



James M. Slater, MD

Proton

Treatment and
Research Center

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LOMA LINDA UNIVERSITY
MEDICAL CENTER

A community affair: one patient's experience with proton radiation therapy

Every patient treated with protons has a unique life story. Staff at the James M. Slater center are well aware of this, and treat each patient with the respect that the person's uniqueness deserves. In doing so, the staff are following a maxim laid down many years ago by Dr. Slater: "Treat patients as though they are members of your own family."

From time to time, a patient comes along who really is a member of the family. In the case of Richard Garner, of Loma Linda, California, the "family" relationship exists on three levels: he is a former employee of LLUMC; he and his wife, Grace, are members of LLUMC's community partners (individuals, families, and local businesses who serve patients coming to LLUMC for proton therapy); and he is a neighbor who lives a few blocks from the medical center. Mr. and Mrs. Garner, whom everyone (it seems) at LLUMC knows as Dick and Gracie (Fig. 1), have a long history with the community of Loma Linda, with LLUMC, and with proton therapy.

Dick Garner was born and raised in Rockmart, Georgia, a small town near Atlanta. Gracie was born on the island of Kauai, Hawaii, and lived there until her family moved to Honolulu, where she attended and graduated from Hawaiian Mission Academy in 1956. Dick entered the U.S. Air Force in June 1956. While in the Air Force, Dick met Gracie in Spain. They were married on the rock of Gibraltar. Dick and Gracie have four children (Keone, Darlene, Delton, and Eric), 13 grandchildren, and three great-grandchildren.

Dick served in the Air Force for 20 years, working in the field of Human Resources. He retired in June 1976, and began working at LLUMC the next month. He attended Cali-

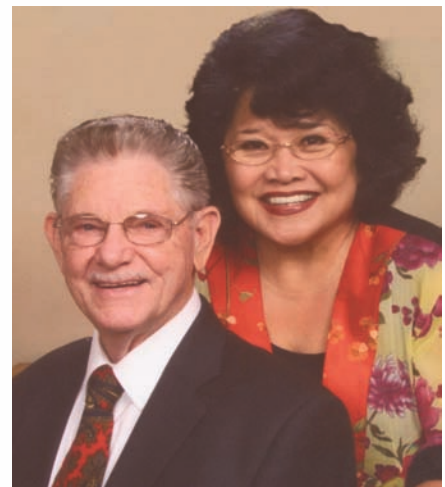


Fig. 1. Mr. and Mrs. Richard Garner

fornia Baptist University, Riverside, California, receiving a Bachelor of Science degree in Business and Management. His initial work at LLUMC was as Manager for Employment and Recruitment, similar to the Human Resource work he had done in the Air Force. He became Executive Director of Human Resource Management for LLU and LLUMC in 1989, serving in this capacity until he retired in 2001. Through most of those years Gracie worked part time in the Community Relations Office and Public Affairs Office at LLUMC.

Dick's association with proton therapy began in his employee days. When the Proton Treatment Center (as it was then called) was being built at LLUMC in the late 1980s, occasionally Dick would be in contact with Dr. James M. Slater on matters relating to recruitment, hiring, and wages for various staff of the department of radiation medicine.

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A community affair ...

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Dick and Gracie's association with LLUMC's community partners began even before there was such an entity. Their nearby home includes a cottage in the back yard. Initially they used the cottage for family visitors, but as far back as 1985 they would occasionally make the cottage available to patients visiting LLUMC from out of town. In the early 1990s, as more and more patients began coming to Loma Linda from distant towns, states, and nations, Dick and Gracie decided to make the cottage available to patients only.

In the early 1990s too, the department of radiation medicine began taking steps to meet the needs of these same people. Housing was the most pressing need; the department began compiling a list of places where patients and their families might stay. Ms. Patti Lee, working in patient services for the department of radiation medicine, recalls, "I think Dick and Gracie Garner were the first people we talked with when we began making that list."

It quickly became apparent that housing was only the beginning. Patients receiving proton therapy might need to be near the hospital for periods ranging from a few days to two months or more. Most patients experienced few or no side effects from proton treatments; they had a good deal of free time and wanted to go places and do things. The department, with the assistance of a social worker, Mr. Gerry Troy, began assembling other lists: dining establishments; nearby places of worship; transportation alternatives; and beaches, mountains, and other places of recreation. To these were added programs to make the patient and family feel "at home" in the medical center, such as the popular Wednesday Night Support Group, the Dinner Group, and regular tours of the proton facility. All these programs are supervised by J. Lynn Martell, D.Min., director of special services for the department of radiation medicine (Fig. 2).

These programs help build a sense of community within and connect with the community without. The community partners play a major role. Dr. Martell points out, "The community partners contribute so



Fig. 2. J. Lynn Martell, D. Min. (left) and Patti Lee

much to the success of our patients' treatments." Updated lists of community partners and other information for patients and families can be viewed on line at <http://www.protons.com/patient-education/patient-visitors-guide/index.html>.

"Lists" should not be taken quite literally. The department does not look up likely places in the phone book. Ms. Lee personally interviews all potential partners before including them on the housing or restaurant lists, to ensure that partners understand the needs of patients and families, and agree to meet them. Landlords, for example, understand that the division of special services is not a rental agency and so cannot promise that the landlords will have renters all the time. Sometimes circumstances change and landlords cannot meet some needs or afford to have vacancies during periods when the patient census is lower; to deal with such possibilities, Ms. Lee keeps in touch with landlords and adjusts the lists as needed. She notes, however, that landlords appreciate the LLUMC proton patients and understand their needs and situation. Indeed, many undertake special attempts to make their properties suitable for patients. Dick and Gracie Garner, for example, have remodelled their cottage several times in response to reported needs, adding services such as Internet access, full-time cable television, and a bathroom with shower handholds.

Restaurant partners play an equally important role: they are willing to accommodate small or large groups without extra charges; they do not charge for using banquet rooms; they allow separate checks for group dinners, some of which can be quite large; they provide friendly service. Patients love get-togethers at dinner groups, Dr. Martell observes, and Ms.

Lee spends a good deal of time getting to know the restaurant owners and staff and letting them know how much LLUMC and the patients appreciate their service.

The department of radiation medicine appreciates the LLUMC community partners. To show its appreciation, it held a dinner on St. Patrick's Day, March 17, to celebrate the contributions of partners who provide temporary housing to out-of-area patients. The event featured Irish entertainment and showing of a video presentation in which NBC's *Today* correspondent George Lewis described his experiences as a patient at the James M. Slater center. After the entertainment, Yolanda Magana, R.N., B.S.N., M.B.A., service line director for the department (Fig. 3), presented an overview of department services. She noted the crucial role community partners play in helping to make proton therapy a reality for many out-of-town patients. "We want to express our appreciation to each of you for partnering with us," she said. "Some of you have been doing it for more than twelve years. Our patients travel from across the country and from around the world to be treated for cancer. It is an extremely stressful time in their lives. You are providing a 'home away from home' for them. It helps immeasurably in providing an atmosphere for them to have a good patient experience. Thank you for making a difference in their lives."



Fig. 3. Yolanda Magana, R.N., B.S.N., M.B.A

New patient positioning and alignment system is installed

The department of radiation medicine has completed a major step in upgrading treatment capabilities at the James M. Slater, M.D., Proton Treatment and Research Center. An image-guided proton therapy system, developed and tested by Optivus Proton Therapy, Inc., has been installed in Gantry Room 1 at the center. At this writing the system is undergoing commissioning by physics and physician staff at the department.

The system will bring an increased level of precision to proton radiation therapy at Loma Linda. When in full clinical operation the new system will combine and automate imaging, patient registration, and patient alignment for proton therapy. Several components in the system help to attain those objectives.

A proprietary precision patient positioning alignment system (PPAS), popularly known as the robotic positioner or robot, will calculate and adjust patient alignment automatically so as to place the treatment target within 1 mm of the patient's treatment plan. In addition to the PPAS, the system features a new modular



immobilization device that offers comfortable support as the robotic arm moves the patient into position to receive the proton beam. A computerized, three-dimensional scan of the patient's anatomy pinpoints the size, location, and coordinates of the tumor target volume, doing so with sub-millimeter precision.

The system permits six axes of movement, enabling therapists to place the patient precisely and repeatedly in a virtually infinite range of positions. Both the patient and the beam can be moved to the precise coordinates needed for

each patient treatment. All movements are computer-controlled to ensure the utmost precision in positioning, and all necessary positions of the patient and the beam are made automatically, without need for intervention by the radiation therapist once the patient is in the modular immobilization device.

Two important benefits will result from the new system. One, of course, is the ability to place the patient and the beam in whatever positions are required to fulfill the dose prescription, and to do so with repeatable precision, at each treatment session. The other is increased patient throughput. The system will reduce set-up times significantly, resulting in time savings that will enable more patients to receive proton radiation therapy.

The new system is part of an ongoing effort to make proton therapy as effective and efficient as it can be, and to extend the benefits of protons to as many patients as possible. Commissioning is expected to be completed during the winter months, after which patient treatments will begin.

A community affair ...

Dick and Gracie Garner were among those attending the dinner. Later, Dick reported that since they began renting the backyard cottage in the early 1990s, all the patients have been recipients of proton therapy. Gracie and he have met patients having tumors in a variety of anatomic sites.

In March 2009, Dick was diagnosed with prostate cancer. He had no doubt about the treatment he wanted. After work-up revealed he was a candidate for proton therapy, he began treatments on April 15, 2009. Dick's situation was a bit unusual in that he previously had two total hip replacements. His physician, David A. Bush, M.D., told him that although most patients are treated with two beams, aimed at the prostate from each side, through the hips, the precision of the proton beam enabled him to devise an alternative plan. There would be a slightly higher risk of side effects, Dr. Bush said, but they would be able to get a complete dose in. The plan was successful; Dick completed his course on June 11, 2009, and reported minimal side effects, mainly some burning when urinating, controlled by taking

2-3 doses of Advil daily, and some fatigue toward the end of the treatment course. However, Dick says, "I still did yard work and pursued all my normal activities." He has started a follow-up program, beginning with visits every four months for the first two years.

Dick is enthusiastic about his experience. "Dr. Bush; his nurse, Gail Verrecchio; Anjali David, the nurse practitioner; and the techs, Anthony Dayton, Ed Schultz, Matthew Barker, Nancy Cooper, and Michelle Johnson, all were wonderful," he says. "It was a true blessing to receive care from such dedicated staff from day to day." He offered another perspective on the community partners. "This program has been much appreciated by all those folks in the community who rent their apartments, rooms, cottages, etc., to patients from out of town," he said. "The annual dinner, tour, and update on the proton center have been enjoyable occasions for all."

Dick Garner is an open, friendly man, not much inclined to muse about what-ifs and what-might-have-beens. Rather, he is an action-oriented, let's-get-it-done sort of person.

In discussing his experience, however, he was reflective. "In all the years I worked at LLUMC, I never thought that one day I would receive proton treatment for prostate cancer," he said, "but you never know." He went on, "One thing I learned about the proton center as a patient that I did not know as an employee or community partner is the tremendous dedication of all the staff involved in my treatments. They do an exceptional job with each patient, and that's not just what I say. That same thought was voiced by many patients that I was acquainted with while going through the program."

Similar thoughts often are expressed by many patients receiving treatment in the department, and their family members. It is common for staff to receive thanks, often accompanied by expressions of gratitude for the way patients and families are treated. The maxim, to "treat patients as though they are members of your own family," is followed constantly at the James M. Slater center. Fittingly, the department of radiation medicine's community partners, like an extended family, make an important contribution to this vital effort.

Faculty from department of radiation medicine featured at annual Loma Linda University research symposium

One of the academic traditions at Loma Linda University is an annual research symposium sponsored by the department of basic sciences at the university and held at the beginning of the academic year. This year, at the 12th iteration of the event, faculty and graduate students from the department of radiation medicine's Radiation Research Laboratories played a salient part, offering a minisymposium on radiobiology and radiation medicine, and also offering several oral and poster presentations. The symposium was held in the Wong Kerlee International Conference Center on Thursday, September 10, 2009.



Michael J. Pecaut, Ph.D.

The chairman of the organizing committee for the symposium was Dr. Michael J. Pecaut, associate research professor in the Radiation Medicine Radiobiology Program. Dr. Pecaut has a long-standing research interest in

whole-body radiation, such as astronauts experience on space flights. He also has performed research on topics such as low-dose, low-dose-rate radiation and the effects of radiation on immune responses. Dr. Pecaut assembled a comprehensive minisymposium covering many aspects of radiation biology, in addition to his areas of special interest.

The symposium was opened by Roger H. Hadley, M.D., dean of Loma Linda University School of Medicine. He noted that the symposium was being held during the centennial year of the School of Medicine, and that special commemorative events would be held from October 28 to 31, 2009. Dr. Hadley was followed by Lawrence C. Sowers, Ph.D., associate dean for basic science faculty and translational research. Dr. Sowers indicated that one purpose of the symposium was to initiate the research season for the new academic year. He also noted that the university is undertaking many efforts to bridge the gap between basic science and clinical applications;

i.e., at LLU there is a special interest in translational research. Dr. Pecaut concluded the introductory remarks by thanking the participants, sponsors, vendors, and attendees for supporting the research symposium.

The minisymposium was chaired by Dr. Daila S. Gridley, professor in the departments of radiation medicine and basic sciences, and associate director of the Radiation Research Laboratories. She introduced the other speakers in the minisymposium: Dr. Lora M. Green, professor in the department of medicine, research professor in the departments of radiation medicine and basic sciences, and research immunologist at the Jerry L. Pettis Veterans Administration Medical Center; Dr. Pecaut; and Dr. Reinhard Schulte, associate professor in the department of radiation medicine.

Dr. Green spoke on "The Contribution of Tissue-Level Organization to Genomic Stability Following Low-dose Gamma Irradiation." The fundamental research question that she and her colleagues sought to answer was whether the level of tissue organization affects the induction and persistence of low-dose, radiation-induced genomic instability. They hypothesized that cells grown in a well-developed, three-dimensional (3-D) tissue model would exhibit reduced expression of genomic instability as compared to cells grown in a two-dimensional model; in essence, such cells would be closer to real tissue and hence better able to act as tissue does. In her talk, Dr. Green began by summarizing the various types



Daila S. Gridley, Ph.D.

of radiation, ionizing and non-ionizing, to which humans are exposed. She noted that DNA is the primary site of damage from ionizing radiation, and noted further that effects could range from almost immediate lethality to changes evident only many cell generations later. Dr. Green described a sophisticated procedure involving the 3-D modeling of rat thyroid cells, which provided a detailed understanding of changes at the cellular level following exposure to radiation. Dr. Green and her colleagues concluded that their 3-D model is a realistic means of approximating tissue behavior, displays a tissue-like low mitotic index, and is highly integrated. They found that aberrations are evident at low doses and are non-linear, and that the 3-D model seems to suppress the level of aberration, compared to aberrations displayed in less-restrained 2-D cultures. The model has the potential to serve as a useful analogue to understanding the effects of radiation in tissue.

Dr. Pecaut spoke next. He noted that his interest in the effects of space flight on living systems traces back to his graduate work at the University of Colorado. Dr. Pecaut came to Loma Linda University in 1999 from Colorado and has devoted much of his research to that central question. Among animals he has studied to determine effects of whole-body radiation are mice that have been transported into space on NASA Space Shuttle missions. His talk, entitled, "Radiation, Spaceflight, and Psychoneuroimmunology," was based on his studies with mice exposed to space flight and to Earth-based experiments at the Radiation Research Laboratories.



Lora M. Green, Ph.D.

Space-flight studies are important, Dr. Pecaut observed, because long-duration missions, to Moon bases or to Mars, for example, are being planned for future astronauts. In those environments, astronauts will have to cope with a variety of stresses. Radiation is one of them, of course, from such sources as galactic cosmic rays, the Van Allen belts, and solar particle events that unleash bursts of radiation from the Sun. Other stresses must be dealt with too, such as the effects of microgravity, which include factors such as unloading, fluid shifts, and environmental "dead spaces" with

Faculty presentations at annual research symposium...

little or no active air circulation; and psychosocial issues, including claustrophobia, altered sleep cycles, and being removed from familiar Earth surroundings for a long period of time. These stresses can produce both systemic and cellular effects. The work of Dr. Pecaut and several colleagues in the Radiation Research Laboratories is aimed not only at better understanding how astronauts can survive in such environments, but also to identify potential short- and long-term effects they might encounter upon their return to Earth.

Dr. Pecaut studied mice to evaluate physiological changes induced by the stresses of space travel and radiation exposure in the laboratory. In addition to comparing mice exposed to space travel versus identical control mice kept in similar conditions on Earth, he performed Earth-based studies of mice given whole-body irradiation versus those receiving radiation to the body only. He found that space flight produced changes not seen in the control animals, and also found differences in mice receiving whole-body (including brain) radiation versus body-only radiation. He concluded that space flight and radiation produce several changes: decreased spleen mass; general reductions in white blood cells; changes in cytokine patterns (some increased and some decreased); an increase in reactive oxygen species (often associated with cell damage and death); and altered psychological and physiological stress-related pathways (such as the hypothalamic-pituitary-adrenal axis and the sympathetic nervous system). In general, in the mice studied, both space flight and radiation increased the inflammatory and innate immune response but reduced the adaptive response.

The third speaker in the minisymposium, Dr. Schulte, gave a talk entitled, "From Bench to Bedside: Translational Research Activities Related to Proton Therapy." He began by noting that, often, potentially good ideas never make it to practical application because links from laboratory to clinical utilization are missing. Faculty in the department of radiation medicine, working with colleagues within and without Loma Linda University, are continuing to establish such links through a program of translational research. Dr. Schulte noted that links are created by benchmarking potential new therapeutic approaches in the labora-

tory, having them verified independently by other researchers, and translating them into clinical application using a progression of clinical trials on increasingly larger groups of patients, as well as patterns-of-care studies.

Dr. Schulte then discussed two of the translational-research projects currently underway in the department of radiation medicine: development of proton computed tomography (pCT)



Reinhard W. M. Schulte, M.D.

and nanodosimetric studies of proton track structure. The former involves using protons to plan treatments as well as to deliver them. Proton CT offers the potential to reduce range uncertainty in planning proton therapy. Currently, photon (x-ray) CT is used to plan proton radiation treatments. Range uncertainty is adjusted for in the planning process and is not a confounding factor in proton radiation therapy, but for very small target volumes, such as those that may be encountered occasionally in planning treatments for CNS tumors, reducing range uncertainty is a desirable goal. Investigators in the department of radiation medicine and their colleagues have built prototype models and are striving to develop a clinical pCT system.

Track studies involve efforts to determine more precisely the actual damage done to the DNA molecule, as a means of assessing the biologic effectiveness of given doses of proton radiation. Dr. Schulte and his colleagues have developed a nanodosimeter that can evaluate such damage; they are directing their efforts now to developing one that can be used in the clinical setting.

Both of these studies, which have been pursued in the department for the past few years, are aimed at increasing the precision of proton radiation therapy even further than is attainable now. Both also, Dr. Schulte pointed out, are excellent examples of the interdisciplinary, intra- and inter-institutional collaboration that

often characterizes translational research in the department and at Loma Linda University.

In addition to their spoken presentations, all faculty noted above participated in poster sessions at the annual research symposium. Those presentations, many of which involved collaboration with students and fellows, covered a wide variety of basic-science topics, some relating to the spoken presentations and some to other investigations. Other participating students, fellows, staff, and faculty from the department included D. Ajao, E. Bayeta, B.M. Bianski, M. Campbell-Beachler, C.J. Favre, T.L. Freeman, T. Jones, G.A. Nelson, K.E. Nelson, A. Obenaus, L. Ortloff, C. Pan, C. Perez, L. Ritter, M.C. Sanchez, S-W Sun, E. Titova, and A. Wroe.

The highlight of the annual symposium at LLU is the Mortensen Lecture. The 2009 lecture was presented by John F. Dicello, Jr., Ph.D. Dr. Dicello was introduced by James M. Slater, M.D., F.A.C.R.

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Milestone passed

During October 2009, almost 19 years to the day since the Loma Linda proton treatment facility opened, the department of radiation medicine passed another milestone: the 14,000th patient was treated with proton radiation. More patients have been treated with protons at Loma Linda University Medical Center than at any other institution in the world.

Most patients receiving protons at the James M. Slater center are treated for cancer of the prostate, but protons are used for a wide variety of cancers and other diseases, including breast cancer, lung cancer, cancers of the liver, head-and-neck tumors, tumors of the central nervous system, and tumors in children. Research is ongoing into the use of protons for an even wider variety of other neoplastic and non-neoplastic diseases. The past promises an even brighter future.

Visit the James M. Slater center on the Web:
<http://www.protons.com>

Faculty presentations at annual research symposium...

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Dr. Dicello is professor emeritus in the department of radiation oncology and molecular radiation sciences at Johns Hopkins University School of Medicine, where he also served as director of medical physics. He is visiting professor in the department of aerospace engineering at the U.S. Naval Academy, Annapolis, Maryland, and is professor of radiation medicine at LLU and director of biophysics in the LLUMC Radiation Research Laboratories.

Dr. Dicello is known around the world for ground-breaking work in the microdosimetric analysis of energetic heavy ions, pions, muons, neutrons, and protons, and the application of such particles to cancer therapy. His research has included collaborative radiation physics and cell and animal studies, including the only comprehensive study of cancer induction for high-energy protons, heavy ions, and gamma rays, done at Brookhaven National Laboratory and LLU, to establish risks to astronauts.

At LLU he is involved in several ongoing investigations, including estimating risks of second cancers in proton therapy, determining biological pathways associated with chemical, biological, or radiological agents, and real-time imaging for quality assurance for newer, more complex treatment methods in radiation therapy such as the use of scanning beams in proton therapy.

Dr. Dicello's topic was a comprehensive one, "Reflections on 40 Years of Translational Research." He overviewed many of the studies he has been involved in during that time (which, he said, actually is closer to 50 years), including some of the work in which he is currently involved at Loma Linda.

In keeping with the theme of the 2009 symposium, to highlight basic research in the areas of radiobiology and radiation medicine, he discussed collaborations that led to milestones and breakthroughs that in turn allowed the practical implementation of protons and heavier particles in radiation therapy at Massachusetts General Hospital in collaboration with Harvard Cyclotron Laboratory, at Loma Linda University Medical Center, and, more recently, at other institutions. Pointing out that spin-offs are usually thought to arise most frequently in other areas of research and then be applied to medicine, he repeatedly noted examples of



John F. Dicello, Jr., Ph.D.

the translation of new ideas developed in radiation physics and biology to such diverse areas as space research, microelectronics, and even the cattle industry. In the latter case, he showed slides of cattle being treated successfully for eye tumors by cowhands (both women and men) in New Mexico with what was at the time a radical approach to tumor control, simply applying high temperatures of heat. He also discussed the development of accelerators compact enough to go into space and showed an example of one type developed at Los Alamos National Laboratory, where Dr. Dicello has worked, that has been exhibited at the Smithsonian Institution in Washington, D.C.

Because the annual LLU research symposium is attended by graduate students as an expected part of their core curriculum, one of the objectives of Dr. Dicello's talk was to provide less-experienced investigators with background concerning how basic research develops and what may be involved in translating it into the clinic (aspects not usually discussed in scientific publications) in order to help them develop a more realistic appraisal of what the process is really like. In this regard he noted that the first human studies with heavy-parti-

cle therapy began in the 1930s, but only now is such therapy beginning to blossom worldwide. If researchers, particularly the younger ones, fail to appreciate how long it takes bringing scientific discoveries to fruition, and do not understand the frustrations that can occur in attempting to bring discoveries to clinical and practical use, and do not appreciate the red tape and levels of bureaucracy sometimes associated with bringing new breakthroughs into the clinic, those inexperienced researchers can easily become discouraged.

Paraphrasing Thomas Edison, Dr. Dicello said that research can be "99% frustration and 1% satisfaction." He supported the statement by noting several instances in which promising research never came to the clinical-trial stage because of the lack of sufficient research funding. He spoke somewhat tongue-in-cheek about this with reference to cures for cancer, saying, "I've got dozens of them sitting on the shelf in my office," and further noted that pion beams, neutrons, and even heavier-ion beams have never had the widespread application that protons have enjoyed, the latter in large part thanks to the persistence and tenacity of Dr. James M. Slater.

Even so, Dr. Dicello concluded, a vocation in research is worth following because, in the face all the obstacles, discoveries are made, some are translated to the clinic, and frequently they benefit patients and their quality of life. He ended by noting that, despite the frustrations, he personally has a satisfaction derived from fifty years of research because of an altruistic tendency that he cannot suppress and because of "the life it brings," a quote from Robert J. Oppenheimer that was used later by a physicist, Jeremy Bernstein, as a title for an article in the *New Yorker* and an autobiographical book.

Research is the foundation of all branches of medicine. This is recognized in many ways at Loma Linda University School of Medicine, the annual research symposium being but one example. The department of radiation medicine was proud to participate in the 2009 iteration of the symposium, and to share with students and faculty the scope of its research program. The emphasis on translational research underscores the department's overarching goal: better treatments for patients in need.

Sharing information on protons for breast cancer

During October 2009 the department of radiation medicine offered to the public and the LLUMC community information about the Phase II trials of proton radiation for breast cancer being conducted at LLUMC. This information was made available at two events: the annual Family Health Fair and the celebration of the 100th anniversary of Loma Linda University School of Medicine. The department staffed informational booths at both events.

Mrs. Ann Hughes, a patient who received protons as part of her treatment for breast cancer, assisted at the Family Health Fair event. She distributed literature about the program at LLUMC and answered questions from inquirers. Mrs. Hughes shared her enthusiasm about the program and related her personal experience. She joined Sandra Teichman, R.N., B.S.N. and Roger Grove, M.P.H., who also staffed the booth at the centennial celebration.

Protons are used at LLUMC for early-stage breast cancer following lumpectomy. A hypofractionated dose is delivered to a circumscribed volume; patients finish the entire treatment course of 40 Gray in two weeks.

The Phase II trials have nearly been completed, and data analysis is being done now; results will begin to be published in the near future. Preliminary outcomes are highly promising, however, and the treatment will be available to patients requesting and qualifying for it.



Roger Grove, M.P.H., Ann Hughes (seated), and Sandra Teichman, R.N., B.S.N. distribute proton information at the Family Health Fair.

Nineteen years and counting: the Proton Charity Invitational



Ken Venturi offers tips on short-game technique

On May 18, 2009, participants in the 19th Annual Loma Linda University Proton Charity Invitational convened at The Club at Morningside, Rancho Mirage, California, for a morning of golf. The event supports research that benefits patients receiving proton radiation therapy. The importance of such research can be testified to by Ken Venturi, the 1964 U.S. Open champion and the chair and host of the Invitational; Mr. Venturi is himself a former patient. The 120 golfers who attended helped, with several sponsors, to raise \$100,000 in support of proton therapy; the proceeds were deposited in the Ken Venturi Endowed Chair for Proton Therapy Research, which to that date had accumulated \$2.8 million.

At the post-tournament banquet the winners were recognized. Awards for the first-place low gross score were given to David Hunt, Brian Merrick, Charlie Merrick, and Andrew Wheeler. Awards for the lowest first-place net score were given to Don Pursley, Jeff Pursley, Tim Pursley, M.D., and Zareh Sarrafian. Prizes for second place gross score went to Ryan Prior, Hugh Watkins, M.D., Ralph Watts, and Ralph Watts, III; the prize for second place net score was awarded to Fred Davis, Blake DeShields, Don Sease, and David Wooding, M.D. Christopher Burgee, Raul Castillo, Jay DuNesme, and Jeff Kaatz shared prizes for third place gross score, and the award for third place net score went to Chris Cummins, Sam Dahlgren, Victor Siagian, and Elmore Simorangkir.

Awards were also given to four individuals for being closest to the pin on the four par-three holes: Jeff Pursley, Brian Merrick, Chris Taylor, and Brian Gauer. The longest-drive awards turned out to be a family affair; gift cards were awarded to Ron Paschall and Billie Paschall for their drives on the sixth hole.

At the awards dinner, Dr. Jerry D. Slater, chair of the department of radiation medicine, thanked the sponsors, the volunteers from the department of radiation medicine who give of their time to assist in preparing for the tournament and helping at various stations around the course, and the staff of The Club at Morningside. Dr. Slater noted that this teamwork, including that of the participants, is vital in helping research to continue. Protons provide an excellent fundamental tool for patient treatment, but research to exploit that tool to the fullest is always necessary, he said.

Dr. Slater concluded by inviting all to save the date for the 20th annual Proton Charity Invitational, Monday, May 17, 2010, at The Club at Morningside. That will be a milestone year in the life of the James M. Slater, M.D. Proton Treatment and Research Center, he said; special events are being planned to celebrate the occasion.



Ken Venturi, Dr. Jerry D. Slater (center), and Dr. James M. Slater

Patient referral information

For more information or to refer patients, please call the James M. Slater, MD, Proton Treatment and Research Center referral service:

USA	(800) 496-4966, or (800) PROTONS
International	(909) 558-4288
Fax inquiry	(909) 558-4829

Those requesting information before or after regular business hours may leave a message and will be contacted the next business day.

Written inquiries may be directed to:

James M. Slater, MD, Proton Treatment
and Research Center
Loma Linda University Medical Center
11234 Anderson Street
Loma Linda, California 92354

Please visit our website at www.protons.com for more information.



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