlear implant. This would allow scientists and engineers who are engaged in cochlear implant research and development to focus on design changes that address specific limitations. Dr. Whiten's research has been presented at the 2003 and 2005 Conferences on Implantable Auditory Prostheses, and is the basis for a U.S. patent application.

The selections of the award recipients were made by a committee consisting of [Professor Dennis M. Freeman](#) (MIT/RLE), [Professor Jeffrey H. Shapiro](#) (MIT, Director RLE), Professor M. Charles Liberman (Harvard, Director EPL), [Professor William T. Peake](#) (MIT/RLE/EPL) and [Professor John L. Wyatt](#) (MIT/RLE).

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