LASER
BECKMAN LASER INSTITUTE

IN THE NEWS

SUMMER/FALL 2003

LAMMP: CONGRATS ON RENEWAL

NIH BIOMEDICAL TECHNOLOGY CENTER AWARDED $5.4 MILLION

In May 2003, the Laser Microbeam and Medical Program (LAMMP) was awarded its 5th competitive 5-year renewal for a total of $5.4 million. LAMMP is a National Institutes of Health (NIH) Biomedical Technology Resource Center in the Beckman Laser Institute supported by the National Center for Research Resources (NCRR). LAMMP is dedicated to the use of lasers and optics in biology and medicine and supports activities in technological research and development, collaborative research, and training/dissemination. With its 5th renewal, LAMMP will emphasize its unique capabilities to facilitate "translational" research by rapidly moving basic science and technology discoveries from "benchtop to bedside." This will be accomplished by combining state-of-the-art optical technologies with in-house facilities in cellular and tissue engineering, animal models and human subjects.

LAMMP team: (back row) Kevin Burns, David Cuccia, Zhongping Chen, Bruce Tromberg, Vasan Venugopalan, Jerry Spanier, Sean Merritt, Stefan Carp, Mike Papac; (middle row) Roman Zorin, Jangwoen Lee, Montana Compton, Debbi Gordon, Tatiana Krasieva, Natasha Shah, Brian Hill, Joon You, Ani Mazumdar; (front row) Babak Naffas, Wendy Tanamai, Amanda Fedyk, Albert Cerussi, Chung-Ho Sun, Nzola DeMagalhaes, Carol Hayakawa; (not pictured: Jeff Andrews, Fred Bevilacqua, Richard Diaz, Tony Durkin, Linda Li, Leacky Liaw, Sheng-Hao Tseng and Aikaterini Zoumi).

HISTORY OF LAMMP

The LAMMP facility was founded in 1979 by Michael Berns, Ph.D., as the Laser Microbeam Program (LAMP) with the goal of developing specialized laser microbeam technologies for selectively altering small regions of living cells or embryos in order to study their function. In its 4th renewal, LAMMP was re-organized with a new director, Bruce Tromberg, Ph.D., and was designed to emphasize fundamental

(LAMMP continued on p. 3)

Newsbriefs

BRP GRANT AWARDED TO CHEN

Associate Professor Zhongping Chen, Ph.D., was recently awarded a Bioengineering Research Partnership (BRP) grant for $2.9 million from the National Cancer Institute to develop a Micro-Electro-Mechanic System (MEMS) technology for optical biopsy. This project is a collaborative effort with UCIMC physician, Dr. Kenneth Chang, UCI Engineering faculty, Drs. G.P. Li and Mark Bachman, and UC Davis Engineering faculty, Dr. Norman Tien.

BLI RECEIVES UCIMC GRANT

The Beckman Laser Institute will be receiving a grant from the UCI Medical Center Associates at a Grants Award ceremony to be held at the UCI Medical Center on October 8, 2003. The grant will help Orange County children undergo laser surgery to remove port wine stain birthmarks. Port wine stains are the result of abnormal blood vessel growth beneath the skin that occurs in an estimated three infants per 1,000. When left

(additional Newsbriefs continued on p. 8)

Arnold Beckman: A Man of Honor

by Michael W. Berns, Ph.D.
Arnold and Mabel Beckman Professor

On March 28, 2003, the Zoological Society of San Diego hosted a dinner to honor Dr. Arnold Beckman with the Society's prestigious Conservation Medal. Dr. Beckman was selected for his outstanding generosity in making possible the future Arnold and Mabel Beckman Center for Reproduction of Endangered Species (CRES) which will open at the Wild Animal Park in early 2005. The Arnold and Mabel Beckman Foundation gave the Zoological Society the largest grant in its 86-year history, $7.5 million, to construct the 49,000 sq. ft. center. Although the Beckman Foundation has given more than $350 million in support of scientific research and education, the CRES grant is its first in the field of conservation science.

I was privileged to be asked to make some personal comments about Dr. Beckman at the dinner. I tried to give the audience an essence of the man. He has received just about every honor that this country can bestow: the Presidential Medal, the National Technology Medal, the Ben Franklin Medal – and the list goes on and on. Those of you who have known Arnold Beckman over the years would agree that if he had been at the dinner that night, he would have said that he didn't deserve any of those recognitions, not to mention the coveted Conservation Medal. But we all know better than that.

As part of the program, the Society prepared a couple of videos about Dr. Beckman. It was great to see Dr. Beckman in the videos and his smile. In fact, it is that smile, his sense of humor, that I focused on for my remarks. I cannot remember any meeting I had with him over the 25 years that we have known each other where he did not exhibit his distinct brand of humor, often with that characteristic Beckman "twinkle in his eyes." One of the very first times I met him, back in 1981, he took great relish in telling me how on New Year's Day (a few days previous), he was involved in a minor traffic accident. He got out of his car, surveyed the damage, and walked over to the nearest pay phone and dialed AAA. He told me that since it was a holiday, he got a rather inexperienced young person on the phone who asked him for his AAA number. Arnold replied, "000004."

Dr. Beckman and daughter, Pat Beckman, are joined by Mr. Thompson Fetter, President of the Zoological Society of San Diego. The Conservation Medal, the highest honor awarded by the Zoological Society, was presented to Dr. Beckman earlier this year.

There was a silence at the end of the phone, and he was asked to repeat it: "000004."

"Sir, that can't be right, we don't have any numbers that low anymore – everyone with those numbers is dead." Well, as Arnold explained it to me and the young man on the phone, he was one of the founders of AAA. A tow truck arrived very quickly.

This sense of humor, this penchant for having a twinkle in his eye, continues to this day. Two years ago when he came to the Beckman Laser Institute for his annual birthday party, one of my students asked: "Dr. Beckman, what do you think is the most significant achievement in your life?" Dr. Beckman cocked his head slightly, deep in thought, and answered, "Living to be 100."

One day when I was very frustrated with some administrative problems, he said, "Michael, don't forget Rule 7: Don't take yourself too seriously." Of course, what he really was saying was you need to step back and see humor in the situation and not get so wrapped up in the problem that you get distracted from your ultimate goals. He reminded me that the "bureaucratic mentality is one of the few constants in the universe."

And then, of course, there was the obvious question. You have told me about Rule 7. What about Rules 1-6? His answer was: "Rule 1 is integrity. You have to do everything in your life with the utmost integrity. Rule 2 is don't do anything that embarrasses others." After a prolonged pause, I asked him about rules 3, 4, 5 and 6. He thought for a

(Beckman continued on p. 4)

Human Subject and Human-related Tissue Protocols

There are 16 human subject protocols currently being conducted that are supported or partially supported by LAMMP. Since 1999, over 1,900 patients have participated in the following studies. For further information, you may contact Clinical Research Coordinator Montana Compton, R.N., MBA, at mocomton@uci.edu or (949) 824-9265.

- Measurement of breast optical properties.
- Optical biopsy of human skin.
- Laser treatment of port wine stain.
- Non-invasive functional mapping of breast tissue physiology using quantitative near-infrared spectroscopy: effects of selective estrogen receptor modulators.
- Measurement of human skin temperature during pulsed laser exposure.
- Using hyperspectral images for human identification at a distance.
- Delayed onset muscle soreness in children and adults.
- Non-invasive measurements of anemia and physiologic tissue response to blood transfusions in very low birth weight infants using quantitative near-infrared spectroscopy.
- Monitoring the response of chemotherapy by photon migration spectroscopy.
- Laser treatment of psoriasis.
- Photodynamic detection of oral pathology.
- Transillumination of the paranasal sinuses.
- Near-infrared optical coherence tomography of the larynx.
- Assessment of endometrial photodynamic therapy following topical application of 5-aminolevulinic acid.
- Treatment of hypertrophic keloid scars.
- Treatment of vascular lesions with tandem 532/1064 nm laser.

In addition, there are 3 human-related tissue protocols for diagnostic support of cancer-related research.

- Two-photon microscopy of tissues.
- Early cancer recognition in gynecology.
- Photodynamic therapy on human glioma spheroids.

LAMMP: Congratulations *(cont'd from p. 1)*

light-tissue interactions in High Intensity, Coherent, and Diffuse regimes of photon transport. This revitalization proved highly successful with several important new technologies and biomedical applications emerging during the five-year grant period.

TWO NEW CORE AREAS

While still committed to the basic goals first defined 24 years ago, this year a substantial effort was made to consolidate LAMMP technology development into two core areas. The first, Microbeam and Microscopy Technologies (MMT), involves developing functional tools for high resolution imaging of living cells and tissues. Tatiana Krasieva, Ph.D., is the MMT Core Manager, and the main technology development thrust of this Core is the combination of multi-photon microscopy (MPM) and optical coherence tomography (OCT).

The second Core, Medical Translational Technologies (MTT), includes monitoring, treating, and imaging preclinical animal models and human subjects. According to MTT Core Manager Albert Cerussi, Ph.D., this Core involves diffuse tissue spectroscopy and imaging, photoacoustic techniques, and functional OCT. One of the MTT activities involves the development of a portable, hand-held instrument for the detection of breast cancer, brain anomalies, and muscle function. In the case of breast cancer, this device is being used in clinical studies to monitor the effects of chemotherapy. The goal of this work is to provide clinicians with a simple technology that could be used to predict whether a patient is responding to a particular drug. Ultimately, this approach could help minimize the toxic effects of chemotherapy and improve a patient's chance for survival.

The motivation of all these projects is to invent modalities that are non-invasive. Ultimately, LAMMP's broadest technical goal is to develop "real-time" optical technologies for the functional imaging and monitoring of tissue structures with well-defined resolution and sensitivity.

As always, core LAMMP technologies are available for shared use by the research community. Thirty-nine major collaborative projects were initiated in 2002-2003. Collaborations included projects with researchers from Claremont Graduate School, UC Berkeley, UC San Francisco, Stanford, Carnegie Mellon, University of Pittsburgh, University of Nevada at Las Vegas, and several departments at UC Irvine in both the School of Engineering and the College of Medicine.

For further information about LAMMP, you may contact Resource Coordinator Debbi Gordon at dmgordon@uci.edu or (949) 824-8367. For information about either the MMT or MTT Cores, you may contact: MMT Core Manager Tatiana Krasieva at tkrasiev@uci.edu or (949) 824-3664, or MTT Core Manager Albert Cerussi at

Probing for a Cure

Zhongping Chen, Ph.D., shown here in his Optical Coherence Tomography lab.

By the time Zhongping Chen, Ph.D., arrived at the Beckman Laser Institute in 1995 as an assistant researcher, he already had experience working in academia, industry and government. After receiving a B.S. in Applied Physics from Shanghai Jiao Tong University in the People's Republic of China, an M.S. in Electrical Engineering, and a Ph.D. in Applied Physics from Cornell University, Dr. Chen worked in industry as Director of Research for Biological Components Corporation in Syracuse, NY, for one year. He then spent two years as a research associate in the Biotechnology Division of the U.S. Army Natick RD&E Center in Natick, MA. But it was at the Beckman Laser Institute, collaborating with clinicians such as Dr. J. Stuart Nelson, that Dr. Chen found a great environment for his interdisciplinary research expertise.

USING ODT FOR PWS

When Dr. Chen joined BLI, Dr. Nelson was looking for a way to measure the change and response in port wine stains (PWS) to laser therapy. Dr. Chen, together with Dr. Nelson, Dr. Tom Milner (University of Texas, Austin) and other researchers, developed optical Doppler tomography (ODT) which allows simultaneous imaging of tissue structure and blood flow. ODT would provide standard measurements for treating PWS and thus eliminate the subjective aspects of laser therapy. With standard data to use as a reference, the physician would be able to determine which laser wavelength to use and what settings would be best in order to yield consistent optimum results for each and every PWS patient.

COMBINING OCT WITH A PROBE

From this initial collaboration, which produced several publications and practical applications, Dr. Chen turned his focus on developing a non-invasive optical imaging technology which combines optical coherence tomography (OCT) with a Micro-Electro-Mechanic System (MEMS)-based endoscope probe that will be able to detect cancer in the GI tract at an earlier stage. Currently, if you have a suspicious lesion, a surgeon excises the tissue and a pathologist analyzes it with a microscope to determine whether it is cancer. With this new technology, physicians could eliminate the tissue removal step. The miniaturized probe would allow the physician to view the area without surgery.

OCT would allow the tissue to be viewed non-invasively by creating a visual impression of structure and blood flow. If successfully developed, with the aid of a guiding endoscope, the probe would be inserted into the patient's esophagus and guided through the stomach and colon in order to determine if there are any tumors growing in the intestine. The primary goal of the research team is to actually develop the miniaturized probe, but there are many levels of research work that still need to be done before a finished product will be available. This research has recently been funded by a grant from NIH (see Newsbriefs).

Dr. Chen's research has resulted in over 40 publications, and he is currently the principal investigator of four grants from the National Institutes of Health, the National Science Foundation and the Defense Advance Research Program Agency. ■

Beckman *(cont'd from p. 2)*

minute and then said, "I'm still working on those!" What a mentor I have had for the past 20+ years!

Dr. Beckman's deep conviction about giving back to the scientific and educational communities led to the founding of the Arnold and Mabel Beckman Foundation. He has always been reluctant to talk about his philanthropic efforts, preferring to "let the gifts speak for themselves." I think it is appropriate that the Conservation Medal was awarded to Arnold O. Beckman, a truly great man of the 20th century whose example, I hope, will not be an "endangered species" of the 21st century. ■

Natasha Shah: San Francisco Here She Comes

Natasha Shah recently returned from San Francisco where she had been living for the past four months while working on a LAMMP collaborative project with UC San Francisco involving the laser breast scanner.

How did the idea of the project come about?

At Beckman, I work with a technology called the Laser Breast Scanner (LBS) that is used to study breast tissue using near-infrared light. In order to further the technology, we decided to collaborate with Dr. Nola Hylton and Dr. Laura Esserman at UCSF who study MRI techniques in breast tissue. The goals behind the collaboration were to increase the number of patients studied as well as correlate our technique with MRI. We believe combining the two methods will lead to more effective techniques in breast care.

Describe the project you worked on in San Francisco.

We built and transported an LBS instrument to San Francisco specifically for the collaboration with UCSF. My first project was to set up clinical trials at UCSF so that women who participated in research projects involving an MRI could also enroll in the LBS study. Once our clinical trials were underway, the project focused on correlating the results from MRI and the LBS to assess how the two techniques complement each other.

What did you have to do when you first arrived at UCSF?

I had to set up clinical trials entirely by myself. This included teaching the basics of the technology to the group at UCSF, training them how to use the instrument and conducting patient measurements using the LBS. I also set up the clinic room, such as getting drapes and a gurney and working around a busy clinic to get a room blocked off for our trials. I had to get radiologists and nurses on board, work with MR techs, and get protocols together. I also spent time learning about MRI and testing the LBS periodically. When we started seeing patients, I would analyze the LBS data, go over the MRI's with the radiologist and try to correlate the results.

What were the positive results from the collaboration?

Our preliminary results were remarkable. We were able to show that results from the LBS, a new technology, are comparable to those of MRI, an established clinical imaging technique. For example, using the LBS, we could monitor changes in tumor blood vessels over the course of a patient's chemotherapy which was validated by the patient's MRI's. We could also show that our technology is sensitive to structures in a normal breast, such as glands, fat and even scar tissue. This is exciting because it leads the way for our technology to complement existing technologies like mammography or MRI. I am writing two manuscripts on our results now, and a third will be written in the near future.

Is further collaboration contemplated?

Yes, we have several avenues for collaboration. I am returning to UCSF this fall and will continue to work with Dr. Hylton and her colleagues. We are designing focused studies on high-risk women, cancer patients and women undergoing chemotherapy. I am also collaborating with radiation oncologists, Dr. Catherine Park and Dr. Alison Bevan, who want to use the LBS to study the effects of radiation therapy.

Natasha Shah, M.S.

What did you learn about yourself during this time?

Personally, I learned that I enjoy living in San Francisco. I thought it was a beautiful and interesting city, definitely different from Orange County. From the collaboration, I gained more confidence in my ability to manage things independently. I underestimated the difficulty of getting clinical trials started at a busy hospital 400 miles away. I am glad I had the opportunity to work at UCSF and I look forward to going back. Now I'll know my way around and have friends there.

What are your interests outside of research and what did you do in San Francisco?

When I have time, I enjoy photography, journalism and cooking. While I was in San Francisco, I spent time exploring the different neighborhoods, visiting museums, taking advantage of the great restaurants and seeing some of the tourist sights. I also joined in some of the city events like Bay to Breakers - an annual 7-mile race from the bay side of the city to the ocean. *(continued on p. 7)*

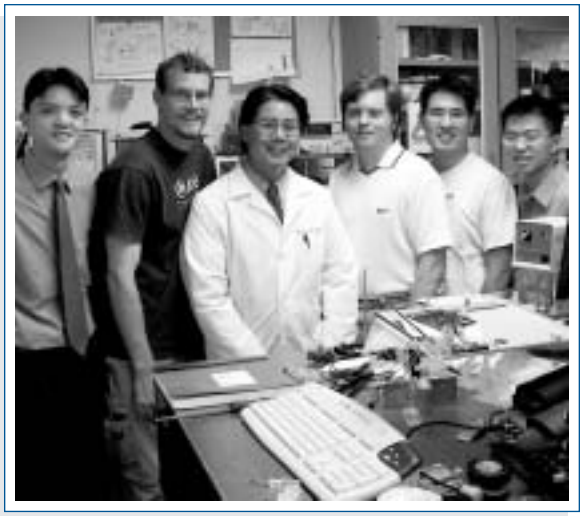
Collaboration upon Collaboration

Imagine a juggler trying simultaneously to spin eight plates atop whirling sticks and you will have an idea of the schedule of Brian Wong, M.D., F.A.C.S., as he dashes between the UC Irvine Medical Center treating patients and the Beckman Laser Institute conducting experiments. The hectic schedule does not dampen his enthusiasm as a doctor or as a research scientist. After receiving a B.S. in engineering at USC in 1985 and his medical degree from Johns Hopkins University in 1990, he went into medicine with the idea of focusing on biomedical engineering. Dr. Wong describes it as going from "bench to bedside." During his residency training at UCI Medical Center (UCIMC), he was encouraged by BLI Founder Michael Berns, UCIMC Otolaryngology Chair Roger Crumley and former BLI Medical Director Yona Tadir to come to BLI to do research.

Dr. Wong is collaborating on many projects at BLI, but his major interest is in laser cartilage reshaping which is supported by two grants from the National Institutes of Health. Working with Associate Director J. Stuart Nelson, whom he considers his mentor, and Visiting Postdoc Dmitry Protsenko, Dr. Wong is exploring the reshaping of cartilage for aesthetic and reconstructive surgery.

CARTILAGE RESHAPING

Cartilage is the framework for structures in the face and upper airway and also provides a smooth gliding surface in joints. For example, in rhinoplasty, to change the shape of the nose, the cartilage is reshaped using a scalpel and sutures. In an effort to make rhinoplasty less invasive and traumatic, Dr. Wong is studying ways to reshape the cartilage without using these conventional surgical techniques. Cartilage is like plastic and can be molded into any shape when it is heated. The trick is to determine the correct amount of heat required to reshape without killing tissue cells. Dr. Wong likes to call cartilage reshaping the true "plastic" surgery. Ultimately, Dr. Wong envisions molds that can be inserted into the nostril or placed over the nose with optical fibers or heated needles that will change the shape of the cartilage in the nose. While that is a future goal, there already are some practical non-cosmetic uses of cartilage reshaping.



Brian Wong, M.D.,(third from left) is shown in the Cartilage Research Laboratory at BLI with his research team (from left) Kevin Ho, Michael Brewer, Dmitry Protsenko, Anthony Lam and Chao Li.

TREATING OBSTRUCTIONS

Working with Professor Emil Sobol of the Institute on Laser and Information Technologies in Moscow, Dr. Wong's ideas have impacted over 200 patients who have been treated in Russia for deviated nasal septa to relieve nasal obstruction. Sobol and Wong have invented a device that is inserted into a twisted septum; when the laser heats the cartilage, the septum straightens to conform to the inserted device and the patient can now breathe freely. With funding from the Air Force Office of Scientific Research, Dr. Wong is also devising technology to reshape cartilage in the trachea and larynx (or voice box) for patients who have critical injuries from both combat and civilian trauma. These ICU patients usually need a tube placed in their throats to facilitate breathing since prolonged intubation causes the larynx to collapse or deform from its normally round shape. By using cartilage reshaping, it is hoped to return the entire trachea to its original healthy state.

OCT FOR IMAGING VOCAL CORD STRUCTURE

Working with BLI and Biomedical Engineering Associate Professor Zhongping Chen, Dr. Wong has three grants to develop optical coherence tomography (OCT) technology to image vocal cord structure in order to detect pre-malignant and malignant tumors. They are developing three separate devices, each one specialized for use in the operating room, endoscopy suite and the doctor's office. These devices would better manage and treat early vocal cord cancer and benign diseases, such as vocal cord nodules prevalent in singers. At present, the only way to diagnose growths in vocal cords is by biopsy which can be extremely damaging to the voice box.

(continued on p. 7)

Arrivals and Promotions

BLI new arrivals pictured from left: Brian Hill, Misbah Hzaira-Khan, Roman Zorin, Julio Cesar Ramirez San Juan and Jung Rae Chung.

Jung Rae Chung, Ph.D., is a Visiting Postgraduate Researcher at BLI. Dr. Chung will be working with Dr. Zhongping Chen on polarization imaging of biological tissue for cancer diagnosis.

Brian Hill recently received his M.S. in Chemical Engineering and has joined BLI to work with Dr. Bruce Tromberg's research team. He will work as a software engineer on the development of computer-based controls for medical diagnostic instrumentation.

Misbah Hzaira-Khan, M.D., is a Visiting Postgraduate Researcher who will work with J. Stuart Nelson, M.D., Ph.D., and Bernard Choi, Ph.D., on developing agents for "optical clearing" to facilitate skin imaging.

Julio Cesar Ramirez San Juan, Ph.D., has joined BLI as a Visiting Postgraduate Researcher. Dr. Ramirez will work with Dr. Stuart Nelson's research team to carry out fundamental studies of liquid spray atomization, droplet flight profiling and liquid cryogen evaporation from skin.

Roman Zorin has been hired as a microscopist to work with Drs. Tatiana Krasieva, Chung-Ho Sun and Bruce Tromberg on a project involving high thruput screening and inactivation of airborne bacteria. This project is sponsored by the Environmental Protection Agency.

Shuo Tang, Ph.D., is a Postgraduate Researcher who will work with the LAMMP group on two-photon microscopy and optical coherence tomography (OCT).

Associate Director **J. Stuart Nelson, M.D., Ph.D.**, received an accelerated merit increase.

Anthony Durkin, Ph.D., BLI's first Beckman Fellow, received a promotion to Assistant Professor.

Petra Wilder-Smith, Ph.D., D.D.S., received a promotion to Associate Professor.

Albert Cerussi, Ph.D., received a promotion to the Professional Researcher Series.

Collaboration *(cont'd from p. 6)*

PROJECTS ON SINUSITIS AND KELOIDS

Dr. Wong has also initiated two major projects with BLI LAMMP Director Bruce Tromberg and his research group. The first involves diagnosing sinusitis optically. Drs. Wong, Tromberg, and Cerussi have built a prototype device that uses near-infrared light to image the sinuses. Present modes of diagnosing sinusitis are CT scans and X-rays, both of which involve large amounts of radiation. If the prototype is successful, it will provide a mode of diagnosis that is low in cost and uses no radiation.

The second project seeks to develop ways to use photodynamic therapy to treat keloid tumors. Keloids are benign soft tissue tumors that can be caused by surgery or ear piercing. Treatment to remove keloids is unsatisfactory and usually results in growths that are larger than the original injury. Keloids, for some unknown reason, are more prevalent in African Americans and Hispanics. Drs. Wong and Tromberg worked with BLI Fellows, Drs. Alvin Yeh and Behrooz Torkian, and BLI Biochemistry facility director, Dr. Chung-Ho Sun, in this multidisciplinary effort. This project, like Dr. Wong's other research interests, have a common theme: he is seeking practical clinical applications based on sound basic science and engineering that will impact a large number of people.

Dr. Wong has over 45 peer-reviewed publications and is the principal investigator of five grants. ■

Natasha Shah *(cont'd from p. 5)*

What is the most rewarding aspect of your research?

Something that I want to mention about my work at BLI is that I have interacted with most of the women who have participated in the breast program. One of the best parts of my job, certainly the most inspiring, is getting to work with these volunteers and patients: especially the ones who are undergoing chemotherapy. We see them on a weekly basis, we get to know their life history and we often meet their families. We also see them lose their hair, eyebrows, weight, and they continue to come in and volunteer just to help future generations of women. It's very touching how brave and generous people can be. I have measured over 200 women: from breast cancer survivors to those with a family history of breast cancer to young women, old women, and women who are healthy but who just wanted to volunteer. Since our technique takes 45 minutes and the patient gets to lie down and relax, we always end up talking. I think in the end, it will be the stories I have heard from all these women that I will remember the most from my work at Beckman. It also drives home what our research at BLI is about. ■

NEWSBRIEFS

(cont'd from page 1)

untreated, these birthmarks can produce a range of medical complications, including glaucoma and seizures. Documented research indicates that these lesions, because they most commonly affect the face and neck, exact a profound psychological toll on children.

NELSON HONORED BY UCIMC

Associate Director J. Stuart Nelson, M.D., Ph.D., was the recipient of the Second Quarter, 2003, ARISE Employee Award. Recipients are outstanding role models who exemplify the organization values of academic achievement, respect, integrity and excellence at the University of California, Irvine Medical Center (UCIMC). Dr. Nelson was recognized for Academic Achievement.

As cited by Ralph W. Cygan, M.D., Chief Executive Officer of UCIMC, "Dr. Stuart Nelson's clinical and research interest is in the area of laser surgery. He developed a cooling device for use in the clinical applications of lasers, and he and UCI hold 15 patents related to this device. For more than 12 years, Dr. Nelson has chaired a program for disadvantaged children called the Children's Treatment Fund. This fund allows children to have disfiguring birthmarks and other lesions removed at no cost to the family. The work that Dr. Nelson and other UCI scientists have done in the area of lasers has been incorporated into 6,000 lasers worldwide. In addition to his charitable work, Dr. Nelson has published more than 230 articles that benefit physicians, students and other researchers about the application of laser therapy. He remains committed to continued research in developing new tools and serving as an outstanding role model for the medical students who observe at the Surgery Laser Clinic."

GRANT AND AWARD RECEIVED BY WONG

Associate Professor Brian Wong, M.D., received a grant from the National Institute on Deafness and other Communication Disorders. In addition, Dr. Wong received the Clinical Innovator Award from the Flight Attendant Medical Research Institute. Dr. Wong was also awarded a patent entitled, "Method and Apparatus for Cartilage Reshaping by Radio Frequency Heating," where radio frequency provides a unique means to reshape cartilage without sutures. ■

Dr. J. Stuart Nelson pictured here just after he received the ARISE award.

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