LASER
BECKMAN LASER INSTITUTE

IN THE NEWS

SUMMER 2004

NEW LEADERSHIP

In November 2003, the appointment of Bruce J. Tromberg as the new Director of the Beckman Laser Institute (BLI) was formally announced by Thomas C. Cesario, Dean of the College of Medicine. Dr. Tromberg is also the Director of the National Institutes of Health Resource, Laser Microbeam and Medical Program (LAMMP), located at BLI as well as the lead investigator of a new Network for Translational Research in Optical Imaging (see "Network Grant," page 6).

Dr. Tromberg came to BLI in 1988 to work specifically with co-founder and former director Michael W. Berns as a Hewitt Foundation Fellow. He is currently Professor of Biomedical Engineering and Surgery and Vice Chair of the Department of Biomedical Engineering.

As a member of the UCI faculty, Dr. Tromberg has pioneered the development and application of several new photonic technologies in the areas of diffuse optical spectroscopy, photodynamic therapy, and multiphoton microscopy.

From l. to r.: Newly appointed Medical Director J. Stuart Nelson and Director Bruce J. Tromberg.

Dr. Tromberg is the editor-in-chief of The Journal of Biomedical Optics and is the past chair of the Optics in Biology and Medicine working group of the Optical Society of America. He has received several awards, including the Coherent Biophotonics Young Investigator Award, OE magazine's Technology Innovator Award, the R & D 100 Award, and was recently elected to the board of the International Society of Optical Engineering (SPIE).

In related news, on February 18, 2004, Dr. Ralph Cygan, CEO of the University of California, Irvine Medical Center (UCIMC), appointed BLI Associate Director J. Stuart Nelson as the new Medical Director of the UCIMC Surgery Laser Clinic located at BLI. As Medical Director, Dr. Nelson will be responsible for ensuring that services provided at the clinic are of the highest quality and service oriented. He

(Leadership continued on p. 4)

Newsbriefs

AFOSR GRANT AWARD/ SCIENTIFIC ADVISORY BOARD APPOINTMENT

Founder Michael W. Berns, Ph.D., was awarded a 4 year, $2.25 million grant from the Air Force Office of Scientific Research to study "Advanced Optical Technologies for Defense Trauma and Critical Care." In addition, Dr. Berns was appointed to the Scientific Advisory Board (SAB) of the ICFO-Institut de Ciències Fotòniques (Institute for Photonic Sciences). ICFO is a research institution recently launched by the Government of Catalonia in Barcelona, Spain, to conduct cutting edge research in different areas of optical sciences. The SAB is composed of internationally renowned scientists and advises the Board of Trustees and the Director on visionary decisions concerning the development of the Institute.

EDITOR-IN-CHIEF APPOINTMENT

Medical Director J. Stuart Nelson, M.D., Ph.D., was recently appointed as editor-in

(additional Newsbriefs continued on p. 2)

FOUNDER'S COLUMN

Arnold Orville Beckman: 1900 - 2004

by Michael W. Berns, Ph.D.
The Arnold and Mabel Beckman Professor
May 19, 2004

I thought there'd be no tears. But I was wrong.

Arnold Beckman had lived 104 years, during which he was a vibrant, witty, inquisitive, sensitive, ingenious, and charitable person. He epitomized humor, humility, and honesty.

His life spanned an entire century: a century in which his inventions played key roles in the discoveries that not only shaped much of that century but will also shape much of the 21st century. His legacies will continue through the work of the organizations that bear his name and through the many students (from kindergarten through postdoctoral scholars and young professors) whose careers have been nurtured by his support. Arnold O. Beckman is celebrated not mourned.

So why the tears? Arnold O. Beckman lived a full life. Even as those years eroded his hearing and vision, it was clear he was still enjoying himself and that his brain was still "with it." When asked by a student at an informal 99th birthday gathering, "Dr. Beckman, what is your most significant accomplishment," he tilted his head with a twinkle in his eyes and said, "…living to be 99." And when asked by another student the following year about the secret to his longevity, he replied simply, "Breathing." His humor never faded even as age took its physical toll.

So why the tears? He was a great success in the private sector. He received more awards than anyone I know. He often referred to himself as "not a businessman." He felt many of the awards were not deserved (though we all know otherwise). He lived his life with such humility. That person is no longer amongst us.

So why the tears? "Integrity" was his password. It was a password to his trust and respect. "Whatever you do has to be done with utmost integrity," was a phrase I heard many times over. When he signed an agreement or simply shook your hand as a final step in the process, you knew he would keep his word. He would stay the course. His honesty was impeccable. AOB is gone.

Arnold Beckman

I guess I cried because even though this wonderful man lived a long life and will live on through his many legacies, I still will miss him. There is no other person I know who is like him. There is no other person I will know who will be like him. ■

(Newsbriefs cont'd from page 1)

chief of the journal, Lasers in Surgery and Medicine, by the Board of Directors of the American Society for Lasers in Medicine and Surgery (ASLMS).

AMA MEDICAL STUDENT POSTER SESSION AWARD

Following abstract submission, Lynn L. Chiu was invited to present a poster of her work at the Medical Student Poster Session of the 25th annual Assembly meeting of the American Medical Association held in Honolulu, Hawaii, from December 5-8, 2003. Her poster entitled, "Reduction of Superficial Thermal Injury using Cryogen Cooling during Laser Cartilage Reshaping in the Rabbit Ear," consisted of collaborative work she completed between the laboratories of Brian J. F. Wong, M.D., Ph.D., at the Beckman Laser Institute and Cheng-Jen Chang, M.D., Ph.D., of the Department of Plastic and Reconstructive Surgery at Chung Gung Hospital in Taiwan. Posters and presentations were judged by the AMA Council on Scientific Affairs which selected Lynn as the 2003 winner of the AMA Medical Student Poster Session Award. She was awarded an engraved crystal and will be sent to the AMA National Advocacy Conference and Leadership Program in Washington, DC, where she will present her work and meet with congressional representatives to discuss health care policy and the missions of the American Medical Association.

STUDENT RESEARCH AWARDS

Undergraduate Research Opportunities Program (UROP) awards were given to Ani Sarkassian for "A Novel Multimodality Non-invasive Approach to Oral Malignancy" and Carol Chen for "Photoeradication of Gastric

(additional Newsbriefs continued on p. 8)

Technology Focus: Neonatal ICU

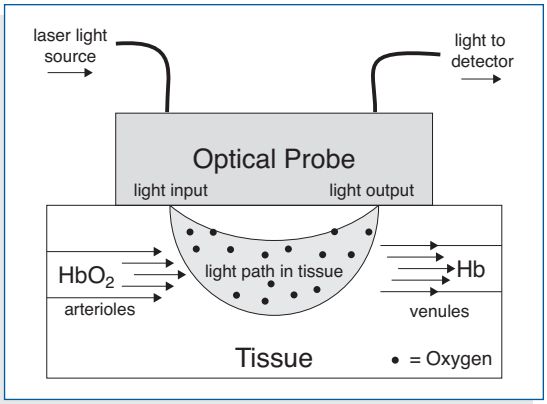
The Neonatal Intensive Care Unit of a hospital has myriad machines surrounding tiny babies in their incubators. Because neonates cannot respond verbally and have a variety of physiological differences, a large amount of technology is involved to help care for premature infants. In this environment, new technology can easily be introduced because, although there are already so many machines, physicians could use even more.

REQUEST FOR NEW TECHNOLOGY

Recognizing this opportunity, Dr. Feizal Waffarn, Head of the Neonatal Intensive Care Unit (ICU) at the University of California, Irvine Medical Center (UCIMC) contacted Beckman Laser Institute (BLI) Director Bruce Tromberg approximately five years ago. He wanted to know whether Diffuse Optical Spectroscopy, a technique developed by the Laser Microbeam and Medical Program (LAMMP) at BLI, could be utilized in the ICU. Specifically, Dr. Waffarn wanted a non-invasive anemia detector.

ANEMIA CAN BE DEADLY

Anemia is a condition where there is not enough oxygen in body tissues because there is insufficient hemoglobin. Currently, the standard method for diagnosing anemia involves drawing blood from the patient and analyzing its composition. The problem with drawing blood from neonates is that premature infants have an extremely limited supply. They can even become more anemic by the blood drawing procedure. If a neonate is discovered to be anemic, a blood transfusion is ordered. Once a transfusion is complete, another problem can develop. This is due to the fact that there are no consistent guidelines for the most efficacious time to transfuse or how much blood to give. According to Dr. Waffarn, a non-invasive device is needed that can (1) determine whether the neonate is anemic and (2) assess the impact of the transfusion. If these two factors can be quantified, one can learn more about anemia, improve treatment, and save lives.



Oxygenated hemoglobin (HbO_2) from lungs is delivered to tissues by arterioles in the tissue capillary bed. Oxygen is utilized by metabolically active tissue and deoxygenated hemoglobin (Hb) is taken away by venules. Diffuse Optical Spectroscopy (DOS) quantifies HbO_2 and Hb as well as tissue water and lipid content.

HOW TO MEASURE OXYGEN

Diffuse Optical Spectroscopy (DOS) is a technique that measures the concentration of hemoglobin in tissue. The basic concepts are illustrated in the accompanying figure. Oxygen is bound to hemoglobin, and hemoglobin is delivered to tissues by red blood cells in the arteries and arterioles. Physicians can determine how much hemoglobin is in the arteries from drawn blood but cannot tell from the measurement how much oxygen was utilized by the tissue. A device is needed that "sees" everything in the tissue without drawing blood. This device would measure the appearance of the tissue deep within the muscle or brain.

COMBINING DIFFUSE OPTICAL SPECTROSCOPY WITH A TISSUE OXIMETER

BLI Assistant Researcher Albert Cerussi, Ph.D., working with UCIMC Neonatal ICU Medical Fellow Richard Van Woerkom, M.D., developed a non-invasive anemia indicator. They began with a tissue oximeter made by ISS of Champaign, IL, and modified it with broadband technologies for neonatal use. Before modification, the oximeter could only measure oxy- and deoxy-hemoglobin. After modification, water concentration and lipid concentration could also be quantified. To date, the modified oximeter has been tested on 18 neonates. It was discovered that DOS could non-invasively assess changes in tissue oxygen delivery in very low birth weight infants undergoing blood transfusions and may serve as a non-invasive bedside tool to assess tissue oxygen supply/demand relationships. This work was presented by Dr. Van Woerkom last year at the annual meeting of the Society for Pediatric Research/Pediatric Academic Societies in Seattle, WA, and at the Hot Topics in Neonatology meeting in Washington, DC.

Dr. Cerussi is exploring additional applications of the modified oximeter to measure neonatal developmental growth in muscle and bone. He is in the process of training a new Neonatal ICU Medical Fellow for the next set of experiments. ■

Two Great Reasons to Give

CHILDREN'S TREATMENT FUND

Since its inception in 1982, the Beckman Laser Institute (BLI) has earned a reputation as one of the world's premier centers for the treatment of congenital birthmarks in children in general, and port wine stain (PWS) birthmarks in particular. PWS is a congenital, progressive vascular malformation of the skin that occurs in an estimated 7 children per 1,000 live births. Approximately 1,500,000 individuals in the United States and thirty-two million people worldwide have PWS birthmarks.

Since most of the malformations occur on the face, PWS is a clinically significant problem in the majority of patients. PWS should not be considered a cosmetic problem but a disease with potentially devastating psychological and physical complications. Personality development is adversely influenced in virtually all patients by the negative reaction of others to a "marked" person. In childhood, PWS are flat red macules, but as a child matures, lesions tend to darken progressively to purple and, by middle age, often become raised as a result of the development of vascular nodules. Hypertrophy of underlying soft tissue, which occurs in approximately two-thirds of lesions, further disfigures the facial features of many patients.

Researchers at BLI developed the preferred therapy for PWS birthmarks which has been incorporated into more than 7,500 laser devices sold worldwide. Each year, hundreds of children, both local and international, receive advanced laser therapy for these catastrophic birthmarks at the (UCIMC) Surgery Laser Clinic at BLI.

In 1989, BLI established the Children's Treatment Fund (CTF) as part of its mission to extend the benefits of laser biomedical technology to all segments of the community at no cost to the family. To date, CTF has sponsored PWS laser treatment for more than 100 children.

OPPORTUNITIES TO GIVE:
For a list of programs you can support at the Beckman Laser Institute, please call Erin Miller at (949) 824-4111.

VASCULAR BIRTHMARKS FOUNDATION

The Vascular Birthmarks Foundation (VBF) was established in 1996 as an international, non-profit organization that provides information and resources to families affected by vascular birthmarks, such as PWS, hemangiomas, venous malformations and lymphatic malformations.

The BLI and the VBF will be co-sponsoring a medical conference at UCI on October 7 and 8, 2005, for families with children who are affected by these disorders. There will be a welcome reception for the families on Friday night, Oct. 7. Experienced clinicians will be speaking on Saturday, Oct. 8, and will present updates on new research developments of lasers in medicine and the management of vascular lesions. On Saturday afternoon, a clinic will be held. The clinic is for parents and their children who will be seen by physicians to diagnose and discuss a course of treatment for the affected individuals.

We expect approximately 100 families from across the United States and abroad to attend this conference.

Port wine stain birthmark before and after treatment.

If you would like to make a donation to support the conference or to attend the conference, please contact Erin Miller at emiller@laser.bli.uci.edu or (949) 824-4111. Any contributions we receive will assist us greatly in providing these children and their families with the resources to receive life-changing treatment. ■

Leadership *(cont'd from p. 1)*

will serve as medical liaison to outside referring physicians as well as provide leadership, oversight and supervision of all physicians and allied health care providers working at the site. Dr. Nelson will also continue as Associate Director.

After receiving his B.S. in Biological Sciences and M.D. degree from the University of Southern California, Dr. Nelson joined Dr. Berns' laboratory in 1983 as a graduate student and earned his Ph.D. degree in Cell Biology and Applied Laser Biology in 1987. He became a UCI faculty member and BLI Associate Director in 1987.

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The Ubiquitous Erin Miller

As Director of Development at BLI, Erin Miller's job responsibilities are a good match with her friendly, outgoing personality. Erin regularly organizes tours to outside groups, plans special events, interacts with supporters of BLI, and raises funds for special programs, such as the Children's Treatment Fund (CTF). In other words, she interacts with nearly everyone who enters the building.

Before coming to BLI, Erin attended UCI. As a liaison for her sorority, Delta Gamma, she worked on special events and projects with the Special Events Coordinator in the Chancellor's office and became acquainted with then Chancellor Jack Peltason and his wife, Suzie. Erin graduated from UCI in 1989 with a B.A. in Economics. In 1990, she was hired as the Special Events Coordinator for the Chancellor. She worked closely with the Peltasons until they left UCI when Dr. Peltason became President of the University of California in 1992.

In February 1993, Erin joined BLI as Director of Support Group Relations. Her duties consisted of assisting the Director of Development, fostering relationships with BLI donors, and planning special events. When the job became available in 1997, she became Director of Development. In this position, she has enjoyed working with individuals, foundations and organizations to raise funds for a variety of programs at the Institute.

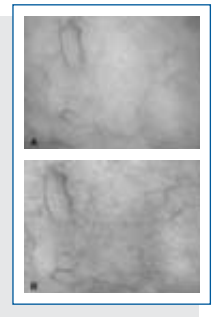
While Erin enjoys all aspects of her job, she gets most satisfaction from participating in the Children's Treatment Fund (CTF) which was established to treat the removal of congenital birthmarks (known as port wine stains) on children whose families cannot afford the multiple treatments. She serves on the CTF Advisory Board and also solicits funds from foundations and individuals for the Fund. Her passion for this cause is heartfelt, and she is grateful that she is able to help these children. She says, "It makes me feel good to know that we are able to give these children a gift that is life-changing." Currently, Erin is organizing a conference in conjunction with the Vascular Birthmarks Foundation for families with children who have been born with these catastrophic birthmarks.

Erin Miller

Erin has been married to her husband, Shawn, for over 11 years. They live in Tustin Ranch with their two sons, Ryan, age 8, and Ian, age 4 1/2, and a Russian tortoise named Otto. While most of her time is spent playing with her kids in sports like soccer and baseball, Erin also finds time to read, ski and work out at the gym. ■

Research Update: How Deep Is Skin Deep?

Medical Fellow, Misbah H. Khan, M.D., doing research with Associate Director J. Stuart Nelson, M.D., Ph.D., has published "Optical Clearing of *in vivo* Human Skin: Implications for Light-based Diagnostic Imaging and Therapeutics" in *Letter to the Editor* of the February issue of Lasers in Surgery and Medicine (Vol. 34, pp. 83-85, 2004). Human skin is a complex structure with many variables. It serves as a highly scattering medium for visible and near-infrared wavelengths. Light-based diagnostic techniques and therapeutics would likely be improved if scattering could be reduced, thereby enhancing light penetration into human skin. Dr. Khan's research demonstrated that an FDA-approved, pre-polymer mixture that was invented at BLI causes skin to become more transparent when applied topically on intact skin. The visualization and treatment of various dermatoses, such as birthmarks and nonmelanoma skin cancers, amenable to light-based diagnostic methods, such as optical coherence tomography (OCT), and laser therapy are enhanced as the scattering of light inside the skin is markedly reduced. This reduction allows much deeper penetration of light into the tissue. A patent is pending on the invention of this innovative cream. ■



Cross-polarized images of telangiectasias before (A) and after (B) the topical application of pre-polymer mixture (PPG:PEG).

Network Grant for Development of New Center at BLI

The Beckman Laser Institute (BLI) will lead a nationwide effort to standardize use of a new technology that improves breast cancer detection, cancer therapy management and the quality of life for cancer patients. Funded by a $7 million grant from the National Cancer Institute, the center at BLI is one of four national programs that form a"Network for Transitional Research in Optical Imaging" (NTROI). The other three centers are located at the University of Pennsylvania, Boston University, and Stanford University.

BLI FOCUS ON BREAST CANCER

The center at BLI (UC Irvine) will focus on the development of multi-dimensional diffuse optical imaging technologies. This method can be used to detect and give detailed information on tumors, and researchers will use it to create laser imaging devices that complement conventional detection methods, such as mammography and MRI. "Our goal is to transform this cutting edge science into a versatile tool that can be widely used by the entire cancer research community," said Director Bruce J. Tromberg who is lead investigator in the study as well as one of the researchers who has pioneered the technology.

CONSORTIUM OF UNIVERSITIES, GOVERNMENT AGENCIES AND MEDICAL COMPANIES

To achieve this goal, the center will bring together a consortium of researchers from universities, government agencies and industry. Research will focus on creating new instruments specifically designed for optimizing detection and treatment of breast cancer. The center will validate the performance of these new instruments as well as standardize how images are acquired and analyzed. In addition, the consortium will work together to complete multi-center clinical trials and stimulate the formation of commercial partnerships. Major participating institutions include UC San Francisco, University of Pennsylvania, Harvard University/ Massachusetts General Hospital, Dartmouth College, the University of Illinois at Urbana-Champaign, Siemens Corporate Research, Inc., and the National Institutes of Health.

LASER BREAST IMAGING

NTROI researchers have already found laser breast imaging to be particularly effective in detecting tumors in the denser breast tissue of pre-menopausal women and those on hormone replacement therapy. Unlike mammography, laser imaging provides detailed information on tissue, blood, fat and water composition, as well as oxygen consumption and cellular density. In previous studies, these factors have been shown to change as breast tumors appear, progress and respond to therapy. "This technology will provide added insight into the origins of breast disease and practical approaches for addressing several key challenges in breast cancer clinical management," Dr. Tromberg added. "This includes detecting early disease, distinguishing between malignant and benign lesions, and understanding the impact of therapies."

For further information about the center (see http://www.bli.uci.edu/NTROI/index.htm) or contact Jennifer Dorwachter, Coordinator of the UCI network, at jdorwachter@laser.bli.uci.edu or (949) 824-5633. ■

Leadership *(cont'd from p. 4)*

Dr. Nelson is currently Professor of Surgery, Dermatology and Biomedical Engineering.

As a member of the UCI faculty, Dr. Nelson has devoted his career to finding more efficacious ways to treat hypervascular skin lesions, such as port wine stains, with laser therapy. Dr. Nelson developed and pioneered "dynamic cooling," a technique which combines precise cryogen spray cooling with laser energy to optimize port wine stain treatment. This methodology has been incorporated into more than 7,500 laser devices worldwide.

He has just been appointed the editor-in-chief of Lasers in Surgery and Medicine, was president of the American Society for Laser Medicine and Surgery from 2001-2002, and was past chair of the Gordon Research Conference on Lasers in Biology and Medicine.

As former students of Dr. Berns, both Tromberg and Nelson are in an ideal position to preserve the vision of BLI founders, Drs. Beckman and Berns, and lead the Institute into the 21st century. Congratulations! ■

Arrivals and Departures

ARRIVALS

Enrique Camacho, B.S., joins the research team of Brian Wong, M.D., at BLI as an Assistant Specialist. The focus of his work is to characterize the mechanical performance/stability and viability of cartilage after electroforming in *ex vivo* cartilage specimens and subsequently evaluate how these properties change over time in tissue culture.

Jennifer Dorwachter joins BLI as the coordinator for the Network for Transitional Research for Optical Imaging grant (NTROI). This grant is funded by the National Cancer Institute.

Wangcun Jia, Ph.D., was hired as an Assistant Project Scientist at BLI to work with J. Stuart Nelson, M.D., Ph.D., on the cryogen spray cooling project.

Yi Jiang, Ph.D., works with Zhongping Chen, Ph.D., on Second Harmonic Generation (SHG) Optical Coherence Tomography (OCT).

Chang-Soek Kim, Ph.D., is a Postgraduate Researcher working closely with Bernard Choi, Ph.D., on photothermal imaging.

Cathy Ledray joins BLI as the new Management Services Officer to manage the administrative operations of the Beckman Laser Institute.

Julia Lyubovitsky, Ph.D., is a Hewitt Fellow hired as a Postgraduate Researcher to work with Dr. Bruce Tromberg's research team. Dr. Lyubovitsky is developing new approaches to quantify Multiphoton Microscopy (MPM) signals from thick tissues.

Johan Verjans is an M.D., Ph.D. student working on a collaborative research project with Bruce J. Tromberg, Ph.D., and Jagat Narula, M.D., to image remodeling in heart failure.

Back row from l. to r.: Cathy Ledray, Wangcun Jia, Chang-Soek Kim, Enrique Camacho, Julia Lyubovitsky, Johan Verjans. Front row, from l. to r.: Jennifer Dorwachter, Yi Jiang, Rong Zhang, Phillipe Zatta, Willem Verkruysse.

Willem Verkruysse, Ph.D., has been hired as an Assistant Specialist to work with Dr. J. Stuart Nelson on the photothermal imaging of port wine stains. Dr. Verkruysse will work on experiments on the thermodynamics of cryogen spray cooling of human skin involving Fast Flashlamp Photography (FFLP), Ensemble Particle Concentration and Sizing (EPCS) and Phase-Doppler Interferometry (PDI).

Phillipe Zatta, Ph.D., has joined BLI as a Junior Specialist to work with Dr. Bruce Tromberg's research team on improving Laser Breast Scanner (LBS) technology.

Rong Zhang, Ph.D., is a Postgraduate Researcher working with Dr. J. Stuart Nelson. Dr. Zhang will carry out fundamental studies on liquid cryogen evaporation from skin and cryogen tissue freezing.

DEPARTURES

Management Services Officer **Sheryl Cherrison** has moved to the UCI College of Medicine to become the Academic Personnel Coordinator.

Frederick Bevilacqua, Ph.D., is a researcher with Ircam (Institute for Research and Coordination Acoustic/Music) in Paris, France. The general goal of his research is to develop novel technology for performance arts and, in particular, motion capture and movement analysis.

Guillermo Aguilar, Ph.D., is an Assistant Professor in the Department of Mechanical Engineering at the University of California, Riverside. His research focuses on the experimental and numerical modeling of fluid mechanics, thermodynamics, and thermal processes relevant to biomedical optics and medical laser applications. This includes the combined use of cryogen spray cooling and laser irradiation during vascular lesion and skin resurfacing therapies as well as cartilage reshaping. Dr. Aguilar also teaches undergraduate and graduate courses in mechanical engineering.

Alvin Yeh, Ph.D., is an Assistant Professor in the Department of Biomedical Engineering at Texas A & M University. He is currently assembling an optical and tissue culture lab. In addition, he is training and mentoring a research group consisting of one Ph.D. and two M.S. candidates. In Fall 2004, he will be offering a new course on tissue engineering and has been named the coordinator for a new undergraduate track in biochemical/tissue engineering.

NEWSBRIEFS

(cont'd from page 2)

Helicobacter Pylori (HP) using 5-ALA: Preliminary Human *in vivo* Studies." In addition, the American Society for Laser Medicine and Surgery (ASLMS) awarded student travel grants to Hamza Beydoun, "A Novel Approach to Imaging Oral Premalignancy and Malignancy," and Kristina Messeih, "Non-invasive, High-resolution Optical Coherence Tomography for the Early Detection of Dental Caries," to present their papers at the annual ASLMS meeting in April 2004, in Dallas, Texas. All four students are under the supervision of the Dental Program Director Petra Wilder-Smith, D.D.S., Ph.D.

NEW APPOINTMENT

Henry Hirschberg, Ph.D., has been appointed Researcher. Funded by a recent $400,000 award from the Norwegian Science Council, Dr. Hirschberg is conducting research on photodynamic therapy of brain tumors.

YOUNG INVESTIGATORS AWARD

Research Fellow Johan Verjans (see Arrivals, page 7) has been informed that his abstract entitled, "Noninvasive *in vivo* Ultrasound Imaging of Apoptosis in Acute Myocardial Infarction with Annexin-V Conjugated Microspheres," was selected as a finalist in the American Society of Echocardiography's 2004 Young Investigators Award competition. Johan will be presenting his work at the 15th Annual ASE Scientific Sessions in San Diego, CA.

AMA GRANT AWARDED

Amir Karamzadeh, M.D., a resident in the Otolaryngology Department at UCIMC, has been awarded a $2,500 grant from the American Medical Association Foundation Seed Grant Research Program for "The Study of Peripheral Nerve Injury in the Rat using Ultra-High Resolution and Polarization-Sensitive Optical Coherence Tomography." Dr. Karamzadeh has been doing research at BLI with Brian Wong, M.D., and Zhongping Chen, Ph.D.

Student award recipients from l. to r.: Hamza Beydoun, Ani Sarkassian and Kristina Messeih (Carol Chen not pictured).

GOOD-BYE

With a great deal of heaviness in our hearts, we say good-bye to Joyce Zeiler, R.N., who retired after 17 years of service at BLI. Joyce was the Nurse Director in the clinic and was instrumental in establishing the Children's Treatment Fund and Treatment Assistance Fund. We could always count on a smile from her, and we will miss her good nature and the kindness that she exhibited to patients and co-workers alike. ■

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