



HIGHLIGHTS:

Scientists in the newly formed Minimally Invasive Surgical Technology Institute at Cedars-Sinai Medical Center are working to develop a new generation of advanced surgical tools and procedures. Minimally invasive technologies, robotic surgery, optical imaging and gene and cellular “nano” therapy are major points of focus for the Institute, which is funded by a \$1 million grant from the U.S. Navy. The Institute is led by Daniel L. Farkas, Ph.D., who has also been named vice chairman for research of Cedars-Sinai’s Department of Surgery.

**NAVY GRANT LAUNCHES MINIMALLY INVASIVE SURGICAL TECHNOLOGIES
INSTITUTE AT CEDARS-SINAI, BIOPHYSICIST DANIEL FARKAS NAMED DIRECTOR**
*Institute to Develop New Generation of Minimally Invasive Surgery Tools and Imaging Methods
Specifically for Advanced Therapy*

LOS ANGELES, CA (Mar. 5, 2003) - Scientists at Cedars-Sinai Medical Center will work closely with clinicians to develop a new generation of minimally invasive tools and techniques at the hospital’s newly created Minimally Invasive Surgical Technology Institute. The Institute was established through a \$1 million grant awarded by the Office of Naval Research in November 2002 and internal contributions from Cedars-Sinai.

Under the direction of biophysicist and Fulbright scholar Daniel L. Farkas, Ph.D., the Institute brings together a scientific research group, a pre-clinical facility and a clinical assessment team, all focusing collaboratively on the development, testing and introduction of noninvasive technologies into everyday surgical practice.

“My role is to connect the right people and provide support on the scientific, technological and financial fronts,” says Dr. Farkas, who is also vice chairman for research of Cedars-Sinai’s Department of Surgery. “For me, the greatest excitement and the most fun come from bringing together top-tier professionals to design and build much better tools to put in surgeon’s hands.”

According to Achilles A. Demetriou, M.D., Chair of Cedars-Sinai’s Department of Surgery and initiator of the Institute, the facility will also be attractive for industry, supporting research relevant to the development of new approaches and products for clinical intervention.

“The new Institute will concentrate on the development of innovative methods that will minimize negative outcomes following major surgical operations and create new tools for more precise diagnosis and treatment,” he said. This will be accomplished by integrating *in vivo* imaging-guided navigation systems, a robotic operating room environment, as well as tissue engineering, fiberoptic, microchip, photonic and other technologies to optimize medical care delivery.

Dr. Farkas, who was born in Romania and moved to Los Angeles from Pittsburgh to accept the Cedars-Sinai post, was most recently, simultaneously, scientific director of the NSF national science and technology center at Carnegie Mellon University; associate director, Pittsburgh Tissue Engineering Initiative; and professor of bioengineering and pathology, University of Pittsburgh.

The Cedars-Sinai Institute's first project, entitled "Experimental Studies in Minimally Invasive Surgical Technology," is a catalyst for the contributions Dr. Farkas and his team hope to make in the clinical arena, where the rise in gene and laser therapy is heralding the need for even more sophisticated imaging and surgical tools.

"For regenerative medicine, for instance, we need to know how to put stem cells into the body and follow them, in a complex environment" explains Dr. Farkas, who will be supported by a core staff of 12 researchers. "Even with infinite amounts of money to fund such procedures, the tools don't exist. Someone will have to develop them. That is our role at the Institute."

With the funding and labs now in place, the Dr. Farkas and his team will begin work on several research projects, including (1) an investigation of whether liver stem cells derived from adult bone marrow can be used to salvage failing livers after transplant, (2) development of a portable, imaging-assisted endotracheal intubation system, (3) a noninvasive method of monitoring intracranial pressure through imaging in the eye, (4) hyperspectral surgical pathology, (5) multimodality imaging of wound healing and (6) femtosecond laser-induced genetic manipulation.

The trend in minimally invasive techniques, or "keyhole surgery," and noninvasive approaches has led to an emphasis on these procedures and making smaller holes in the body. "At a much finer level, with gene therapy, we need a very thorough understanding of how to insert and manipulate *cellular* material," states Dr. Farkas. "We need different tools. It's really nanosurgery. Some gene therapy has had bad outcomes because the delivery vehicle failed; it needs to be simple, efficient, controllable."

Dr. Farkas believes the most promising direction relies on mesoscopic optical imaging (yielding microscopic resolution within the body) and lasers, combined with established MRI, ultrasound and positron emission to guide the surgeon. These imaging tools are now in academic, but not clinical use in institutions as Harvard University, MIT, Stanford and University of California-Irvine.

"For the good of the healthcare industry, the academic and medical communities need to come together," explains Dr. Farkas. "Research is the vehicle for funding, but ultimately we want to serve the clinical community by putting new and better tools and techniques into the hands of clinicians."

Cedars-Sinai Medical Center is one of the largest nonprofit academic medical centers in the Western United States. For the fifth straight two-year period, Cedars-Sinai has been named Southern California's gold standard in health care in an independent survey. Cedars-Sinai is internationally renowned for its diagnostic and treatment capabilities and its broad spectrum of programs and services, as well as breakthrough biomedical research and superlative medical education. Named one of the 100 "Most Wired" hospitals in health care in 2001, the Medical Center ranks among the top 10 non-university hospitals in the nation for its research activities.
