



BECKMAN LASER INSTITUTE

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FALL 2009

2009 Port Wine Stain and Vascular Birthmarks Conference: A Wonderful Success

The 2009 Port Wine Stain and Vascular Birthmarks Conference was the Vascular Birthmarks Foundation's (VBF) largest conference ever with 300 attendees from around the world and 25 medical experts. The conference was co-sponsored by Dr. J. Stuart Nelson, Medical Director of the Beckman Laser Institute (BLI) and the VBF, a global foundation dedicated to helping families afflicted by vascular birthmarks, tumors or syndromes. It was held on October 9-10 at the Island Hotel in Newport Beach and at the Beckman Laser Institute.

The conference began on Friday night with a reception at the Island Hotel. Immediately following the reception was a welcome from Dr. Nelson and VBF Founder, Dr. Linda Rozell-Shannon. Dr. Martin Mihm, Clinical Professor of

Pathology at Harvard Medical School and Dr. Nelson presented groundbreaking research results for the treatment of vascular birthmarks. Dr. Mihm presented the results of a study concerning the histopathology of hemangiomas that gives promise to developing a drug that will prevent them from growing.

Dr. Nelson presented preliminary results of great interest to individuals with port wine stains. The current study results provide hope for a new combination of drug and laser therapy treatment that will remove port wine stains.

Three awards were given that evening. The Physician of the Year award



Dr. J. Stuart Nelson with the Dr. Michael W. Berns Achievement Award recipient, Dr. Anne M. Comi.

was presented to Dr. Robert J. Rosen, Co-Director, Division of Peripheral and Endovascular Intervention at the Lenox Hill Heart and Vascular Institute in New York. Dr. Anne M. Comi, Director of the Hunter Nelson Sturge-Weber Center at Kennedy Krieger Institute in Baltimore, received the Dr. Michael W.

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Newsbriefs

"BENCH TO BEDSIDE" WORKSHOP

Leading-edge advances, such as a revolutionary cardiology treatment and noninvasive optical techniques for studying the brain combined with pragmatic discussion on research focus and funding highlighted a two-day inter-institute workshop at the National Institutes of Health (NIH) in Bethesda, MD.

Approximately 350 preeminent researchers in biophotonics attended the workshop entitled "Optical Diagnostics and Biophotonic Methods from Bench to Bedside." Amir Gandjbakhche, Chief of

the Section on Biomedical Stochastic Physics in the Laboratory of Integrative and Medical Biophysics, National Institute of Child Health and Human Development at the NIH, and Bruce Tromberg, Director of the Beckman Laser Institute, chaired the meeting held on October 1-2, 2009. Dr. Tromberg's opening remarks outlined the barrier to translation of optical technologies from the research bench to clinical use. He noted that of more than 50,000 clinical trials surveyed, "only a few percent involved lasers or optical technologies." He said that this low percentage is "a result of our community's focus primarily on technology development and early

feasibility studies. Our next great challenge is to expand our impact and pursue phase 1-3 studies that standardize and validate new technologies and demonstrate clinical efficacy." The workshop's 30 oral presentations covered the latest optical techniques for diagnosis of diseases of the eye, brain, breast, and vascular system, and developments in endoscopy, molecular probes, and applications to stem cell research.

ABILITY TO SEE THROUGH TISSUE

The research of Assistant Professor of Biomedical Engineering Bernard Choi was highlighted in an article entitled

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The Second M in LAMMP

by Michael W. Berns, Ph.D.

Arnold and Mabel Beckman Professor
Co-Founder, Beckman Laser Institute

I thought it would be an interesting story to recount the history behind LAMMP since it is the cornerstone program of the Beckman Laser Institute (BLI) and one of the most successful programs at UCI.

In the 1970s, as a young professor in the UCI Department of Developmental and Cell Biology, I was developing the laser microbeam (lasers through the microscope) as a tool to study problems in cell biology. In the course of doing this, I was getting many requests from scientists at other universities to come to UCI to use our laser microbeam system. The requests got to be of such magnitude that I decided to build a separate system just for these "users." In order to get the money to do this, I applied to a special National Institutes of Health (NIH) pro-

gram called the Biotechnology Resource Program (BRP) that was specifically established to provide grants for the development and utilization (by a "user community") of cutting edge new technology. That grant was submitted in 1978 and awarded in early 1979. By December 1979, the new laser microbeam system, the first in the world with super-short pulsed nanosecond and picosecond lasers, was completed, and UCI's Laser Microbeam Program (LAMP with one "M") was "open for business."

Though it was not common (and even frowned upon by my academic colleagues) for professors to seek contacts with private industry, I felt that the LAMP technology could be of potential use to that sector. So I had an "open house" and invited every CEO from the technology/medical companies in Orange County to come see LAMP. We must have sent out over 200 invitations.

The day was rainy (not common in southern California), and only two people showed up: Dr. Arnold O. Beckman with his chief technology officer, Dr. Richard Nesbit.

Following that event and realizing Dr. Beckman's peaked interest in what we were doing in LAMP, I decided to organize a one-day symposium where I invited many of the top laser specialists from around the country. It was held at the former Newporter Inn (now the Hyatt Regency Newport Beach). Of course, the symposium was pitched towards Dr. Beckman, and a few days after the symposium, he invited me to his office at Beckman Instruments for a one-on-one lunch on his office patio (from which I later patterned the Director's office and patio at the Beckman Laser Institute). I could tell that Dr. Beckman was intrigued by the use of lasers through the microscope for

(Founder's Column continued on p. 7)

VBF Conference *(cont'd from p. 1)*

Berns Achievement Award for outstanding research contributions to the understanding, diagnosis and treatment of patients with Sturge-Weber Syndrome. The VBF Service Award was given to BLI Director of Development, Erin Miller, for her dedication and tireless energy in her work with families affected by vascular malformations.

The entertainment for the evening was provided by VBF's Musicians with Birthmarks, Christine Shannon (daughter of VBF Founder Linda Rozell-Shannon) and Jennie Legary, VBF Board member and Director of Musicians with Birthmarks. The VBF celebrated its 15th anniversary with cake and a slide show of the past 15 years.

The evening ended with five breakout sessions which were informal question and answer sessions with experts in the fields of port wine stains, hemangiomas,



Dr. J. Stuart Nelson presents the VBF Service Award to Erin Miller.

syndromes, malformations and the newly formed adolescent support group session.

On Saturday morning, an international group of physicians specializing in vascular malformations and related diseases presented the latest findings on research, diagnoses, and treatments for vascular birthmarks and related syndromes to families from as far away as Beijing, China, and as close at Costa Mesa, CA. In the afternoon, at the Beckman Laser Institute, over 100 clinic

appointments were scheduled and conducted by four medical teams specializing in various vascular malformations.

The conference was made possible by the generous donations of the following individuals and organizations: Patricia Beckman, Dr. Michael Berns, BLI, Inc. non-profit, Dr. Bruce Tromberg, LAMMP, National Center for Research Resources (NCRR), NIH, Dr. Martin Mihm, Haas Foundation, Michael Steffano, Birthmarks.com, UCI Office of Research, Disney VoluntEARS Community Fund and Dr. J. Stuart Nelson.

Next year the conference will be held in New York City on Oct. 8-9, 2010. The Beckman Laser Institute will again host the annual vascular birthmarks conference in 2011. For more information, please visit the Vascular Birthmarks Foundation website www.birthmark.org or contact Erin Miller at (949) 824-4111. ■

Inaugural Virtual Photonics Workshop Held At BLI

The Virtual Photonics Technology Core of the Laser Microbeam and Medical Program (LAMMP) held its inaugural Virtual Photonics Workshop at the Beckman Laser Institute (BLI) on August 21-23, 2009. The workshop was



Students at Virtual Photonics Workshop.

attended by 23 undergraduate, graduate, and postdoctoral researchers representing UC Irvine's Beckman Laser Institute, Center for Functional Onco-Imaging, Department of Biomedical Engineering, Laboratory for Fluorescence Dynamics, and Center for Complex Biological Systems. The workshop also hosted special guests Dr. Arnold Kim, Associate

Professor of Applied Mathematics at University of California, Merced, and Dr. Snow Tseng, Assistant Professor of Electrical Engineering at National Taiwan University. As prominent experts in the modeling and computation of biophotonic processes, their participation was requested to evaluate the workshop activities and set the stage for possible future collaboration as contributors to the Virtual Photonics effort.

The workshop was designed to present the fundamental principles involved in modeling light propagation in cells and tissues and to expose students to how modeling and computation can be applied towards the development, design, and analysis of therapeutic, imaging and diagnostic methods in Biophotonics. The workshop curriculum was comprised of 6 didactic lectures coupled with 5 interactive sessions with the "Virtual Tissue Simulator" (VTS): custom software designed by the Virtual Photonics Technology Initiative

to simulate radiative transport processes in real-time. The VTS design is open-source and can be run within a standard internet browser on both Macintosh and Windows platforms. The Virtual Photonics software development team consisted of Drs. Carole Hayakawa, David Cuccia, Katherine Bhan and UCI students Adam Gardner and Jerome Chen.

The core curriculum was supplemented by Case Study Presentations. The presentation by Prof. Bernard Choi (Biomedical Engineering) illustrated the use of modeling and computational approaches to advance the application of biophotonic methods for the treatment of pigmented lesions. Jing Liu (Physics and Astronomy) discussed diffuse optical imaging of the breast, and Dr. David Cuccia (Modulated Imaging, Inc.) presented wide-field spectroscopic imaging methods. Lectures were given by the co-directors of the Virtual Photonics Core: Profs. Vasan Venugopalan and Jerry Spanier.

According to BLI Director Bruce Tromberg, "This workshop is both the
(VP Workshop continued on p. 4)

Every Mother's Dream: A Doctor and a Gold Medal Swimmer

UC Irvine Adjunct Professor of Gynecology Yona Tadir is both a doctor and a swimmer of distinction. If you log on to the new website about IVF (in vitro fertilization) at <http://www.ivf-worldwide.com/> and scroll down "The History of IVF – Major Milestones of the Process" to 1989, you will see that Dr. Tadir first reported the use of laser techniques in the field of assisted reproduction for application in gametes or embryos (Tadir et al. 1989, *Fertility and Sterility* 52: 870).

At the recent 18th World Maccabiah Games, which were held July 13-23, 2009, Dr. Tadir won five gold medals. The Maccabiah Games take place every 4

years in Israel and are considered to be the Jewish Olympics. Over 7,000 people from over 50 countries participated. Dr. Tadir, age 65, competed in swimming events for those age 60 and over. He won first place in the 50m freestyle, 50m butterfly stroke, 50m backstroke, 50x4m freestyle relay, and the 50x4m individual medley. Overall, this was quite a triumph, especially in the 50m freestyle event, where his time was 28.90 seconds, only 0.4 seconds off from the current European record.

Dr. Tadir, the Medical Director at the Beckman Laser Institute (BLI) from 1991-97, was a swimmer in his teens and twenties on the Israeli National Swim



Dr. Yona Tadir with gold medal.

Team. After 40 years devoted to the medical profession (although he was able to include several years of "light swimming at the University Hills pool" while here at UCI), he started swimming again competitively at Masters championships (National, European and World). In September, he competed in Spain at the European Masters Swimming Championship. ■

More Funding for LAMMP

BLI director Bruce Tromberg and the Laser Microbeam and Medical Program (LAMMP) faculty have been awarded two American Recovery and Reinvestment Act (ARRA) translational research grants from the National Center for Research Resources of the National Institutes of Health.

The first ARRA translational grant, entitled “Development of bedside medical biophotonic diagnostic devices,” provides two years of support for the LAMMP Medical Translational Technologies (MTT) core led by Drs.

Albert Cerussi, Bernard Choi, Anthony Durkin and Zhongping Chen to develop new portable, state-of-the-art bedside devices. These new instruments will be used to help solve several clinical problems, such as cerebral vascular imaging for assessing aneurysm repair, non-contact imaging of burn depth, image-guided prostate cancer surgery and detecting hypoxic ischemia and tissue damage in pediatric patients.

The second ARRA translational grant, entitled “Development of medical biophotonic technologies for imaging

and therapy,” provides two years of support for the LAMMP Virtual Photonic Technologies (VPT) core led by Drs. Vasan Venugopalan, Jerome Spanier and Carole Hayakawa to develop Application Tool Kits (ATK) for Photomedicine. The VPT ATK software will place cost-effective, state-of-the-art computational and visualization tools in the clinical setting for applications such as skin and wound imaging and targeted laser therapy of cancer and vascular lesions. ■

Special Departures

Paula Sweet



Paula Sweet

Paula Sweet has literally been a fixture at UC Irvine for most of her adult life. When she married in 1970, she and her husband finished college at UCI. She completed a graduate

year in teaching education and a second graduate year at the Medical Center for a clinical laboratory scientist license. Her first job at UCI was as a clinical laboratory scientist doing medical science research for the Department of Medicine, Division of Hematology-Oncology research laboratory from September 1973 until December 1999—over 26 years. She then worked in the Department of Ophthalmology from

1999 until 2004. Paula arrived at BLI in July 2004 to assist Veterinary Director George Peavy in the use of laser-assisted imaging techniques on knee tissues. She also performed immunohistochemistry on skin tissue for Medical Director J. Stuart Nelson. While officially retired from full employment, she will return to work part-time at BLI as well as continue to quilt, read, walk, volunteer, garden, and travel as much as possible. Those who have had the pleasure of working with her (for she is as congenial as her name implies as well as a meticulous and dependable co-worker) will miss seeing her every day.

Diane Wilson

When Diane Wilson started working at UC Irvine 28 years ago, she was a clerk typist in Central Purchasing. From there she went to Accounting and then



Diane Wilson

the Department of Community and Environmental Medicine. For the last 11 years, Diane has worked at BLI as a Senior Administrative Analyst where her responsibility has been to manage all the budgets for the Institute. She has enjoyed working at BLI and is proud of its research and educational programs. Diane retired from the University at the end of September. Her colleagues will miss this “numbers person” who was an integral part of the day-to-day management of the Institute. When asked what her future plans are, she laughed and replied, “To do nothing.” Nothing will include traveling, knitting and photography.

VP Workshop *(cont'd from p. 3)*

culmination of more than 10 years of work and an important beginning. Virtual photonics tools are the future of our field. They give us practical insight into how to design new instruments and

allow us to perform measurements and deliver therapies more effectively.” The entire workshop schedule and curriculum including lectures and case study presentations (slides and video), software exercises, supplemental educational materials, and access to the

Virtual Tissue Simulator can be found at the Virtual Photonics Wiki Site: <http://www.virtualphotonics.org>. Inquiries regarding the Virtual Photonics Technology Core can be directed to Vasan Venugopalan at vvenugop@uci.edu. ■

Arrivals and Departures

ARRIVALS

Seung Kuk Baek, M.D., Ph.D., an Assistant Professor of Otolaryngology-Head and Neck Surgery from Korea University College of Medicine, will be doing research with Dr. Brian Wong.

Allen Foulad is a 3rd year medical student who has received a UCI General Clinical Research Center (GCRC) scholarship. He will be doing research with Dr. Brian Wong at BLI for one year on electromechanical reshaping.

Sang Won Lee, Ph.D., is a postdoctoral fellow from Korea who has joined BLI to work with Dr. Zhongping Chen's group.

Sang Yong Park, Ph.D., will be working as an Assistant Specialist for Drs. Bernard Choi and Anthony Durkin. He will be studying the clinical application of wide field functional imaging.

Pinghe Wang, Ph.D., from the People's Republic of China will be working as an Associate Specialist in Dr. Zhongping Chen's lab. He will be assisting in the development of a tunable laser with a narrow linewidth for long range OCT.

Wei Wei is a graduate student from the People's Republic of China and joins BLI as a Junior Specialist. He will work with

Dr. Zhongping Chen to develop a photo-acoustic imaging system for imaging blood vessels in collaboration with an ultrasound group from USC.

Tao Wu, Ph.D., is a postdoctoral scholar from the People's Republic of China who will be working with BLI Co-founder Dr. Michael W. Berns.

DEPARTURES

Paul Holden, M.D., left BLI to go to Indiana University where he is doing a fellowship in facial plastic surgery. Dr. Holden worked with Dr. Brian Wong.

Khyati Mohanty, M.S., who worked in the lab of BLI Co-founder Michael W. Berns, will pursue her Ph.D. degree in the Department of Biomedical Engineering at Carnegie Mellon University in Pittsburgh, PA.

Samarendra Mohanty, Ph.D., a postdoctoral scholar working in the lab of BLI Co-founder Michael W. Berns, has accepted a faculty position with the



From left to right are Allen Foulad, Sang Won Lee, Sang Yong Park, Pinghe Wang, Seung Kuk Baek, Tao Wu and Wei Wei.

Department of Physics at the University of Texas, Arlington.

James Ridgway, M.D., recently left BLI for the University of Washington where he will do a fellowship in facial plastic surgery. Dr. Ridgway worked with Dr. Brian Wong.

Ali Sepehr, M.D., left BLI to continue at the University of Toronto where he will do a fellowship in facial plastic surgery. Dr. Sepehr worked with Dr. Brian Wong.

Xiang Qun Xu, Associate Specialist with Dr. Zhongping Chen's group, returned to the People's Republic of China.

Lingfeng Yu, who worked in Dr. Zhongping Chen's lab, has joined Carl Zeiss Meditec in Dublin, CA, as a Staff Scientist.

Selected Recent Publications

"Optical approach to the salivary pellicle" by J. H. Baek, T. Krasieva, S. Tang, Y. Ahn, C. S. Kim, D. Vu, Z. Chen and P. Wilder-Smith in *Journal of Biomedical Optics* 14: 044001, 2009.

"Amplitude and phase of tightly focused laser beams in turbid media" by C. Hayakawa, V. Venugopalan, V. V. Krishnamachari and E. Potma in *Physical Review Letters* 103: 043903, 2009.

"Investigation of a probe design for facilitating the uses of the standard photon

diffusion equation at short source-detector separations: Monte Carlo simulations" by S. H. Tseng, C. Hayakawa, J. Spanier and A. J. Durkin in *Journal of Biomedical Optics* 14: 054043, 2009.

"Broadband diffuse optical spectroscopy assessment of hemorrhage- and hemoglobin-based blood substitute resuscitation" by J. Lee, J. G. Kim, S. Mahon, B. J. Tromberg, D. Mukai, K. Kreuter, D. Saltzman, R. Patino, R. Goldberg and M. Brenner in *Journal of Biomedical Optics* 14: 044027, 2009.

"Blood flow dynamics after laser therapy of port wine stain birthmarks" by Y. C. Huang, N. Tran, P. Shumaker, K. M. Kelly, E. V. Ross, J. S. Nelson and B. Choi in *Lasers in Surgery and Medicine* 41: 563-571, 2009.

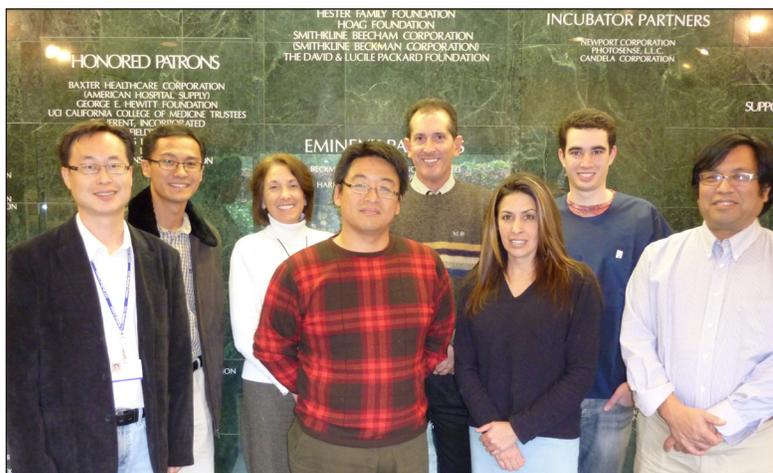
"Diffuse optical spectroscopy measurements of healing in breast tissue after core biopsy: case study" by W. Tanamai, C. Chen, S. Siavoshi, A. Cerussi, D. Hsiang, J. Butler and B. J. Tromberg in *Journal of Biomedical Optics* 14: 014024, 2009.

New Optical Methods and Drugs for Pulmonary and Critical Care Medicine

The laboratory of BLI Professor and Chief of Pulmonary and Critical Care Medicine (UCIMC) Matthew Brenner, M.D., is working to provide advances in clinical care utilizing the newest optical methods developed at the Beckman Laser Institute (BLI). Translational research performed by the Brenner Research Team is designed to bridge the gap between the optical technologies developed by fellow BLI engineers and physicists and the direct clinical needs of patients. The Brenner Team makes use of three important new optical technologies: optical coherence tomography (OCT) imaging, diffuse optical spectroscopy (DOS), and continuous wave near infrared spectroscopy (CWNIRS) monitoring to improve diagnosis and treatment in several important patient care areas.

The early diagnosis of airway cancer is critical to improving patient survival, and Yeh-Chan Ahn, Ph.D., is using OCT imaging in both preclinical models of lung cancer and in patients. OCT can be introduced into the airway via very thin flexible fibers and can provide high resolution images of airway tumors less than 1mm in diameter. OCT can provide images of abnormalities both on the surface and hidden just below the surface of tissues. Dr. Ahn makes use of the latest OCT innovations from the lab of physicist and biomedical engineer, Dr. Zhongping Chen, at the BLI to accomplish these studies. OCT has the potential for providing very early recognition of suspect cancerous tumors and may ultimately reduce the need for invasive tissue sampling.

Smoke inhalation airway injury is a common occurrence due to smoke exposure in home fires, industrial accidents, and military incidents. It is important to understand the severity of smoke inhalation injury in order to make proper decisions for patient triage and care. Dr.



From left to right are Jae Kim, Yeh-Chan Ahn, Sari Mahon, Jangwoen Lee, Matthew Brenner, Tanya Burney, Daniel Lemor and David Mukai.

Ahn, David Mukai, Tanya Burney, and collaborating scientist Ram Ramalingam, Ph.D., have been studying the early and longer term effects of smoke inhalation on the airway with OCT imaging in model systems. OCT can reveal very early changes in airway epithelial thickness that may be predictive of longer term needs for airway support and treatment. This information can lead to better treatment decisions, particularly in civilian and military mass casualty situations.

Jangwoen Lee, Ph.D., and Jae Gwan Kim, Ph.D., are using their expertise in optical spectroscopy to develop and test applications of DOS and CWNIRS for detection and monitoring of hemorrhage (internal bleeding), pneumothorax and hemothorax (air and blood leakage into the chest cavity) resulting from vehicle accidents and other types of civilian and military trauma. DOS and CWNIRS can look at tissue and brain oxygenation in real time using infrared light probes placed on the skin and without the need for blood sampling and analysis. Their goal is to develop monitoring systems that can identify these potentially lethal occurrences and that can be easily deployed and used in emergency vehicles or by military field medics to help quickly recognize patients in need of immediate critical care and life support.

The development of cyanide toxicity may occur from smoke inhalation, industrial exposure, and acts of terrorism. With more than 5.2 billion pounds of cyanide produced annually worldwide, mass casualty cyanide exposure from intentional terrorism acts is a major concern to civilian and military personnel. The newest experiments in the Brenner Lab are focusing on quickly identifying and treating cyanide poisoning. Dr. Lee, Dr. Kim, and Sari Mahon, Ph.D., with the help of Daniel Lemor, are designing experiments to use DOS and CWNIRS to recognize the physiological changes that occur with cyanide exposure and to use these spectroscopic technologies to monitor and compare the treatment of cyanide poisoning with antidotes. The Brenner Team has a major collaborative project effort with the University of Minnesota and UC San Diego to test several exciting new classes of drugs which could shortly be available to treat mass cyanide exposure without the need for highly skilled medical personnel.

The important medical problems addressed by these emerging technologies highlight the “bench to bedside” research concept that is widely employed throughout the BLI and is helping advance patient care. ■

Honors and Awards

J. Stuart Nelson, M.D., Ph.D.

Medical Director J. Stuart Nelson has been elected to the College of Fellows of the American Institute for Medical and Biological Engineering (AIMBE). Located in Washington, DC, AIMBE is the leading advocacy group for medical and biological engineering and is comprised of some of the most important leaders in science and engineering, the top 2% of medical and biological engineers.

Zhongping Chen, Ph.D.

Professor of Biomedical Engineering Zhongping Chen has been awarded a National Institutes of Health (NIH) Bioengineering Research Grant entitled “Integrated multi-modality intravascular US/OCT imaging system.” This is a collaborative project which involves Dr.

Chen’s Cardiovascular Optical Imaging Lab at the Edwards Lifesciences Center for Advanced Cardiovascular Technology (ELCACT) and his Optical Coherence Tomography (OCT) Lab at the Beckman Laser Institute (BLI), Dr. Nagat Norula’s lab at ELCACT, and Drs. Q. Zhou and K. K. Shung of the Transducer Resource Center at USC.

Brian J. F. Wong, M.D.

Professor and Vice-Chairman of UCIMC Department of Otolaryngology-Head and Neck Surgery Brian Wong has been awarded a grant from the National Institutes of Health (NIH), National Institute for Dental and Craniofacial Research, for “Electromechanical reshaping of tissue” and a grant from Lockheed-Martin Corp. for “Laser cartilage reshaping.” Dr. Wong has also been

named Senior Examiner for the American Board of Otolaryngology.

Rohit Garg, M.D., M.B.A.

Dr. Rohit Garg, who works with Dr. Brian Wong, received a Resident Travel Grant from the American Academy of Facial Plastic and Reconstructive Surgery for the annual meeting held in San Diego, CA, on October 1-3, 2009, for work on “Stabilization of costal cartilage graft warping using infrared laser irradiation in a porcine model.” Dr. Garg also received a Resident Leadership Grant from the American Academy of Otolaryngology – Head and Neck Surgery Foundation (AAO-HNS/F) at the annual meeting held in San Diego, CA, on October 4-6, 2009, for work on “Chondrocyte viability in human nasal septum after morselization.”

Founder’s Column *(cont’d from p. 2)*

very fine subcellular surgery. Being bold (which seemed to be my “character” at the time), I suggested that he might want to fund the further development of this work. He challenged me to come back with a detailed conceptual proposal.

Getting it all into a coherent proposal consumed the next six months of my life and a lot of time from a very supportive Academic Vice Chancellor William Lillyman and Assistant Vice Chancellor Bill Parker – who is one of the UCI Medal recipients this year. It was finally ready to present to Dr. Beckman in February of 1982. I remember the day I heard back from Dr. Beckman very clearly. It was in July 1982. He summoned me to his Irvine Beckman Instruments office, and he simply asked me, “How much will you need to build the Laser Institute?” I blurted out, “\$5 million,” (which would be 3 times that amount in today’s dollars). Without any further discussion, he said that he would give half, but only after I raised a matching half. Within six months (by the end of 1982), we had all \$5M lined up, and

the Beckman Laser Institute, focused around LAMP, was born on paper. Then the actual design and construction phases started. By that time, the NIH LAMP program was coming up for its first five-year review, and it received a resounding thumbs-up leading to another five-year award.

By June 4, 1986, construction was completed, and the BLI, actually called the Beckman Laser Institute and Medical Clinic (BLIMC), opened on the UCI campus. The “Medical Clinic” addition to the name came into being because I was also engaged in an exciting new NIH-funded application of lasers in medicine called Photodynamic Therapy of Cancer. Dr. Beckman and I felt that any institute focused around lasers should be engaged in this new application. So at the “last minute,” a clinic with an operating room was designed into the building. That put us over our budget by about half a million dollars, and with Dr. Beckman as a guarantor, we borrowed the money from a local bank (probably a “first” for any new building on a UC campus). But the loan was repaid within six months by addi-

tional donations from a very supportive Orange County community (mainly Dr. Beckman’s friends!).

Ironically, even though “Medical” was part of the BLIMC name from the beginning, principally because of the addition of the clinic, it wasn’t until the third NIH renewal cycle of LAMP in 1994 that I proposed that the second “M” be added to LAMP, which now became the **LA**ser **M**icrobeam and **Me**dical **P**rogram, or LAMMP. By that time, we had seen over 15,000 patients in the clinic for problems that included port wine stains in young children, cervical cancer, and refractive problems of the eye. The NIH review panel enthusiastically endorsed the newly named LAMMP program and recommended continued funding “...with high enthusiasm.”

By that third NIH renewal period, it was clear that the vision of the BLI Founders of an institute with a balance of programs comprised of *basic science, engineering, and clinical medicine* was truly unique and was really a workable concept for interdisciplinary collaboration. The evolution of LAMP to LAMMP epitomized this concept. ■



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

"The most transparent research" in *Nature Medicine* 15: 1106-1109, 2009. The article describes methods to enhance the ability to see more deeply into biological tissue. Dr. Choi was interviewed about his recent work on dimethyl sulfoxide (DMSO) for optical clearing of the skin. All the researchers profiled in the article shared the common goal of one day making it possible to see what is going on deep inside of the body through diverse approaches. This would provide new insights into human biology and help doctors diagnose and treat disease more easily.

RESEARCH HIGHLIGHTED ONLINE

Two articles by Samarendra Mohanty, Ph.D., who worked as a postdoctoral researcher in Co-founder Michael W. Berns' lab, have been selected by *Optics & Photonics News - Optics in 2009* (OPN) and *Virtual Journal for Biomedical Optics* (VJBO). The special

year-end issue of OPN features Dr. Mohanty's article entitled "Digital holography enables quantitative phase evaluation during laser microsurgery." Dr. Mohanty's article entitled "Digital holographic microscopy for quantitative cell dynamic evaluation during laser microsurgery" was selected by editor-in-chief, Gregory Faris, for publication in the September 2009 issue of VJBO. Every month, Dr. Faris reviews articles in the biomedical field that have been published in other OSA journals and selects appropriate articles for inclusion in VJBO.

MORE LABORATORY SPACE

Assistant Professor of Biomedical Engineering Elliot Botvinick now has additional lab space at the UCI Edwards Lifesciences Center for Advanced Cardiovascular Technology. At this lab, he will be investigating (1) the link between extracellular matrix mechanics and capillary morphogenesis during wound healing and for engineered tis-

sues, (2) the construction of a new tissue-derived material for heart valve leaflets, and (3) new devices for the diagnosis and treatment of vascular diseases.

NEWLY ELECTED OFFICERS OF PDA

Rolf Saager, Ph.D., a post-doctoral researcher working in Dr. Tony Durkin's lab, and Darren Roblyer, Ph.D., a post-doctoral fellow in BLI Director Bruce Tromberg's lab, have been elected as officers in the recently formed organization, Post-Doctoral Association (PDA), which was officially recognized by UC Irvine in June 2009. The PDA organizes social and networking events, professional development workshops and seminars, and participates in state-wide and national forums to identify and discuss challenges facing Post-Docs as well as promote the quality of life of Post-Docs during their appointment at UCI. Dr. Saager serves as President while Dr. Roblyer serves as Vice Chair of Social Events.