LASER
BECKMAN LASER INSTITUTE

IN THE NEWS

WINTER 2014

Another Successful VBF Conference

The 2013 Port Wine Stain and Vascular Birthmarks Conference was attended by approximately 275 people, including many medical experts. Held on Saturday, October 12, 2013, at the Island Hotel in Newport Beach and at the Beckman Laser Institute (BLI), the conference was co-organized by Dr. J. Stuart Nelson, Medical Director of the BLI, and the Vascular Birthmarks Foundation (VBF), a global foundation dedicated to helping families afflicted by vascular birthmarks, tumors or syndromes.

Dr. J. Stuart Nelson presents the Patricia Beckman Excellence in Philanthropy Award to Leslie and Dennis Rebelo. From left to right: Herminia Canto (Leslie's mother), son Derek, Leslie Rebelo, Dr. Nelson, daughter Daneka and Dennis Rebelo.

The conference began in the morning at the Island Hotel with a welcome from Dr. Nelson and VBF founder Dr. Linda Rozell-Shannon and the presentation of five awards. The Physician of the Year award was presented to Dr. Francine Blei, Medical Director of the Vascular Birthmark Institute in New York City. The VBF/BLI Service Award was given to Deborah Birnie for her many years as a dedicated volunteer in helping make the conference run smoothly and efficiently. The VBF Service Award was given to Andria Gottsabend for organizing an annual one-mile walk called "Olivia's Walk for Birthmarks" that supports the VBF. Dr. Wenbin Tan was presented with the Dr. Michael W. Berns Achievement Award for his outstanding research contributions to the understanding, diagnosis and treatment of vascular birthmarks. Leslie and Dennis Rebelo were given the Patricia Beckman Excellence in Philanthropy Award for their exceptional fundraising efforts which included hosting a dinner, dance and auction that raised funds which enabled more families to attend the VBF conference.

After the awards presentation, an international group of physicians specializing in vascular malformations and

(VBF Conference continued on p. 3)

BLI Awarded Grant from the DoD

The Beckman Laser Institute and Medical Clinic (BLI) has received notice from the Department of Defense (DoD) that a three-year, $4 million grant application, "Advanced Optical Technologies for Defense Trauma and Critical Care," has been approved for funding. Under the leadership of Principal Investigator, Professor Michael Berns, and Program Director, Dr. George Peavy, this Air Force Office of Scientific Research (AFOSR) program has been a BLI core grant since 1985. The current award will provide funding for seven projects involving the development and application of state-of-the-art Biophotonics technologies to longstanding problems in trauma and combat casualty care. Overall, the grant supports seven BLI lead scientists and 22 collaborators, students and postdocs. Projects include:

Critical Care Monitoring (under the supervision of Drs. Matthew Brenner and Elliot Botvinick)
This project involves the development and evaluation of non-invasive optical detectors and wearable microsensors for the rapid, real time measurement of tissue lactic acid, pCO2, pO2, oxy- and deoxyhemoglobin, and cytochrome c oxidase redox states. These advanced monitoring technologies will be tested in trauma and critical care settings for their ability to rapidly guide and optimize treatment in patients.

Non-invasive Methods for Detecting Acute Dehydration (under the supervision of Dr. Matthew Brenner)
Rapid, real time detection of dehydration in active soldiers, athletes, and hospitalized patients is a major unmet technolo-

(DoD Grant continued on p. 5)

How BLI Snagged a Department of Defense Grant

by Michael W. Berns, Ph.D.
Arnold and Mabel Beckman Professor
Co-Founder, Beckman Laser Institute

It started with a phone call in the summer of 1985. My office was in Steinhaus Hall on the main campus of UC Irvine; the Beckman Laser Institute (BLI) was beams and girders and cinder block—about half-finished. We were still $200,000 short of funds to finish the building. My mind was wrestling with Arnold Beckman's suggestion that the Beckman Laser Institute corporation borrow the money from the bank—and pay interest! The phone call was an unneeded distraction at that moment, but Bev, my secretary, insisted I take it. So I did.

It was a guy from D.C., from an organization I never heard of. He rattled off the name: Strategic Defense Initiative Organization (SDIO). Half listening, the rest of my mind focused on whether or not to borrow money to finish the building, my ears perked up when he mentioned "President Reagan" and "new money." Then I listened … intently. But as the conversation progressed, I realized he wasn't looking at me or UCI as a potential recipient of funds: what he was looking for was someone to review proposals because the SDIO had no infrastructure for this task and, frankly, had no concept of "peer review," something they needed in order to give their new grant program legitimacy in the eyes of the Congress, the scientific establishment, and the public. They wanted me to review the proposals—be the peer review for the entire program.

This convinced me they really didn't know what they were doing, as peer review certainly could not be done by just one person. Not so innocently, I asked if there was a description of the program. I was promised a copy would be sent to me by special delivery (the form of "quick" delivery in those days). I said I would call back with my answer.

The one page announcement arrived in two days. I still have it, a yellowed sheet of paper that announces: "Biomedical and Materials Research with Free Electron Lasers on Behalf of the Innovative Science and Technology Office of the Strategic Defense Initiative Organization." It stated that awards would be made September 1st, but there was no deadline date for submission—odd. I called the 202 area code number. Surprised that I got a person on the first ring, I asked, "When is the deadline for submission of proposals?" The curt answer: "in two weeks." I hung up—the heck with being the peer review for a program that didn't know anything about review. I was going to apply.

That's how our Department of Defense (DoD) program joined the NIH LAMP (LAMMP) biotechnology resource grant as the two cornerstone core grants of the BLI—a year before the doors to the new building opened and up to this day. We recently were notified that our DoD grant would be renewed for another three years to the tune of $4,000,000.

It's been a long road since 1985 when the program started as the Medical Free Electron Laser (MFEL) program. As described in the initial call for proposals: "The program is expected to be three to five years in length." That was thirty-eight years ago! The announced purpose of the program then was two-fold: (1) development of tunable free electron lasers (FELs) capable of operating at wavelengths of 20 nanometers or less (certainly not our expertise), and (2) basic biological and biomedical research that will make use of the FELs, for which BLI fit the bill to a "T." One of our strengths was basic research on high power pulsed lasers and traveling to the FELs located at Stanford and UC Santa Barbara with our biological systems would be feasible, especially when the government paid for us to charter our own plane to fly us with the cells to Santa Barbara in the morning and back in the evening. We were successful in snagging an SDIO award.

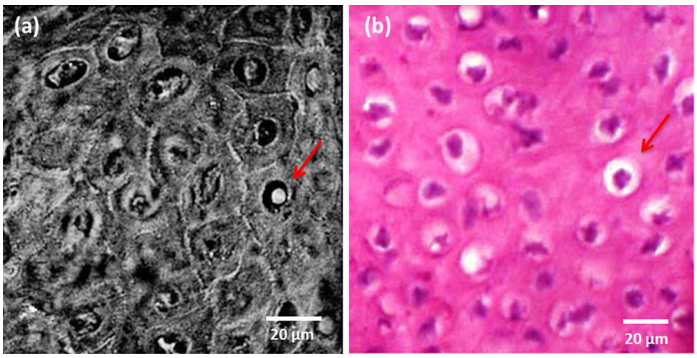
The collaboration worked like a charm, and we published the first paper in the literature on the biological effects of long wavelengths from free electron lasers. But it soon became clear that SDIO was not the best organization to manage an applied and basic research laser program so management was transferred to the Office of Naval Research (ONR) that had a lengthy track record in managing contract and grant awards to universities. For the next 20 years, the BLI, as well as the Wellman Laboratory for Photomedicine at Massachusetts General Hospital (along with Stanford, Vanderbilt and Duke Universities), received multiyear competing awards for basic and applied research, initially using pulsed laser systems and subsequently with a broader array of pulsed and continuous wave (CW) laser systems.

During the first 15 years of the program, BLI generated 29 patents and invention disclosures. Then in 2000, the program was again transferred, this time to the Air Force Office of Research (AFOSR), with a much stronger mandate for diagnostic and therapeutic photonic systems transferrable to military and non-military medicine, as well as commercial uses. The DoD lost interest in the MFELs, and the program morphed into the present Military Medical Photonics Program. Again, because of the unique concept and design of the BLI facilities, including the addition of the Photonic Incubator in 1996, the BLI was in a great position to compete for continued funding. ▪

BLI Newsletter Staff
Editor: Bruce Tromberg
Writers: Elaine Kato, Erin Miller, Deborah Birnie
Layout & Design: Brian Hill

A New, Non-invasive Method for Identifying Squamous Cell Carcinoma

There is a need to develop non-invasive diagnostic tools to achieve early and accurate detection of skin cancer in a non-surgical manner. In "Evaluation of stimulated Raman scattering microscopy for identifying squamous cell carcinoma in human skin" by R. Mittal, M. Balu, T. Krasieva, E. O. Potma, L. Elkeeb, C. B. Zachary and P. Wilder-Smith published in *Lasers in Surgery and Medicine* 45: 496-502, 2013, the authors evaluated the capability of stimulated Raman scattering (SRS) microscopy, a potentially non-invasive optical imaging technique, for identifying the pathological features of squamous cell carcinoma tissue.



(a) SRS image of atypical cells in comparison with (b) H&E stained tissue.

Optical microscopy studies of skin cancer, the most common form of cancer, have been facilitated by the manifestation of the disease in superficial tissue layers that are easily accessible for optical inspection. Due to the optical accessibility of the epidermis, skin cancer is often used as a model for evaluating novel diagnostic and therapeutic approaches. While the majority of skin carcinoma lesions are in the form of a basal cell carcinoma, squamous cell carcinoma (SCC) is the second most common pathology, constituting 20% of all cutaneous malignancies. SCC is a malignant tumor arising from uncontrolled growth of epithelial keratinocytes. It is estimated that 700,000 cases of SCC are diagnosed annually in the U.S., resulting in approximately 2,500 deaths. Although most of the non-melanoma skin cancer cases can be cured, rising incidence and local invasiveness constitute an important clinical challenge. Today, non-melanoma skin cancer is diagnosed by visual inspection followed by invasive skin biopsy and histopathological examination. Patients with SCC are at an increased risk of future SCC tumor development, especially in the same location or surrounding tissue. Primary cutaneous SCCs can metastasize unless treated early by optimal surgical techniques, and thus, early diagnosis is important.

Simulated Raman scattering (SRS) is a non-linear optical microscopy technique which probes the vibrational signature of a molecule. One of the premier targets of the SRS technique is skin tissue. With penetration depths up to 0.5mm, SRS microscopy holds promise as a diagnostic tool of skin carcinomas, which are present in the optically accessible epidermis layer of the tissue. The goal of this translational

(Non-invasive continued on p. 4)

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

related diseases presented the latest findings on research, diagnoses, and treatments for vascular birthmarks and related syndromes to families from as far away as Venezuela and as close as Irvine, CA. Two concurrent lecture sessions were held so that people could attend the session that pertained more specifically to their conditions. Families heard from experts in the fields of port wine stains, hemangiomas, malformations and syndromes (head & neck), and malformations and syndromes (extremities).

In the afternoon, at the Beckman Laser Institute, 127 clinic appointments were scheduled and conducted by six medical teams specializing in various vascular malformations.

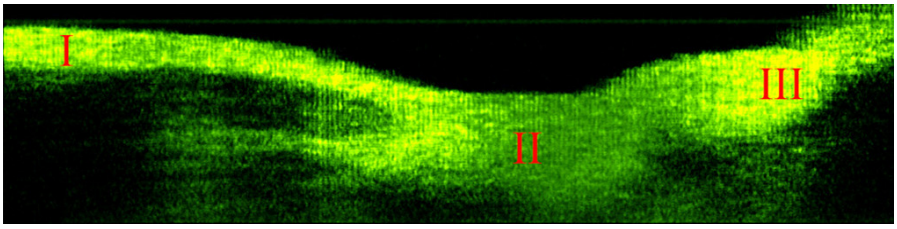

Dr. Wenbin Tan

The conference was made possible by the generous donations of the following individuals, organizations and corporations: Syneron, Inc.; Leslie and Dennis Rebelo; The Beckman Laser Institute Foundation, Inc.; The Laser Microbeam and Medical Program (LAMMP), a National Institute of Biomedical Imaging and Bioengineering (NIBIB) Biotechnology Center in the BLI; Terumo, Inc.; UCI Medical Center; Lauri Firstenberg; American Society for Laser Medicine and Surgery, Inc. (ASLMS); Dr. Eric Bernstein; Land O' Lakes, Inc.; and Whole Foods Market.

The VBF 20th Anniversary Gala and Conference will be held in New York City on Oct. 10-11, 2014. The Beckman Laser Institute will again host the annual vascular birthmarks conference in 2015. For more information, please visit the Vascular Birthmarks Foundation website at www.birthmark.org or contact Erin Miller at (949) 824-4111. ■

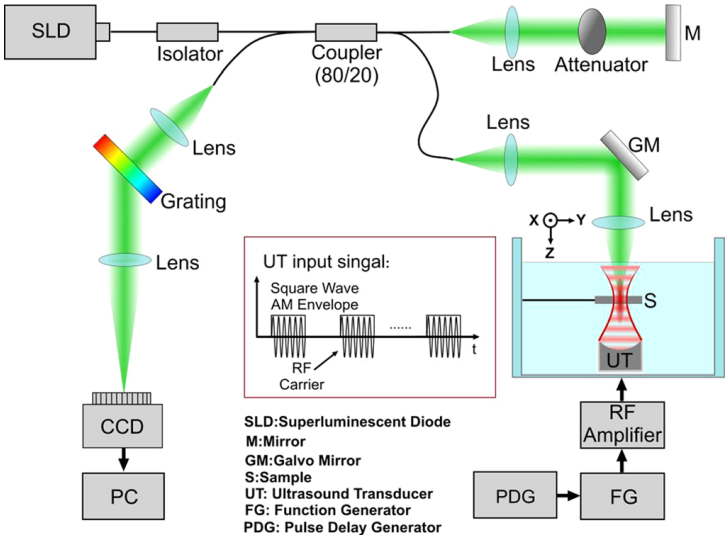
A New Method for Imaging and Characterizing Vulnerable Plaques

In "Resonant acoustic radiation force optical coherence elastography" by W. Qi, R. Li, T. Ma, J. Li, K. K. Shung, Q. Zhou and Z. Chen published in *Applied Physics Letters* 103: 103704, 2013, a team consisting of researchers from the Beckman Laser Institute and the NIH Ultrasonic Transducer Resource Center at USC has imaged a post-mortem human coronary artery with resonant acoustic radiation force optical coherence elastography (ARF-OCE) to demonstrate the potential of resonant ARF-OCE as a non-invasive method for imaging and characterizing vulnerable plaques.



Resonant ARF-OCE image of coronary artery segment showing frequency response at 500 Hz. The thin, loose fibrous cap (regions I and II) shows a higher vibration amplitude as opposed to the thick, dense fibrous cap (region III) which shows very weak vibration at this frequency.

Knowledge of tissue mechanical properties provides valuable medical information in disease diagnosis and prognosis. There is a close correlation between tissue elasticity and pathology. For example, in atherosclerosis, measurement of tissue biomechanical properties has the potential to differentiate between various plaque components and provide critical information to assess the vulnerability of plaques. High strain locations in the vessel wall indicate the presence of vulnerable plaques.



Experimental set-up of ARF-OCE system.

The team developed an ARF-OCE system that uses an amplitude modulated acoustic wave to apply dynamic pressure to the tissue and then uses optical coherence tomography to evaluate the elastic properties of vascular tissue. This combination achieves high speed and high sensitivity mapping of the elastic properties of tissue which has great potential for clinical cardiovascular imaging. The resonant ARF-OCE was able to distinguish different components in the plaque at varying frequencies. A thin, loose fibrous cap showed higher resonant amplitude as opposed to the thick, dense fibrous cap which showed very weak vibration at the same frequency. Since the mechanical characteristics of the fibrous cap determines the stability of the plaque, the resonant ARF-OCE method could provide useful mechanical information about the fibrous cap and thus may serve as a predictor of atherosclerotic plaque stability and provide useful information during clinical interventions, such as stent and balloon catheter insertion. ■

Non-invasive *(cont'd from p. 3)*

study was to investigate the capability of SRS imaging using contrast from lipids and proteins present in the skin to detect and characterize SCC tumor. SRS imaging data were compared with two standards: (1) reflectance confocal microscopy (RCM), which is currently the most widely used non-invasive high-resolution optical imaging technique, and (2) microscopy of hematoxylin and eosin (H&E) stained tissue sections, the gold standard in clinical practice. Whereas RCM has gained clinical acceptance, the SRS technique has not reached this level of clinical translation yet. In order for SRS to make a clinical impact, several hurdles have to be overcome.

In this work, the authors used a rapid, simplified SRS approach for generating meaningful contrast based on the direct mapping of the protein-like density of the methyl vibrational mode. This allowed them to visualize the signal from proteins present in nuclei, cell membrane, and most abundant proteins in keratin. The signal thus acquired was compared with that seen in RCM, and it was concluded that SRS microscopy provided more cellular details and a more faithful representation of the tissue which could potentially lead to a better diagnostic evaluation of skin cancers. In addition, the results of this study demonstrated that the specific histological properties of SCC previously identified through staining methods could be reproduced and visualized through SRS imaging. ■

HONORS AND AWARDS

Robert G. W. Brown, Ph.D.

Robert Brown

Adjunct Professor Robert Brown has been appointed to the Board of Directors of the American Institute of Physics (AIP) for a 3 year term. Founded in 1931 with headquarters in College Park, MD, AIP is a not-for-profit membership corporation created for the purpose of promoting the advancement and diffusion of the knowledge of physics and its application to human welfare. As a "society of societies," AIP supports ten Member Societies, who collectively represent a broad cross-section of more than 135,000 scientists, engineers and educators in the global physical science community.

Wenjuan Qi, Ph.D.

Wenjuan Qi

Wenjuan Qi, who worked in Dr. Zhongping Chen's lab, presented her dissertation defense, "Visualize tissue biomechanics: acoustic radiation force optical coherence elastography," on September 20, 2013. Dr. Qi is now working as an Applications Engineer at Palomar Technologies in Carlsbad, CA.

Bhupinder Shergill, Ph.D.

Postdoctoral Researcher Bhupinder Shergill is one of the recipients of The Ruth L. Kirschstein National Research Service Awards for Individual Postdoctoral Fellowships from the National Institutes of Health (NIH). The 3 year fellowship entitled "Two phase approach to pancreatic islet transplantation" is aimed at advancing the treatment of diabetes by housing islets in a well-vascularized environment where they will remain viable and functional. Bhupinder works in Dr. Elliot Botvinick's lab.

Abhishek Kurup, B.S.

Abhishek Kurup

Biomedical Engineering graduate researcher Abhishek Kurup has received a Predoctoral Training Grant from the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NIH/

(Honors and Awards continued on p. 7)

DoD Grant *(cont'd from p. 1)*

gy need. Non-invasive optical probes and portable spectrometry technology (Diffuse Optical Spectroscopy) developed at BLI will be tested for the quantitative detection and monitoring of hydration.

Wide-field Functional Imaging for Assessment of Burns and Wound Healing (under the supervision of Drs. Anthony Durkin and Bernard Choi)
Wide-field Functional Imaging (WiFI) technology is being developed as a simple imaging camera to assess and rapidly map burn-wound severity by providing quantitative, subsurface information on tissue metabolic activity, hemodynamics, perfusion and biochemical composition.

Development of High Speed Long-Range Fourier Domain OCT Imaging of Inhalation Airway Injury (under the supervision of Dr. Zhongping Chen)
A user-friendly, clinical, high-speed, long-range Fourier domain optical coherence tomography (OCT) system is being developed for near histology quality, near real time, minimally invasive imaging of the major airways for the identification and evaluation of injury caused by inhalation of smoke, superheated air, and chemical agents. This project will accelerate the translation and clinical development of this technology, and validate its use for airway imaging.

Fiberoptic Imaging Probe for Detection and Monitoring of Smoke and Chemical Agent Injuries of the Upper Airways (under the supervision of Drs. Petra Wilder-Smith and Eric Potma)
A new clinical miniature handheld scanning non-linear optical microscopy (s-NLOM) probe will be developed for rapid examination of large tissue volumes capable of mapping cellular features in the tissue down to a depth of 0.5 mm at 4 frames per second, with unique clinical scanning capabilities, enhanced imaging depth and wide field of view, while retaining sub-cellular resolution.

Acceleration of Wound Healing (under the supervision of Dr. Michael Berns)
Low light level radiation from laser and diode sources used alone or in combination with a nitric oxide donor molecule will be examined with respect to the ability to accelerate the closure of wounds in basic cellular and animal model systems. The endpoint of these studies is the development of a field-deployable portable system for the management of acute and chronic wounds.

Improving Rehabilitation from Lower Back Muscle Injuries Using Non-Invasive Metabolic Feedback: A Pilot Clinical Study (under the supervision of Drs. Bruce Tromberg and Albert Cerussi)
Non-invasive, quantitative measures of muscle tissue metabolic function made with a portable, handheld DOS device will be used to improve the detection and treatment of musculoskeletal injuries, particularly in the lower back, with the ultimate goal of developing an integrated DOS-therapeutic ultrasound device for the treatment of muscle injuries.

In the 38 years this grant has been funded, BLI has been awarded 15 patents. ▪

Newsbriefs

Fifth Annual Allan R. Oseroff Photomedicine Lecture

The fifth annual Allan R. Oseroff Photomedicine Lecture held at the Calit2 Auditorium, UC Irvine, was given by Rebecca Richards-Kortum, Ph.D., on October 10, 2013. Stanley C. Moore Professor and Chair of Bioengineering at

Allen R. Oseroff lecture: (from left to right) Drs. Bruce Tromberg, Rebecca Richards-Kortum, Stephanie Pincus and Jennifer Holtzman.

Rice University, Dr. Richards-Kortum spoke on "Low-cost, high-performance optical technologies to meet global health needs." The annual Photomedicine Lectureship was established by the Beckman Laser Institute (BLI) in recognition of Dr. Allan Oseroff's outstanding contributions to the BLI through his participation on the Laser Microbeam and Medical Program (LAMMP) external scientific Advisory Board for more than 10 years. This year's lecture was co-sponsored by the Chao Family Comprehensive Cancer Center, the Institute for Clinical Translational Science, the California Institute for Telecommunications and Information Technology, and the Department of Biomedical Engineering.

UCI Executive Vice Chancellor Visits BLI

Dr. Howard Gillman, UCI's new Executive Vice Chancellor and Provost, visited the Beckman Laser Institute (BLI) on September 5, 2013. After a tour of the BLI, BLI Co-founder Michael Berns presented Dr. Gillman with a replica of Dr. Arnold Beckman's 90th birthday card signed by 5 presidents.

Neurological Surgeons Resident Challenge

Neurosurgery Resident Marlon Mathews, who works with Dr. Henry Hirschberg, won 3rd place at the 2013 Congress of Neurological Surgeons Residents challenge on October 22, 2013. This is a quiz challenge in which members of all the neurosurgery residency programs in North America compete.

Executive Vice Chancellor visit: BLI Medical Director J. Stuart Nelson (left) describes a laser procedure to BLI Director Bruce Tromberg (center) and Executive Vice Chancellor Howard Gillman (right).

Visit to South Korea

The Henry Samueli School of Engineering Dean Gregory Washington and Beckman Laser Institute Professors Brian Wong and Zhongping Chen were members of a UCI delegation that visited the Ulsan National Institute of Science and Technology (UNIST), South Korea, in October 2013 to discuss collaborative research between UCI and UNIST.

CHOC Conference

Seven current and former members of Dr. Brian Wong's lab presented posters at the Children's Hospital of Orange County (CHOC) Pediatrics 2040 Conference on October 3, 2013. Carter Wheatley won the abstract competition in his division ("Medical Devices and Mobile Technology") and gave an oral

(Newsbriefs continued on p. 8)

Selected Recent Publications

"Achromatic miniature lens system for coherent Raman scattering microscopy" by R. Mittal, M. Balu, P. Wilder-Smith and E. O. Potma in *Biomedical Optics Express* 4: 2196-2206, 2013.

"Ex vivo electromechanical reshaping of costal cartilage in the New Zealand white rabbit model" by K. Badran, C. Manuel, C. Waki, D. Protsenko and B. J. Wong in *Laryngoscope* 123: 1143-1148, 2013.

"Perturbation Monte Carlo methods for tissue structure alterations" by J. Nguyen, C. K. Hayakawa, J. R. Mourant and J. Spanier in *Biomedical Optics Express* 4: 1946-1963, 2013.

"Spatial frequency domain imaging of burn wounds in a preclinical model of graded burn severity" by J. Q. M. Nguyen, C. Crouzet, T. Mai, K. Riola, D. Uchitel, L.-H. L. Liaw, N. Bernal, A. Ponticorvo, B. Choi and A. J. Durkin in *Journal of Biomedical Optics* 18: 66010, 2013.

"Quantitative assessment of renal arterial occlusion in a porcine model using spatial frequency domain imaging" by K. Nadeau, H. Lee, A. Ponticorvo, A. J. Durkin and B. J. Tromberg in *Optics Letters* 38: 3566-3569, 2013.

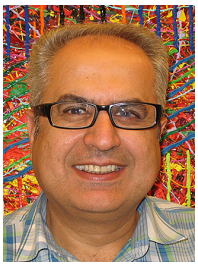
"Increased nanoparticle-loaded macrophage migration into the brain following PDT-induced blood-brain barrier disruption" by S. J. Madsen, H. M. Gach, F. A. Uzal and H. Hirschberg in *Lasers in Surgery and Medicine* 45: 524-532, 2013.

"Targeting telomere-containing chromosome ends with a near-infrared femtosecond laser to study the activation of the DNA damage response and DNA damage repair pathways" by B. A. Silva, J. R. Stambaugh and M. W. Berns in *Journal of Biomedical Optics* 18: 095003, 2013.

"Accelerated rescaling of single Monte Carlo simulation runs with the Graphics Processing Unit (GPU)" by O. Yang and B. Choi in *Biomedical Optics Express* 4: 2667-2672, 2013.

Arrivals and Departures

ARRIVALS


Bahman Anvari

Bahman Anvari, Ph.D., Professor in the Department of Bioengineering at UC Riverside, is working in the labs of Drs. J. Stuart Nelson and Michael W. Berns while on sabbatical from September 2013 to March 2014. Dr. Anvari will be collaborating with Dr. Nelson in studies related to optical imaging and phototherapy of cutaneous lesions and will contribute to the engineering and applications of optical nanoconstructs towards such studies. His collaboration with Dr. Berns concerns research activities involving quantification of chromosomal forces and axonal growth. Dr. Anvari was a former postdoctoral researcher in Dr. Nelson's lab.


Emilia de Alonso Parareda

Emilia de Alonso Parareda, B.S., has been hired as a Jr. Specialist in Dr. Elliot Botvinick's lab. She received her Bachelor's degrees in Mechanical Engineering and Chemical Engineering from the IQS School of Engineering in Barcelona, Spain.


Rani Harb

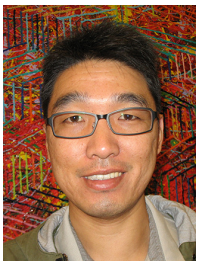
Rani Harb, Ph.D., is a postdoctoral fellow from UCLA who will be working on nasal airway mechanics and air flow in Dr. Brian Wong's lab.


Xingdao He

Xingdao He, Ph.D., is a Visiting Scholar from Nanchang Hongkong University, China. He will be working on optical coherence tomography imaging in Dr. Zhongping Chen's lab for a year.


Sang Joon Lee

Sang Joon Lee, M.D., Ph.D., is a Visiting Researcher from the Department of Otolaryngology, Dankook University Hospital, Cheonan, South Korea. He will be working with Dr. Brian Wong for a year.


Yuejiang Song

Yuejiang Song, Ph.D., is a Visiting Researcher from the Institute of Optical Communication Engineering, Nanjing University, China. He will be working on optical coherence tomography in Dr. Zhongping Chen's lab for a year.


Jiang Zhu

Jiang Zhu, Ph.D., is a postdoctoral scholar working in Dr. Zhongping Chen's lab on Doppler optical coherence tomography.


Xiaoqin Zhu

Xiaoqin Zhu, Ph.D., is a visiting Associate Researcher in Dr. Bruce Tromberg's lab. Dr. Zhu is an Associate Professor of Physics at Fujian Normal University, China. She will be working in Dr. Bruce Tromberg's lab for one year.

DEPARTURES

Veronica Gomez Godinez, Ph.D., who worked in the lab of Dr. Michael Berns, has taken a postdoctoral position at the Institute for Engineering in Medicine, UC San Diego, with Dr. Peter Wang.

Won Serk Kim, M.D., Associate Professor in the Department of Dermatology, Sungkyunkwan University School of Medicine, and Chairman of the Dermatology Department, Kangbuk Samsung Hospital, has returned to South Korea after a one year collaboration with Dr. Bruce Tromberg.

Gangjun Liu, Ph.D., who worked in Dr. Zhongping Chen's lab, has accepted an assistant professor position in the Department of Ophthalmology at the Oregon Health and Science University in Portland, OR.

Hideki Takeuchi, M.D., Ph.D., has returned to the Department of Breast Oncology, Saitama Medical University International Medical Center in Hidaka, Japan, after working with Dr. Albert Cerussi for the last two years on optical imaging of breast cancer.

Honors and Awards *(cont'd from p. 5)*

NICHD). Abhishek was nominated by Dr. Elliot Botvinick and was one of seven recipients awarded the grant.

Barbara Alcaraz Silva, B.S.
Developmental and Cell Biology graduate student Barbara Alcaraz Silva received a graduate travel award from the National Academy of Sciences (NAS) to attend the Sackler Colloquium NAS for the 150 year anniversary on October 16-18, 2013, in Washington, DC. Barbara works in Dr. Michael Berns' lab.

Kyle Nadeau, M.S.
Biomedical Engineering graduate student Kyle Nadeau was awarded a travel grant to present "Spatial frequency synthesis technique for fast tomography and scattering orientation imaging" which earned third place at the International OSA Network of Students (IONS) Conference North America on September 2-4, 2013, in Ensenada, Mexico. Kyle works in Dr. Bruce Tromberg's lab.

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

presentation at the conference on October 5 entitled "Post-processing algorithms of LR OCT image data: challenges and software solutions."

Invited Speaker at Montanga Symposium

Associate Professor Anthony Durkin was invited to give a talk on "Spatial frequency domain imaging of skin" at the Montanga Symposium on the Biology of Skin on October 11-14, 2013, in Portland, OR.

BLI Staff Adopts Two Families for the Holidays

The Beckman Laser Institute administrative staff adopted a Camp Pendleton Marine family and a UCI student family for the Christmas holiday season. In their 9th year of participation, the staff collected food and gifts for the deserving families.

BLI adopts two families: BLI Administrative Staff

OSA & SPIE Student Chapter Welcome Event

Photonics@UCI held a welcome event on October 10, 2013, at the Beckman Laser Institute library. Organized by the Optical Society of America (OSA) and the International Society of Optical Engineering (SPIE) Student Chapter of UC Irvine, an agenda of activities and enrollment opportunities were presented. For students, open office positions were available as well as opportunities to organize future events including seminars with experts from academia and industry. The chapter also offers students the opportunity to present their work in a relaxed environment and participate in several outreach events throughout the year. For faculty, the chapter provides unique opportunities to meet and talk with students and fellow photonics researchers while staying active in the OSA/SPIE community. The UCI OSA/SPIE student chapter was a finalist for the Student Chapter Excellence Award from the OSA. For more information, see photonics@uci.edu and http://www.clubs.uci.edu/photonics/.

Members of the OSA/SPIE chapter at UCI: (from left to right) Alba Alfonso Garcia, Kyle Nadeau, Julia Majors, Richa Mittal and Julie Hsu.