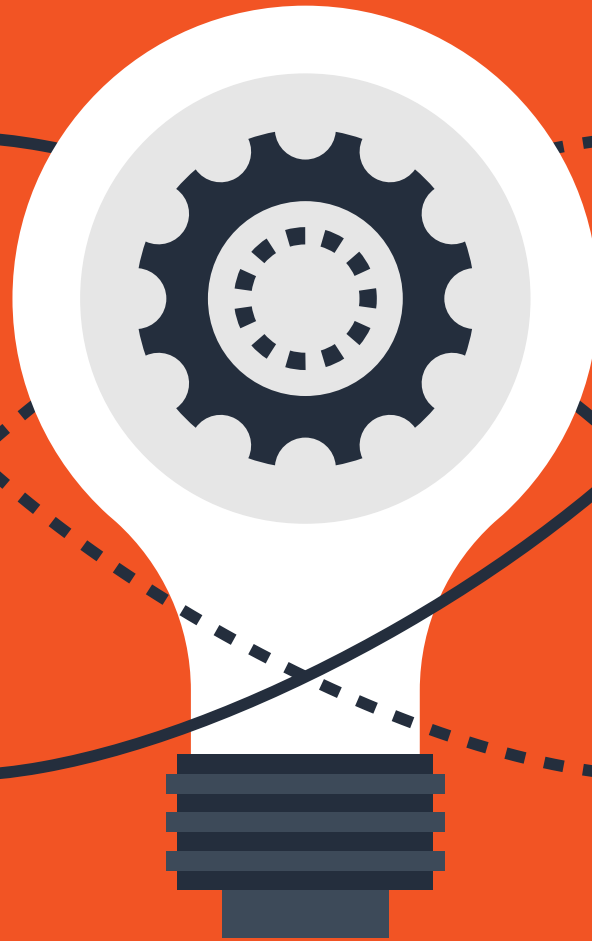


scope

OFFICIAL MAGAZINE OF LOMA LINDA UNIVERSITY HEALTH



innovation

EXPANDING POSSIBILITIES

NEW WAYS OF SERVING PATIENTS
BY EXPANDING POSSIBILITIES IN HEALTH
CARE AND EDUCATION.



LOMA LINDA
UNIVERSITY
HEALTH

Opening shot



AFTER MARCHING UP, university administrators and faculty await graduates of the School of Dentistry as they walk up the aisle during commencement on Sunday, May 28. The school was established in 1953 and offers a doctor of dental surgery degree, a bachelor of science degree in dental hygiene and master of science degrees and certifications in advanced specialty education programs.



PHOTO BY DANIEL TAIPE



innovation

LOMA LINDA UNIVERSITY HEALTH CONTINUES ITS LEGACY OF INNOVATION TO FURTHER ITS MISSION

NEW WAYS OF SERVING PATIENTS
BY EXPANDING POSSIBILITIES IN
HEALTH CARE AND EDUCATION.



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scope

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EXECUTIVE EDITOR
Garrett Caldwell

EDITOR
Ansel Oliver

MANAGING EDITOR
Larry Becker

DESIGN
GUILDHOUSE Group

SCOPE | OFFICE OF PUBLIC AFFAIRS
11157 Anderson Street
Loma Linda, California 92354

EMAIL
scope@llu.edu

WEB
lomalindauniversityhealth.org

SOCIAL MEDIA
@LLUHealth
Facebook.com/LLUHealth
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ONLINE
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COVER AND CONTENTS ILLUSTRATION BY ISTOCK



LOMA LINDA
UNIVERSITY
HEALTH

On INNOVATION



Richard H. Hart, MD, DrPH
PRESIDENT,
LOMA LINDA UNIVERSITY HEALTH

WHEN ASKED ABOUT THE REAL VALUE of research on our academic campus, I often reply it is not primarily to discover new ideas, techniques, or products. Rather, it is to encourage a culture of inquiry, an atmosphere for asking big questions, of wondering why. This is essential for developing young minds, but also for stimulating old minds!

This issue of *Scope* is about innovation — exploring improvements in all that we do or think. It may be in the laboratory or in the community, in our medical advances or our personal practices. You will read about those who are pushing the edges of science as well

as those who are expanding our local and global impact in new ways.

Lawrence Longo, MD, and his pioneering work through the establishment of the Center for Perinatal Biology in 1973 contributed to our culture of inquiry on campus. Today we embrace researchers in multiple fields, and have confidence in them as they push the boundaries of understanding.

You all know of the internationally respected work of James Slater, MD, who created the world's first proton treatment unit at a hospital, and Leonard Bailey, MD, and his pioneering work on infant heart transplantation. But there are many others, from bench scientists to social scientists.

While our researchers have widely diverse interests, much of the research here at Loma Linda University Health focuses on seven core themes: Lifestyle/Vitality/Longevity; Maternal/Fetal/Neonatal Health; Regenerative Medicine; Infectious Disease; Cancer; Stroke/Brain Trauma/Neurological Diseases; and Health Disparities among Diverse Populations.

Our faculty publish more than 600 peer-reviewed articles each year, and that number is steadily climbing. A recent audit showed more than 100 funded studies looking at various aspects of prevention. These research efforts combine to form the third leg of our academic health sciences center, along

with education and our clinical services. It's important to note that research is a core component of our Vision 2020 campaign. We have a \$50 million goal for research funds. This infusion of support will play a role by infecting our students with the spirit of inquiry that is a key part of Loma Linda University Health's commitment to the world.

We are dedicated to continuing our growing research emphasis. The world is waiting for responses to questions that we are uniquely positioned to answer. But it is often difficult for academic institutions, including Loma Linda University Health, to carry their best ideas to the next level, particularly to commercialize our discoveries in the marketplace. To help that, we have established a new office on campus. Called n³eight, (pronounce that out loud!), it assists our faculty in bringing their problem solving innovations for further refinement and possible patents. Some will ask "why didn't I think of that," while others are more esoteric, solving problems we didn't know existed. But they are all part of the spirit of inquiry that makes this place so special.

2016 RESEARCH INDEX

Loma Linda University Health

287 CLINICAL TRIALS

2,659 SUBJECTS ENROLLED IN CLINICAL TRIALS

\$1,906,139 REVENUE FROM CLINICAL TRIALS

9 INTELLECTUAL PROPERTY AGREEMENTS

28 INVENTION DISCLOSURES

1,079 INSTITUTIONAL REVIEW BOARD (IRB) APPLICATIONS

18,969 CITATIONS OF LLUH PEER-REVIEWED PUBLICATIONS

619 PEER-REVIEWED PUBLICATIONS

60 INSTITUTIONAL BIOSAFETY COMMITTEE APPLICATIONS

\$1,241,380 PATENT COSTS

\$127,920 LICENSE INCOME

\$28,154,712 AMOUNT OF EXTRAMURAL AWARDS

HEALTH AND WELLNESS FOCUS OF WOMEN'S CONFERENCE

Presentations feature information designed to empower women to make positive changes in their lives



PHOTO BY ANSEL OLIVER

MORE THAN 1,000 women attended Loma Linda University Health's 2017 Women's Conference, a day-long event offering conference-goers opportunities to learn the latest information in health and wellness presented by local specialists.

Held at the Riverside Convention Center on May 5, the conference theme was "Find Your Healthy Ever After; Hear the Music of Your Soul." Attendees could choose from 22 breakout sessions on subjects such as nutrition, mental health and

aging, menopause and hormones, osteoporosis, sleep strategies, foot health, financial strategies, and healthy living. Conference-goers also had access to free health screenings, and could meet with health specialists who answered lifestyle and wellness questions.

This is the ninth year that Loma Linda University Health has sponsored this conference, said Kerry Heinrich, JD, CEO of Loma Linda University Medical Center.

"Each year we present infor-

mation to inspire Inland Empire women to make positive changes in their lives and the lives of their families," Heinrich said.

Conference keynote speakers were Ronan Tynan, MD, and Vijay Gupta.

Tynan is best known for his international concert performances as a member of the Irish Tenors. Born with a lower limb disability, Tynan did not let his physical challenges limit him. Instead he displayed an inner drive that enabled him to become a physician

and an athlete. Tynan ultimately won gold medals in the Paralympics and set 14 world records in various athletic events. He shared some of the important lessons he has learned at significant moments in his life.

The biggest risk in life is not taking risks, Tynan said. "Don't be the person who says, 'if only I had tried.'"

"So many would like to turn back the clock and undo the mistakes of the past," Tynan concluded. "But the mistakes of



PHOTO BY JAMES PENDER

the past will fuel the successes of the future if you're the kind of person who learns from those mistakes."

Gupta is a violinist in the Los Angeles Philharmonic. He has performed solos and recitals internationally. An advocate for the power of art to change lives, Gupta founded Street Symphony, an organization that enables musicians to perform and interact with people experiencing poverty and homelessness.

"I'm a musician, and I never thought I'd become an advocate talking about the issues of mass incarceration, of mass homelessness and the pain of society," Gupta said. "But as a musician I'm a storyteller. I carry the stories of Vivaldi and Bach and Handel, along with the stories of the marginalized of society. Those stories give me constant inspiration. Too often we write off the most fragile members of society. But some of the warmest people we've ever played for are people whose home may be just a chunk of sidewalk, or a jail cell."



11 LIVES SAVED THROUGH ORGAN TRANSPLANTATION IN A RECORD 5 DAYS

ELEVEN INDIVIDUALS, ranging in age from 13-70, are free of the anxious wait for a new organ to save their lives. Thanks to the selfless act of families and individuals choosing to donate organs, the Loma Linda University Medical Center Transplantation Institute performed a record number of transplants earlier this year.

Transplantation Institute phones began ringing on Feb. 27, with organ offers peaking on March 1, when five patients and six organs were transplanted within 24 hours.

The surgical streak concluded March 3 with two transplant procedures. At the end of the five-day period, a 50-year-old had received a donated liver and kidney, and ten individuals received the gift of life through donated kidneys.

These transplant surgeries set two records for Loma Linda University Medical Center Transplantation Institute: most solid organs transplanted within five days and most organs transplanted within a 24-hour period.

"While the availability of organs is unpredictable, we are prepared to meet this high demand," says Michael de Vera, MD, director of the Transplantation Institute. "Transplant is a teamwork specialty, and these patients can't get served without everyone's help and commitment."

The surgeons performing the transplants were de Vera; Arputharaj Kore, MD; Philip Wai, MD; and Pedro Baron, MD.

The Loma Linda University Transplantation Institute performs pancreas, liver, kidney, liver/kidney and heart transplants.





PHOTO BY BRIANA PASTORINO

KIDS LEARN HEALTH AND SAFETY WHILE HAVING FUN

THE SUN DIDN'T SHINE. But that was no problem for the more than 1,500 kids ages 3-8, or their chaperones, as they took over Loma Linda University Health's campus lawn beneath a cloudy, drizzly sky in May for the 32nd annual Children's Day, sponsored by Farmer Boys.

Clusters of kids cycled through a series of activities and demonstrations that offered insight into the world of health care. The teddy bear and doll clinic — the largest and most popular attraction — simulated a doctor or hospital visit where the doll or stuffed animal was the patient and the child was the doctor.

The figures were registered, measured and weighed before getting their blood pressure

taken. Kids got to wear a stethoscope to listen to the patient's heartbeat, and the final step in the visit was getting a shot — a ritual most kids fear.

Dorothy Brooks, MA, of Loma Linda University Children's Hospital's Child Life Services said one goal of the event is to help kids realize that a hospital is a place to help them when they need it.

"Most kids associate pain with a hospital," Brooks said. "The teddy bear clinic is just one way to help them understand what is happening so they can learn to trust doctors and nurses."

More than 200 volunteers from Loma Linda University Health and the community supported the event.

NEW LAS VEGAS CLINIC SERVES LIVER PATIENTS

LOMA LINDA UNIVERSITY MEDICAL CENTER TRANSPLANTATION INSTITUTE recently opened a satellite clinic in Las Vegas, Nevada, offering comprehensive liver disease management, the first local care option available to individuals dealing with liver issues.

"Nevada has no in-state liver transplant program," says Juan Ramirez Jr., director of referral and business development for the Loma Linda University Transplantation Institute. "Many Loma Linda patients reside in Nevada and drive to Loma Linda for their regular clinic appointments. We wanted to find a way to provide care to these patients in their own community."

The Transplantation Institute serves adult and pediatric patients from the Inland Empire and Southern California, but also Central California, Las Vegas and beyond. The institute performs pancreas, liver kidney, liver/kidney and heart transplants.

The Las Vegas liver clinic opened its doors in February, allowing patients the opportunity to see their hepatology care team in their own community, ultimately decreasing the number of trips they make to Loma Linda.

General hepatology care, such as treatment of viral hepatitis, cirrhosis and hepatocellular carcinoma, is offered in addition to serving liver transplant patients. Patients who may need a liver transplant will still make periodic visits to Loma Linda, including for the operation itself.

The clinic offers five exam rooms and is staffed five days a week. Located at 2020 Goldring Ave., Suite 506, Las Vegas, the clinic can be called at 702-823-0004.



LOMA LINDA UNIVERSITY HEALTH RANKS IN TOP 25 PLACES TO WORK IN U.S. HEALTH CARE

LOMA LINDA UNIVERSITY HEALTH has been nationally ranked in the list of best places to work in the health care industry according to Indeed.com, an employment-related search engine for job listings.

Based on reviews by employees, Loma Linda University Health ranked 25th among nearly 6,000 hospitals and health systems in the United States.

Loma Linda University Health employs nearly 16,000 people across six hospitals and eight schools. More than 85,000 job applications are submitted annually.

"Our employees are what make Loma Linda University Health the successful organization it is today," said Richard Hart, MD, DrPH, president, Loma Linda University Health. "It is because of them that we are committed to creating a work environment that is truly special, and being recognized by Indeed is a testament to that commitment."

LOMA LINDA UNIVERSITY MEDICAL CENTER AWARDED CERTIFICATION AS A COMPREHENSIVE STROKE CENTER

Additional information on the Stroke Center is available online at lomalindastroke.org or by phone at 909-558-2880.

LOMA LINDA UNIVERSITY MEDICAL CENTER in April received the designation as a Comprehensive Stroke Center by the Joint Commission, the American Heart Association and the American Stroke Association. The Medical Center has attained the highest level of stroke care certification for hospitals that meet care standards for the most complex stroke cases on a 24/7 basis.

The hospital demonstrated compliance with Primary Stroke Center standards as well as additional requirements including:

- » Advanced imaging capabilities
- » Advanced, specialized treatments available 24/7
- » Advanced educational opportunities and competencies to enable staff members to care for complex stroke patients.

Vincent V. Truong, MD, director of the Loma Linda University Medical Center Comprehensive Stroke Center, said the certification represents a streamlined, interdisciplinary effort to rapidly recognize and treat stroke patients with the highest quality of care.

"When timing is critical, you want a stroke center that is prepared to deliver the most advanced, comprehensive stroke care," Truong said. "Our recent designation proves we can do just that."

Calling the multi-agency certification a testament to the organization's commitment to the health of the community, Lyndon Edwards, MBA, MHS, senior vice president of adult hospital services, said the medical center is committed to "providing quick, innovative, compassionate care from the minute patients arrive."

BEHAVIORAL MEDICINE CENTER SPONSORS 'STAND UP TO STIGMA' 5K

MORE THAN 400 RUNNERS and walkers of all ages participated in "Stand Up to Stigma," a 5K run/walk sponsored by the Loma Linda University Behavioral Medicine Center in Redlands. By participating in this first-time event on May 21, runners demonstrated their support for mental health services.

"We want to raise awareness of issues surrounding mental health," said Edward Field, MBA, vice president and administrator of the Behavioral Medicine Center. "We have found there is a lot of stigma surrounding mental health, so people are nervous to talk about it.

"Many find it's easier to talk about heart disease or cancer," Field said. "The

disease of mental illness is no different. It's all part of health care."

Loma Linda University Behavioral Medicine Center has provided a full spectrum of mental health services for more than 25 years. The center's services and programs cover issues such as addictions and anxiety or depression for all ages, ranging from children to senior adults. It offers free assessments to anyone who needs help.

According to statistics from the National Institute of Mental Health, one in five adults experience a mental illness at some point in their lifetime. More than 16 million American adults live with major depression.

PHOTO BY LARRY BECKER



SAN BERNARDINO CAMPUS PHARMACY OFFERS STUDENTS HANDS-ON TRAINING

WITH THE ADDITION of a community pharmacy, Loma Linda University Health – San Bernardino offers yet another health care service that blends clinical practice with academic training to serve community members both medically and economically.

Unlike the vast majority of pharmacies, this one is operated by a pharmacy school: Loma Linda University School of Pharmacy. Operating its own pharmacy has been a dream at the school for many years.

Danielle Davis-Khoromana, PharmD, the visionary behind the new pharmacy,

said it has taken perseverance to get through the journey. "Health care is challenging and pharmacy even more so in an underserved area, but we are not your typical pharmacy," she said. "We focus on devotion to patient care, education of students and innovation of pharmacy practice."

School of Pharmacy students will rotate through the San Bernardino pharmacy for clinical training. Students from San Manuel Gateway College will also get hands-on experience once the pharmacy tech program launches.

SCHOOL OF NURSING SEEKING EARLY- CAREER PHD CANDIDATES

For more information, visit nursing.llu.edu/graduate-programs/phd-nursing.



SCHOOL OF BEHAVIORAL HEALTH RESEARCH CONNECTS POOR BODY IMAGE WITH SOCIAL MEDIA USE

USING SOCIAL MEDIA can be harmful for the body image of young adults with overweight/obesity, according to a study conducted by student and faculty researchers in Loma Linda University School of Behavioral Health's Psychology Department.

Dean Lim, MA, a doctoral student, and Amanda Suplee, PhD, a postdoctoral fellow, examined how social media use affects body dissatisfaction in young adults with overweight/obesity. Sylvia Herbozo, PhD, associate professor, supervised their research. Participants, who were categorized as overweight or obese based on their body mass index, completed questionnaires about social media use (e.g., Facebook, Instagram,

Twitter), appearance comparisons in various settings (e.g., work, party, restaurant), and body dissatisfaction.

Results indicate that approximately 24 percent of young adults with overweight/obesity use Facebook and 23 percent use Instagram. For one home test group, those who spend more time on social media sites feel more dissatisfied with their body if they make more appearance comparisons.

Lim and Herbozo presented the study's results during a poster session at the Society of Behavioral Medicine's 2017 Annual Meeting & Scientific Sessions in San Diego earlier this year.

LOMA LINDA UNIVERSITY SCHOOL OF NURSING has reopened applications for its PhD program following a two-year retooling effort that included more online learning and an enhanced flexible program.

Designed to attract an early-career cohort of PhD applicants in their 20s and 30s, the program will offer a greater number of nurses with the opportunity to sustain a longer career in research they are passionate about, said Ellen D'Errico, PhD, RN, NEA-BC, an associate professor who oversees the school's PhD program. New doctoral candidates will spend several days on campus each quarter.

Plans are also in the works to utilize more distance learning options.

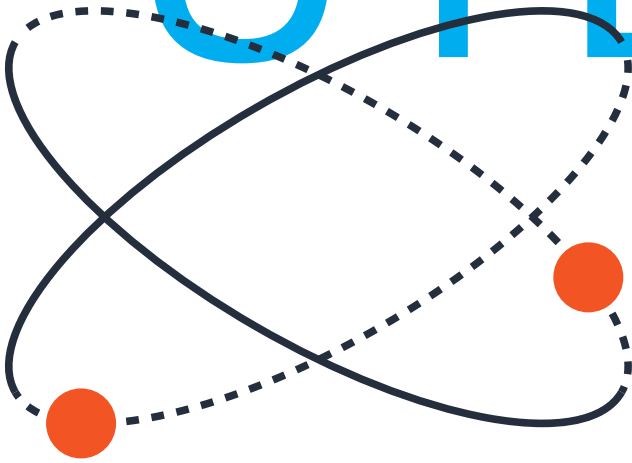
Hazel Ada, RN, MSN, director of nursing education and training at White Memorial Medical Center in Los Angeles, said she is earning her PhD at the School of Nursing to serve as a role model for both her family and colleagues.

"I see a lot of nurses interested in innovation and research, and I'm interested in helping more nurses who want to do that," Ada said. "You can apply nursing research wherever you are and for all kinds of specialties."



PHOTO BY ANSEL OLIVER

STEM CELL IN SPACE



Ask anyone who's received — or needs — a heart transplant and they'll tell you the procedure is fraught with risks alongside the reward of extending and enhancing life. Issues of organ rejection continue to complicate the procedure.

Mary Kearns-Jonker, PhD, an associate professor in the Department of Pathology and Human Anatomy at Loma Linda University School of Medicine hopes to tilt the odds more in favor of the reward side.

Kearns-Jonker, who came to the university from a professorship at the University of Southern California in 2010, is sending cardiac stem cells into space — aboard the International Space Station, with help from the National Aeronautics and Space Administration — to test “how microgravity affects [cardiovascular] stem cells and the factors that govern stem cell activity, including physical and molecular changes,” as she described it in an April NASA announcement.

Kearns-Jonker emphasized the importance of researching these specific stem cells: “It can benefit newborns. It can benefit older people. Most people know somebody with cardiovascular disease.”

Kearns-Jonker said a goal is to determine “whether or not there are any age-related effects of microgravity on these cardiovascular stem cells.” She said the cell clones were “very early in development,” and can be isolated from neonatal and adult humans. As a result of the experiments, she added, “We’re hoping the information we gain this year from this study can provide some insight into the effect of microgravity on these stem cells that can then be applied to either reverse these effects and/or improve longevity and quality of life on earth as well as in space.”

Mary Kearns-Jonker in the lab at the Kennedy Space Center in Cape Canaveral, Florida, in June.

PHOTO BY STEFANIE COUNTRYMAN/BIOSERVE TECHNOLOGIES

CELLS SPACE

BY MARK A. KELLNER

MARY KEARNS-JONKER
IS LOOKING TO THE
HEAVENS FOR ANSWERS
TO EARTH-BOUND ISSUES



Transplantation, and making it more effective,

has been a career interest for Kearns-Jonker.

"I'm a transplantation immunologist, and I've been looking at ways in which I can apply my training to address the shortage of organ donors," she said. "I've been studying the immune response that leads to organ rejection and have been identifying ways in which we can use stem cell therapy to repair rather than replace organs during organ failure."

A native of New York City, Kearns-Jonker's interests were nurtured at the Bronx High School of Science. From there, she attended McGill University in Montreal, where she earned an undergraduate degree in microbiology and immunology, as well as a master's and doctorate in anatomy. She held fellowships at the National Institutes of Health in Bethesda, Maryland, before coming to California, where she was a research scientist at Cedars-Sinai and St. Vincent hospitals before joining the University of Southern California faculty in 1998.

The close, collaborative nature of Loma Linda University Health helps in advancing her research, Kearns-Jonker said.

"One of the things that is very compelling about Loma Linda is that we have a very good relationship with the cardiothoracic surgeons who assist us as part of this project," she explained. "They collaborate with us and provide us the samples from human patients that we can use to isolate our cardiovascular stem cells. We can also collaborate with clinicians over in Cardiology."

She added, "We can take our testing from the laboratory into animal models that help us to determine whether or not the therapies that we're working on are effective and safe."

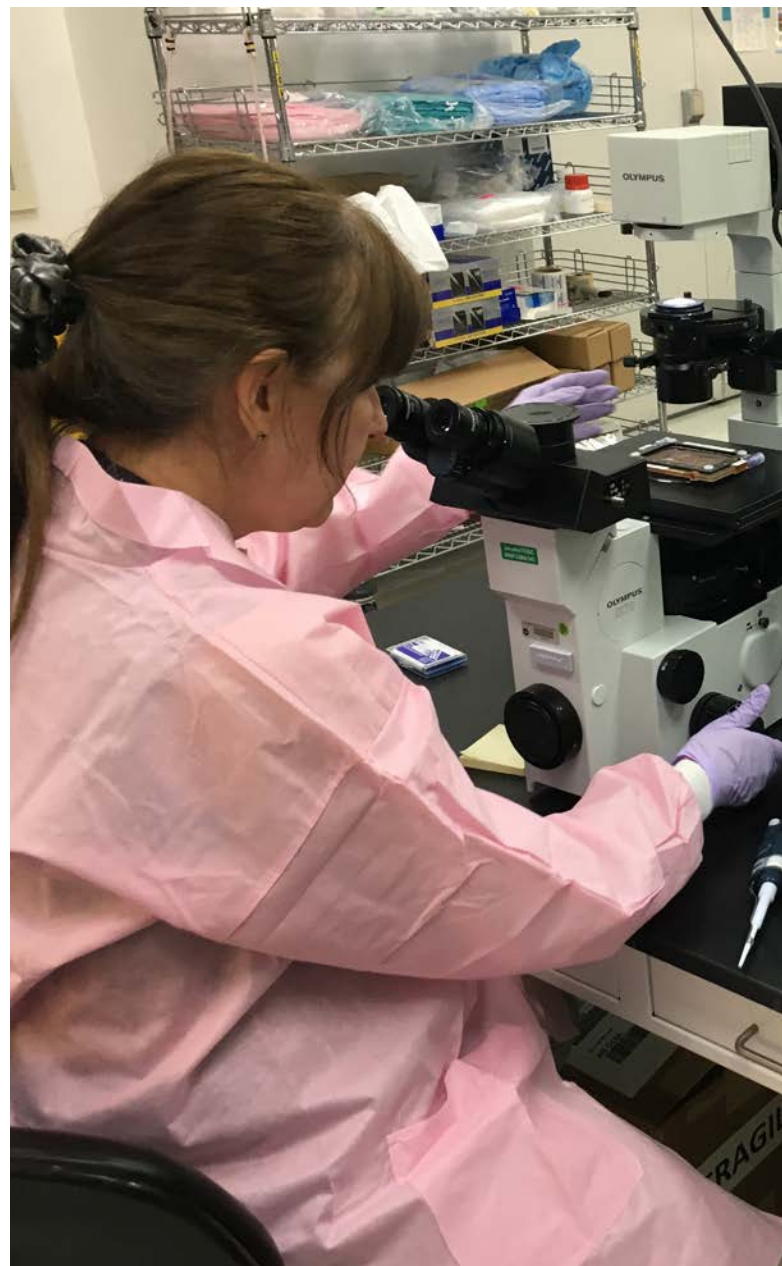
Kearns-Jonker said her work puts her in contact with renowned Loma Linda University Health pediatric cardiothoracic surgeons such as Nahidh W. Hasaniya, MD, PhD, and Leonard L. Bailey, MD, a pioneer in neonatal heart transplantation.

"They're wonderful," she said of Bailey and Hasaniya. "They contribute actively to this project, working on our transplants to study the effect of our cardiovascular stem cells. I have an excellent relationship with them."

And while Loma Linda University is strong in the realms of research and medical innovation, Kearns-Jonker said the institution's intimate atmosphere is a help.

"Everybody knows each other. People work very effectively, very well together. I think that it's a very close-knit university," she said.

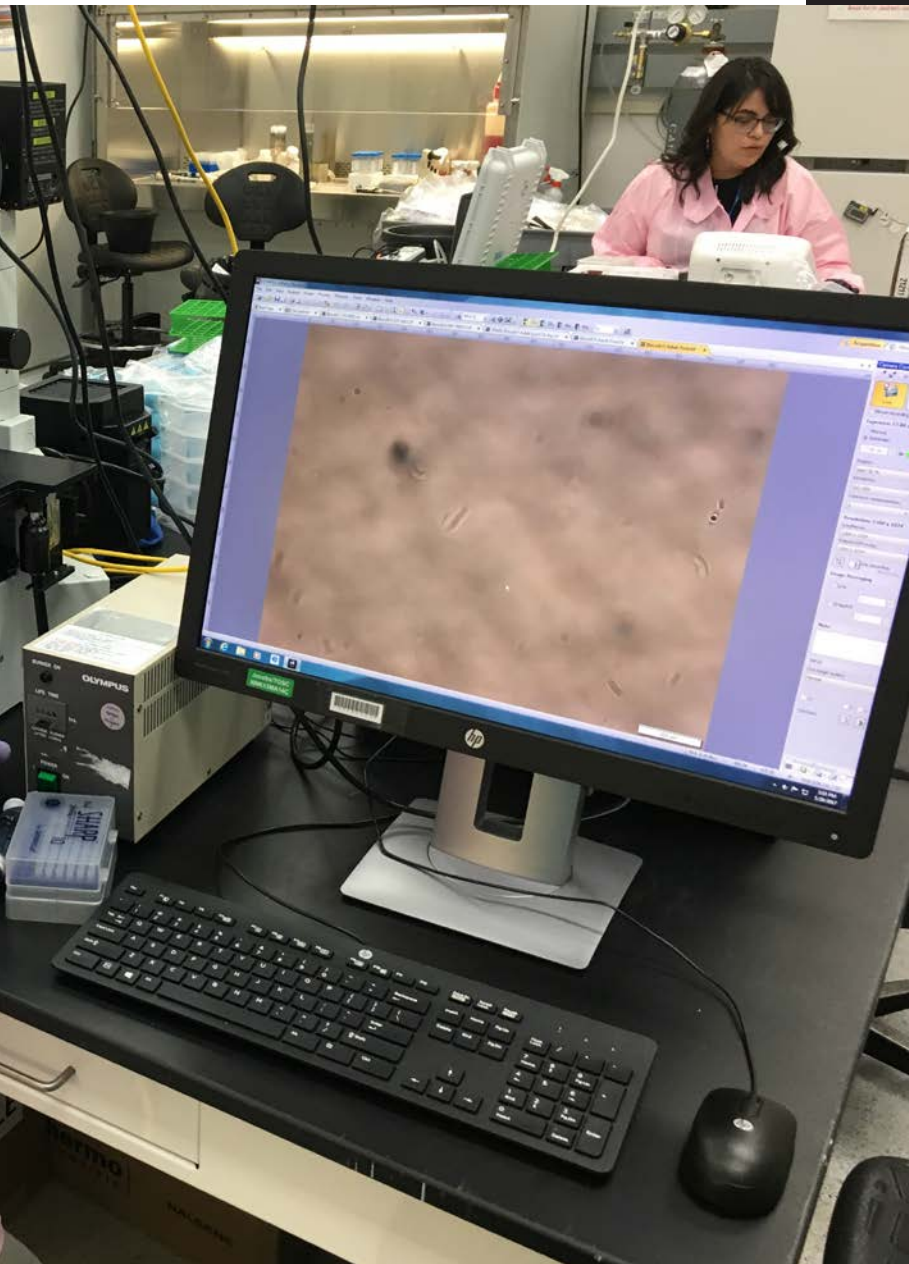
Having found her way in a demanding specialty, Kearns-Jonker keeps an eye out for promising students who



The SpaceX Falcon 9 rocket, with the Dragon spacecraft onboard, launches from pad 39A at NASA's Kennedy Space Center in Cape Canaveral, Florida, in June. Dragon carried almost 6,000 pounds of science research, crew supplies and hardware to the International Space Station.



PHOTO BY BILL INGALLS/DPA VIA AP IMAGES



might also be interested in advancing medical progress. And, she said, LLU offers great opportunities for young people considering their career path.

“One of the things that we try very hard to do in the lab is to invite students to come and work on projects either during the year or over the summer,” she said. “I think the science that goes on in a working laboratory is really nothing like you see described in textbooks.”

She added, “Students should have an opportunity to see what science really is on a day-to-day basis. They may grow to love it just because it really isn’t as dry as it appears to be in textbooks. Students interested in the sciences or mathematics, the STEM fields, should really try to get a hands-on opportunity in a laboratory, especially in an area that interests them.”

Getting that real-world experience can be a turning point, she explained.

“Once they’ve tried it, they may love it. A career that you love doesn’t feel like a job — it’s something you enjoy doing, and it’s a good way to contribute to society.”

For her specific areas of research, Kearns-Jonker said, the field will remain open to newcomers.

“We need all kinds of people,” she said. “We need people who are molecular biologists, trained to work with DNA and RNA and can look at the basic mechanistic basis for the regenerative efficiency of stem cells. We also work with people in the hospital who have experience in cardiac function tests, such as echocardiogram technicians who help us in research during their spare time.”

Along with molecular biologists, she said, her group needs cell biologists as well as statisticians: “Whenever we do research, we have to make sure that our data is analyzed correctly. So, we also utilize the expertise of people with skills in mathematics.”

And as her team works together, Kearns-Jonker stressed the need for dedication.

“That’s the other thing about science — it’s hard work,” she said. “But that’s okay. You have to love it.”

TAKING LOMA LINDA UNIVERSITY HEALTH'S INNOVATIONS TO THE WORLD

BY JAMES PONDER AND CLIFFORD GOLDSTEIN

BIOTECH ATTORNEY and physiology researcher Michael Samardzija, JD, PhD, MS, has worked as a partner in some of the world's largest and most prestigious law firms. Now he's focusing on work in a small, non-descript house across the street from Loma Linda University Medical Center.

The unassuming building at 11219 Anderson Street is Loma Linda University Health's new incubator, which Samardzija established to turn medical research into businesses that can help bring health and healing to as many people as possible.

"We're wanting to help create a culture of innovation that can benefit more patients and the medical staff who treat them," says Samardzija, who came on board with Loma Linda University Health in February of 2016 and now serves as associate vice president for research affairs.

The new center, established in October 2016, is called n³eight. The cryptic name translates from scientific notation as "n-cubed eight" or "incubate," and describes what goes on inside — the creation of new companies that will develop innovations into products and deliver them to patients and physicians, all while creating new jobs in San Bernardino County.

Samardzija says incubators can act as training wheels for businesses that would otherwise crash without enough capital,

staff, lab space or infrastructure. Requirements for bringing products to market are often greater in the biotech sector than other industries.

"To get FDA approval, you need data, and to get data, you need cash. Big companies don't want to take the risk," he says. Incubators, he says, can produce data at a much lower cost.

The ventures at n³eight range from making illuminated pedals for use in surgery to diagnosing age-related macular degeneration to a device that will provide for better crowns and dental implants. The startups have names like *Vis*, *StemRex* and *Elf Zone*.

Altogether there are eight companies so far, and Samardzija says this is just the beginning.

"This work, I believe, can help us spread our message of healthful living," he says, referring to Loma Linda University Health's mission.

Samardzija, a longtime patent attorney who is fluent in French and Serbo-Croatian, says he hopes a greater showcasing of Loma Linda University Health's innovation in the marketplace will serve as a spotlight on the work now being conducted in the organization's labs.

Originally from Belgrade, in what was then Yugoslavia, and the son of a Seventh-day Adventist minister, Samardzija moved with his family at age 3, first to Paris, where his father pastored a Yugoslavian church,

and then years later to Brooklyn, New York.

He knew early in life that he wanted to be in the field of medicine. But it wasn't until he was in college, when he volunteered for six months in a hospital emergency room at Bellevue Hospital in New York, that he realized he wanted to become a researcher instead of a physician.

He graduated from Brooklyn College in 1987 with a bachelor's degree in sports medicine and headed west to Loma Linda University, where he earned an MS degree in exercise physiology and later a PhD in physiology. He then worked as a post-doctoral fellow and researcher at the University of Pennsylvania and at universities throughout Southern California.

Samardzija and his wife, Maja, eventually moved to San Diego, where he went to law school and acquired several honors, including an oratory award. He graduated from the University of San Diego School of Law in 2001 and went to work in San Francisco as a lawyer.

It was there that a seminal event in his life taught him the importance of preparation. In 2002, the Bay Area dot-com bust was at its height, and he was laid off on his birthday.

"Here I was, in one of the most expensive cities in the United States, unemployed and in danger of going bankrupt. Thousands of lawyers were also out of

work at that time," he recalls.

But Samardzija was prepared, having already compiled a list of some 3,000 biotech companies and law firms, and he applied to each. He secured five interviews and received one offer — as the in-house attorney for a pharmaceutical startup. He helped prepare the company for an initial public offering by the time he left.

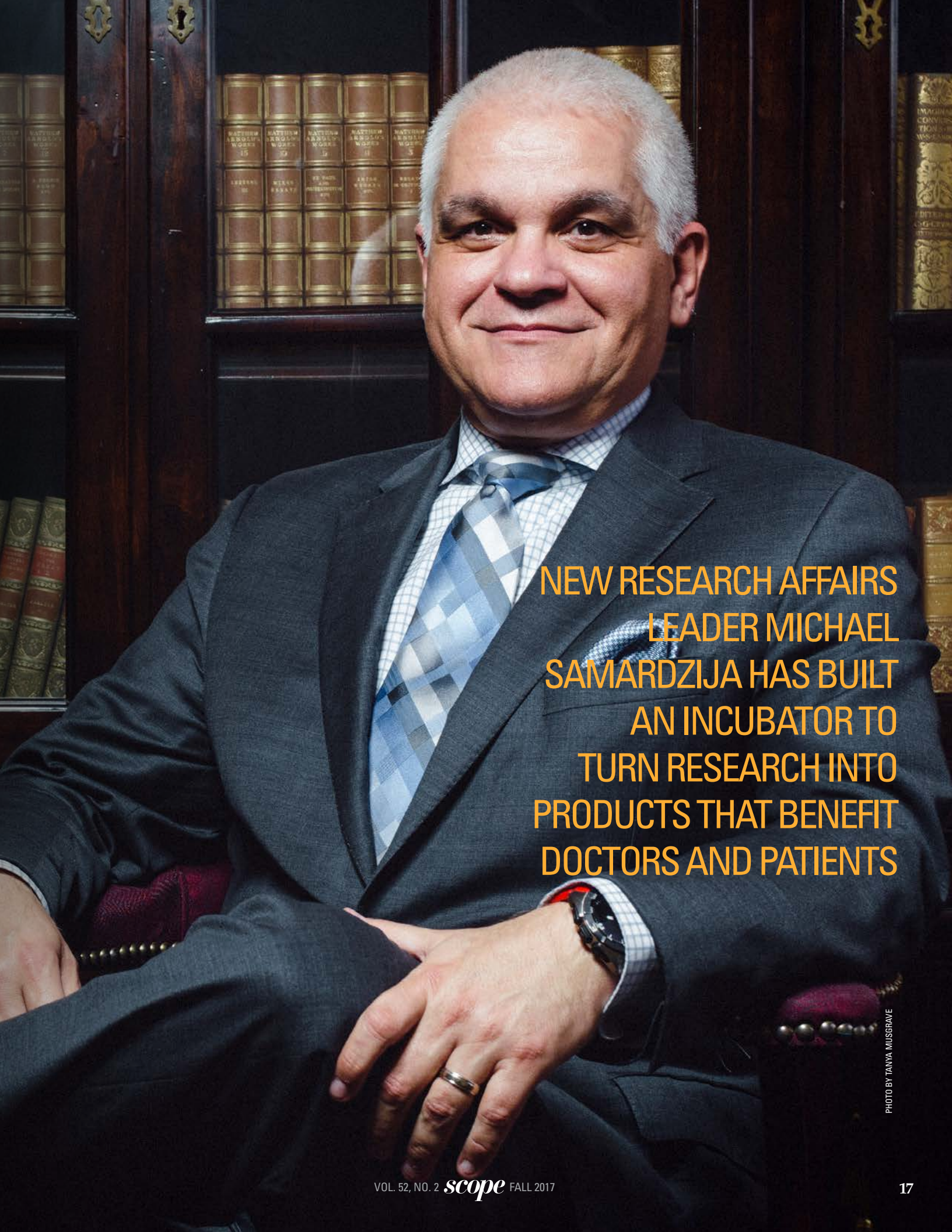
He then worked as director of intellectual property at MD Anderson Cancer Center in Houston before working as a partner in several top-tier law firms, largely focusing on patent applications and infringement litigation.

Things were going well professionally, but Samardzija felt he was traveling too much and wanted to be home more with his wife and teenage sons.

"I was getting tired of being an absentee dad," he says.

Samardzija no longer has an office in a skyscraper with an expansive view of the city skyline of Houston or the Bay Area, but he says he's extremely fulfilled working at Loma Linda University Health. Even during his job interview with executives, he pushed the idea of innovation and gaining greater publicity for the institution and its potential products.

"The great thing about this work is that we can make a difference in people's lives," he says. "We're going to get the word out."



NEW RESEARCH AFFAIRS
LEADER MICHAEL
SAMARDZIJA HAS BUILT
AN INCUBATOR TO
TURN RESEARCH INTO
PRODUCTS THAT BENEFIT
DOCTORS AND PATIENTS

PHOTO BY TANVA MUSGRAVE

AN INNOVATIVE APPROACH TO EDUCATION AND OUTREACH

BY STEVEN K. WAGNER

GIVING HESITANT TEENAGERS a direction in life after high school — a future — is a challenge in the city of San Bernardino, where less than 12 percent have an education level of bachelor's degree or higher, according to a U.S. Census Bureau estimate.

To meet that challenge, Loma Linda University Health has established San Manuel Gateway College in San Bernardino for those wishing to begin careers in health care. It's a bold initiative, one that is playing a pivotal role in helping rebuild the San Bernardino region's battered economy, according to John Husing, former chief economist for the Inland Empire Economic Partnership.

Opened in September 2016, San Manuel Gateway College occupies space on Loma Linda University Health's San Bernardino campus alongside the SAC Health System clinic, an outreach to low-income residents. The college's uniqueness lies in that interconnection.

Not only are San Manuel Gateway College students receiving classroom instruction at the college, they receive hands-on training through opportunities to assist at the SAC clinic. San Manuel Gateway College students are mentored by physicians, Loma Linda University medical residents, medical students and nursing students as they rotate through the clinic. Few colleges in the country provide such a unique



PHOTOS BY ANSEL OLIVER

and innovative three-tiered educational opportunity, said Arwyn Wild, MA, the college's executive director.

"To have all that in one building is certainly unique," Wild said. "I don't know of any other educational model that is quite like ours."

The state-of-the-art college facility grew out of Loma Linda University Health executives' desire to help young people find health care jobs within the Inland Empire. Plans originally called for a two-story structure to house the San Bernardino Campus, but when a proposed college was added to the mix an additional floor was needed. The San Manuel Band of Mission Indians helped lead funding efforts for the additional floor by donating \$10 million as part of Vision 2020 – The Campaign for a Whole Tomorrow. A third partner, San Bernardino Unified School District, provided a pathway to enlist prospective students, many of whom are the first in their families to pursue a career in health care or even earn education beyond high school.

Thirty-four students graduated in the first cohort in June — 22 in a community health workers program and 12 in a medical assistant



program. Four additional majors were added autumn of 2017: pharmacy technician, dialysis technician, surgical technician, and nurse assistant. Academic programs require between four and 18 months to complete, and students — most are from San Bernardino — earn an academic certificate. No motivated student is denied entrance for financial reasons.

"One of our primary goals is to provide viable job opportunities for students in the Inland Empire," said Wild, adding that one source of jobs may be Loma Linda University Health itself. "We will be helping with job placement once they've completed their programs of study."

Wild said there are several goals: to pique the interest of students, encourage them to continue on toward a junior college or college degree, build self-esteem and help enrollees find health care employment. Combined, those goals are both formidable and empowering, said Dynnette Hart, DrPH, RN, director of academic programs.

"We wanted to find an innovative way of empowering students to be successful in an academic program, enabling them to find entry-level employment in the health care field," she said. "We never want a student to take the time to be trained and certified for a particular job and not be able to find employment."

Jordan Harris, assistant to the executive director, has interfaced with various departments and interacts with the students. He has been impressed.

"It's an excellent opportunity for our students to be in an environment where they're valued," Harris said. "One of my rewards is being able to tell students that there are people here who believe in their welfare and who believe in their future."

Wild agreed. "Students want this, they want someone to believe in them," he said. "And, they want to experience success. This is opening up a whole new world to them."

↑ SAN MANUEL
GATEWAY COLLEGE

NEUROPATHY TREATMENT RESTORES HOPE



PHOTO BY TANYA MUSGRAVE

BY LARRY BECKER

INNOVATIVE PHYSICAL THERAPIST DEVELOPS TECHNIQUE THAT REDUCES PAIN AND TINGLING, RESTORING HOPE TO NEUROPATHY SUFFERERS

DIFFICULT TO TREAT, nerve pain and tingling impair some sufferers for the rest of their lives. But now, a new technique developed by a Loma Linda University Health physical therapist brings relief through a technique of physical therapy holds, often freeing patients from the need for surgery or long-term medication use.

Mark Bussell, DPT, developed his innovative technique, termed Intra-neural Facilitation™ (INF). These treatments restore blood supply to nerves damaged by a number of conditions including diabetes, chemotherapy or avascular necrosis.

“Nerves have been termed ‘blood hungry.’ Arteries close to each nerve provide the vital blood supply through small connector vessels,” Bussell says. “When a condition interrupts a nerve’s blood supply, the lack of oxygen causes that nerve to begin to lose function, ultimately causing the pain, tingling, numbness and other symptoms associated with neuropathy.”

Bussell’s INF treatment involves a series of holds that position joints in ways that facilitate blood flow through the tiny vessels feeding the nerves. Together the three holds act as a systematic pressuring of blood flow into damaged nerves, renewing oxygen supply to the nerve, which leads to restored nerve function and fewer neuropathic symptoms.

“Think of a nerve resembling a wire, while an artery resembles a hose. They’re connected by a feeder vessel,” Bussell says. “Pulling the artery and the nerve together stretches out that nutrient feeder vessel. That creates a larger opening and facilitates more blood flowing to the nerve.”

Bussell began developing this new treatment in the early years of his physical therapy career. He found traditional physical therapy methods were hit or miss when it came to relieving nerve pain.

“A friend from Washington state suggested I try doing some osteopath holds,” Bussell says. “I began to see some success in this area.” Bussell is also father of two special-needs sons. Highly motivated to do anything he could to help them, he tried a number of innovative physical therapy techniques.

Bussell soon began to realize that his holds were causing changes to his patients’ microvascular system apart from physical therapy’s typical muscle strengthening effects. In many cases the holds would lead to reduced swelling and reduced pain in his patients. He began practicing on family and friends with various neuropathies.



PHOTO BY ANSEL OLIVER

LOMA LINDA UNIVERSITY HEALTH OPENED A NEUROPATHIC THERAPY CENTER IN JUNE.

He treated his first neuropathy patient in 2007. After the first session, the patient, who had endured severe foot pain for several years, reported a “pillow feeling” in his feet.

“But in 2010 I found out I had cancer,” Bussell says. Following surgery and chemotherapy, he developed neuropathy symptoms of his own, and began self-treating. He described his experience to his oncologist, who sent Bussell other patients with chemotherapy-induced neuropathy for treatment. The improvement impressed the oncologist, who invited Bussell to consider joining their academic medical center. A family move led to his relocation to Loma Linda in 2011.

Bussell has devoted thousands of hours of study to documenting evidence of the effectiveness of this treatment program. He has published one research study in the Archives of Physical Medicine and Rehabilitation. There are several additional studies underway.

“It’s typical that patients start feeling better with the second treatment,” Bussell reports. “But by the third treatment the tingling should be reduced.” Patients typically receive 10 – 20 treatments over the course of one to

two months. Bussell also gives his patients custom complimentary home exercises to do between treatments.

“Neuropathy is becoming widespread,” Bussell says. “I see children with nerve pain, and adults who have very complex pain situations. It’s estimated that 75 percent of people who are diabetic or pre-diabetic will ultimately develop neuropathy. This is very sad, but there is growing hope.”

Loma Linda University Health opened its Neuropathic Therapy Center in June. Located in an outpatient building adjacent to the East Campus facility, the new center has seven treatment bays, dedicated space for Bussell and interdisciplinary teams to conduct additional research, and training space for physical therapists to perform these innovative techniques.

Bussell is humbled by his patients’ responses to his treatments that enable them to live with reduced pain and numbness. “It’s an amazing feeling when you see swelling reduce and color return,” he says. “The patients are so affirming about their experiences and pain relief.”

Mark Bussell snips the ribbon at the Neuropathic Therapy Center opening ceremony earlier this year. The center is home to an innovative, drug-free, surgery-free treatment program for people suffering from peripheral neuropathy (nerve damage) caused by chemotherapy, diabetes or other causes.

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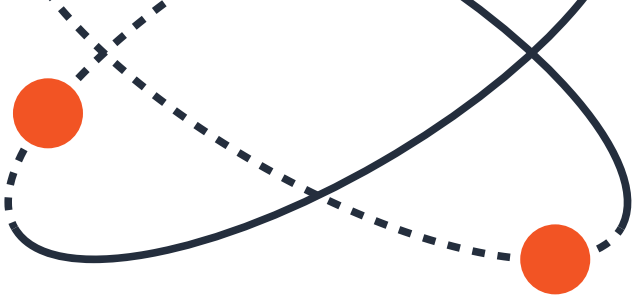


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School of Public Health



MEDICINE MEETS LIFESTYLE AND BEHAVIOR

BY BRIANA PASTORINO

There always seems to be news about the latest and greatest in medical technology — innovative new ways to fight cancer and treat heart disease or new pills or fad diets to shed unwanted pounds. But what if there were another way to conquer chronic disease without a prescription? What if it was growing in your own backyard?

PHOTO BY ANSEL OLIVER



Lifestyle doctor Brenda Rea, MD

A sprouting segment of medical care — known as lifestyle medicine — focuses on food as treatment and how eating and other behavioral habits can either strengthen or stress a person's health.

Loma Linda University Health has long been on the forefront of this approach. When administrators opened a Lifestyle Medicine Center in February, the schedule was soon booked through September. Now, four preventive medicine physicians serve as lifestyle coaches in primary care.

The program's popularity highlights how a lifestyle approach to fighting and preventing disease is appealing to an increasing number of patients.

CLARIVIL'S JOURNEY

Clarivil Cruz had never considered herself unhealthy, but she would admit she also didn't have the healthiest eating or exercise habits. She worked 12-hour shifts as an operating room nurse at Loma Linda University Medical Center but didn't otherwise engage in a lot of physical activity. Her weight had remained unchanged for six years.

But when Cruz noticed she'd gained 13 pounds in three months, she grew concerned and visited her primary care doctor. After tests, Cruz learned she had high cholesterol, high inflammatory markers and was pre-diabetic — something the 31-year-old didn't expect to hear.

"My doctor gave me two options," Cruz recalled. "Start taking high glucose medication or lose the weight. I chose the latter."


Her doctor recommended she join Say N.O.W. (No To Overweight), a free weight management program offered through Loma Linda University Health's Living Whole Wellness program. Cruz was wait-listed for the popular program, which was created by Olivia Moses, DrPH, director of corporate health and wellness in risk management.

Then another bump in the road. Cruz found herself in urgent care after waking up one morning with so much pain she was unable to put weight on her right foot. She left on crutches.

Tests confirmed gout, a form of inflammatory arthritis that can be related to diet.

Cruz's doctor also made another recommendation: a consultation visit with a lifestyle medicine coach. Though she wasn't familiar with the profession, she knew she had to live differently.

"My doctor treated me without medication — but with a lifestyle change," Cruz said.



A LIFESTYLE TREATMENT PROGRAM THAT'S BOOMING IN POPULARITY IS TRYING TO KEEP UP WITH DEMAND

THE LIFESTYLE DOCTOR

Brenda Rea, MD, DrPH, PT, RD, wasn't on a deliberate road to medical school. She began her career as a physical therapist working to rehabilitate patients with strokes and cardiopulmonary disease. She then went on to earn her doctorate in public health but took a few extra classes to become a registered dietician and subsequently taught in the School of Public Health at Loma Linda University.

No matter how much she accomplished, Rea felt compelled to serve in a more preventive manner. "I knew I wanted to do more to help patients to reduce their risk for chronic disease such as stroke and heart attack," Rea recalled.

At 36 years old, Rea decided to go to medical school, making her the oldest person in her matriculating class. She became board certified in both Family and Preventive Medicine through her training at Loma Linda University and began working as faculty in 2014.

According to the Centers for Disease Control and Prevention, 75 percent of all doctor visits involve prescription drugs. Rea's patient visits rarely do.

LIFESTYLE MEDICINE APPROACH

Rea says lifestyle medicine is about finding and treating the underlying cause rather than only treating the disease. The goal is to change behavior. When first seeing patients, she tries to learn their life history, not just their medical history.

"We are getting an idea of their journey that led them to this point in their life, and what is affecting their ability — or inability — to best care for themselves," she said.

According to Rea, Cruz presented with inflammatory joint pain, high cholesterol and pre-diabetes, and she was also mildly overweight and had gout. "I was pretty much allergic to everything," Cruz recalled. She experienced hives often, but never thought to associate it with anything in particular.

While sinus issues tend to be the common effect of allergies, Rea thought perhaps Cruz's allergies were food sensitivities presenting themselves in a different way, maybe in the form of generalized inflammation and weight gain.

Rea put Cruz on an elimination diet so she could identify what foods would trigger symptoms. Cruz eliminated sugar, meat, gluten and dairy for one week and stuck to a primarily plant-based diet.

The results? Sugar caused her headaches; dairy created mucus in her nose and throat; gluten and meat caused inflammation pain in her joints.

Cruz had overhauled her diet by May. She gave up gluten, and her diet became more plant-based. She admitted it was challenging at first, but easier after the first week.

"I changed my mindset — I didn't want to be on cholesterol meds or be pre-diabetic," she said.

Soon she had normal cholesterol levels and inflammatory markers and was no longer pre-diabetic.

Cruz is on the road to becoming a vegetarian, and she rarely consumes those trigger foods, which she learned also give her high cholesterol.

According to the Adventist Health Studies, led by Gary Fraser, MD, PhD, at Loma Linda University Health, there

is convincing evidence that vegetarians have lower rates of coronary heart disease, probable lower rates of hypertension and diabetes, and lower prevalence of obesity. "Overall, their cancer rates appear to be moderately lower than others living in the same communities, and life expectancy appears to be longer," Fraser said.

Still, Rea said the goal of the lifestyle medicine clinic isn't to make everyone a vegetarian. Only if patients are willing to take that route, she says.

"Rather than overload them with information and advice, we want to guide them and build their confidence so they can be self-managed," she said.

Part of self-managing is developing a support system. Cruz said her fiancé drinks flaxseed anti-inflammatory smoothies with her, and he's been supportive. It's enjoyable for both of them, she said.

MORE THAN JUST WHAT WE EAT

"Lifestyle medicine is a different paradigm of how to treat disease," says Rea, who until recently was the main lifestyle medicine physician in primary care.

Nutrition, sleep habits, support, connectedness, spiritual well-being and physical activity are all key factors in lifestyle medicine, according to April Wilson, MD, MPH, a preventive medicine physician, and the preventive medicine residency program director. She and the team have added clinic days to meet the increased demand for the outpatient lifestyle medicine service in primary care. They are also developing an inpatient lifestyle medicine consult service for the hospital setting.

"We envision a seamless system where patients can get the lifestyle coaching and treatment they need anywhere within Loma Linda University Health," Wilson said. "In the past, lifestyle medicine has grown primarily in smaller systems."

Wilson says 80 to 90 percent of chronic disease is related to lifestyle and behavioral factors, so treating the underlying causes just makes sense. "We take a team approach in discovering life goals, health-related behaviors and areas for potential improvement that will contribute to vitality and longevity," she says. "It's very patient-centered. We want them to leave with some substantive goals that will ultimately aid them in reducing risk factors for disease. But if the patient's goals don't perfectly align with ours, that's okay."

Rea says the university's School of Medicine includes a component of lifestyle medicine in the family and preventive medicine combined residency program as well as the general preventive medicine residency program. Rea said she thinks an increasing cohort of physicians may focus on lifestyle coaching in the future.

"It will be interesting to see where this approach to medicine goes over the next five to 10 years," she said.



PHOTO BY TANYA MUSGRAVE



Clarivil Cruz often drinks healthy smoothies with her fiancé

ation

THROWING TOMATOES AT AUTOIMMUNE DISEASES

BY JAMES PONDER

WILLIAM LANGRIDGE, PHD, is working on a new way to fight autoimmune diseases (AD) with edible vaccines.

The biochemistry professor at Loma Linda University Health believes most people would rather eat a tomato than take a shot in the arm. In an article published in the December 2006 *Scientific American*, he made the case for edible vaccines to prevent infectious diseases. For the last decade, however, he has set his sights on AD instead.

Langridge says the fruits of his earlier research — tomatoes and potatoes that synthesize vaccines — are every bit as applicable in the battle against AD. Edible vaccines are inexpensive, easy to transport and can be stored at room temperature compared to traditional vaccines, which require controlled conditions difficult to maintain in parts of the world without refrigeration.

What's more, edible vaccines produce fewer side effects and are friendly to children, who might prefer eating a tomato instead of taking a needle in the shoulder.

The number of recognized autoimmune diseases has blossomed

in recent years, from a handful a decade ago to more than 100 today, Langridge says.

According to the American Autoimmune Related Disease Association, 50 million Americans suffer from AD, which the organization says includes such well-known conditions as rheumatoid arthritis, irritable bowel syndrome, multiple sclerosis and Type 1 diabetes. Langridge says AD ranks among the top 10 killers of children, men and women in all age groups in the developing world.

To stop AD in its tracks, he's taking the opposite approach from his earlier attempts to prevent infectious diseases.

"Our older approach of making vaccines that stimulate the immune system to attack the organisms that cause infectious diseases has been turned upside down by our lab's construction of recombinant vaccines that suppress, rather than stimulate, the immune system to fight an entirely new kind of enemy," he says.

The new enemy, of course, is AD. It causes the body to use its immune system to commit suicide. "Can you think of anything

in biology that is crazier?" he asks.

For the past decade, he and his team have been developing edible plants that produce multi-component vaccines called Cholera Toxin B autoantigen fusion proteins that inhibit immune-cell activation, and thereby prevent the body from destroying its own organs and tissues.

One of the first diseases Langridge targeted in his earlier research was rotavirus, which causes an intestinal infection the World Health Organization says killed more than 200,000

children in 2013 alone.

He says his team's edible vaccine was found to be effective in preventing rotavirus in mouse pups, but the idea of eating modified food wasn't popular with the public. Too many were nervous about eating plants containing recombinant DNA.

Langridge is optimistic, however, that as AD continues to expand, popular reluctance can be overcome.

"There is no evidence that anyone has been harmed by eating genetically altered plants, but the fear persists," he says. "If we're able to show how this will help, I'm confident people will change their minds."

Langridge suspects the current emphasis on cleanliness plays a role in today's unprecedented AD.

"We are a lot cleaner people than ever before," he says, "with all the increased cleaning of eating surfaces, washing of hands and antibiotic soaps."

**BIOCHEMISTRY
PROFESSOR WANTS
TO CHANGE THE WAY
PEOPLE RECEIVE
VACCINES**

In previous generations, when the majority of Americans lived on farms and had daily interactions with animals, people were exposed to all kinds of germs early in life that they seldom or never encounter today. As a result, their immune systems developed robust immune responses and memory cells that could quickly proliferate and eliminate many diseases and germs in childhood.

But with today's zealous

cleanliness, the immune system may fail to develop an appropriate immune response to pathogens early in life. The result is what Langridge terms "a confused immune response when encountering self-proteins that resemble pathogen antigens later in life." The downside is that today's humans appear to be falling prey to a plethora of crippling autoimmune disorders unknown to their ancestors.

Langridge's current research is focused on vaccines to prevent the onset and progression of Type 1 diabetes. Once the mechanism underlying the immune response is fully understood, it will be tested in diabetes patients and the strategy applied to developing vaccines for other, similar forms of AD.

"We are about 70 percent of the way to completely preventing onset of this disease and about halfway to applying the fusion protein vaccine to those with early onset type 1 diabetes inflammation," he reports.

The FDA wants to be certain the vaccines Langridge and his colleagues develop are both safe and effective before authorizing their use in human trials.

In the meantime, Langridge has a couple of suggestions for

people who want to improve their immune system health.

"If you are young," he counsels, "get outside and play in the dirt. If you're not, get a pet. Either way, stop using antibacterial soaps!"

Michael Samardzija, JD, PhD, MS, associate vice president for research affairs at Loma Linda University Health, calls Langridge's work "innovative with practical importance."

"If he achieves the result he's looking for," Samardzija says, "it will be immensely significant to so many who suffer from AD."





PHOTO BY ANSEL OLIVER

VIRTUAL REALITY THERAPY BRINGS HEALING IN STROKE PATIENTS

TECHNOLOGY USED AT LOMA
LINDA UNIVERSITY MEDICAL
CENTER EAST CAMPUS
HELPS MOTIVATE STROKE
PATIENTS TO CONTINUE
REHABILITATION EFFORTS

BY JAMES PONDER



Physical therapists receive instruction on how to incorporate the EksoGE exoskeleton into their therapy



PHOTO BY ANSEL OLIVER

Thanks to four technological innovations now in use at the Advanced Neuro Recovery Center (ANRC) at Loma Linda University Medical Center East Campus, stroke patients can recover lost abilities like never before.

The recently acquired innovations — two EksoGT exoskeletons, two InMotion ARM robots, two MyoPro orthotics braces and one HTC Vive virtual reality simulator — are designed to help stroke patients regain sensorimotor skills and improve perceptual, cognitive and language-memory abilities.

Stroke is both deadly and disabling, claiming a life every four minutes in the United States and leaving more than two-thirds of survivors with a disability, such as paralysis on one side of the body or loss of memory or speech, according to the National Stroke Association.

Research confirms that the brain has the ability to regenerate and repair itself in the aftermath of stroke if the patient is willing to perform repetitive exercises hundreds of times per session. Too often, however, they lose interest and give up.

But with robotic therapy, the devices keep patients engaged, and they continue to perform specific exercise under the direction

of the therapists in a way that promotes better recovery.

“Sometimes the patient can only do 50 percent of a task, but if a machine can do the other 50 percent, the patient is encouraged to keep going,” says Murray Brandstater, MD, the ANRC medical director.

The recent acquisitions add to the care and rehabilitation offerings of Loma Linda University Medical Center, which became the first hospital in the Inland Empire to earn The Joint Commission’s Gold Seal of Approval® and the American Heart Association/American Stroke Association’s Heart-Check mark for Advanced Certification for Comprehensive Stroke Centers in April. The designation means that Loma Linda provides the highest level of stroke care to patients on a 24/7 year-round basis. Following the intense care provided to stroke victims at the medical center, the technological innovations at the Loma Linda University Medical Center East Campus offer patients enhanced

prospects for a fuller recovery. One device, the EksoGT, is the first FDA-cleared, wearable exoskeleton for stroke and spinal cord injury rehabilitation and helps patients re-learn how to walk.

HOW IT WORKS

A patient straps into the EksoGT with help from their physical therapist. As the machine gives them a lift they stand to their feet, step forward and start walking, slowly at first but with increasing freedom and mobility.

“The patient initiates the stepping,” Brandstater points out. “It trains the patient in a more symmetrical gait pattern. The patient’s balance is better, their walking is better.”

Lisa Zidek, MPT, an outpatient rehab specialist at ANRC, demonstrates how the InMotion device works to increase shoulder and elbow strength. After securing her patient’s chest and torso, she straps his arm to a brace as he grips a handlebar. She then turns on the computer.

A moment later, the patient is staring at a colorful design on the video screen and told to move the handlebar in the direction of a blinking light at the top. He hesitates a bit too long and the robot takes over, moving his arm for him. After a few more tries,

the patient wants to review his results. Zidek flashes the report onscreen indicating the number of times the patient hit the goal without help from the robot, along with five other performance indicators.

At this point, the patient’s competitive spirit motivates him. The remaining 45 minutes fly by as he keeps improving his performance, reprogramming his muscles in the process. The formerly tedious exercise has become a sport, and the patient is hooked.

Before the session ends, Zidek asks him to try the MyoPro-powered orthotics brace. After attaching it to his arm with a series of straps, she directs the patient to flex his biceps. As he does, the machine records the strength of his muscle



signal as a number, which Zidek uses to calibrate the unit. She then tells the patient to extend his triceps, and he complies.

At a signal from Zidek, the patient starts flexing his biceps and extending his triceps as the machine charts a series of peaks and valleys. For patients weakened by stroke or injury, the machine moves their arm, strengthening weak muscles as it goes. In addition to stroke, the MyoPro helps patients with brachial plexus injury, spinal cord or brain injury, multiple sclerosis or amyotrophic lateral sclerosis.

HELP FROM VIRTUAL REALITY

The main benefit to recipients of the new VR therapy is that it

makes therapy seem like playing video games. As a result, they are far more likely to continue long enough to achieve real results.

Brian Chau, MD, a physiatrist at East Campus, says the HTC Vive virtual reality simulator is useful for helping stroke patients regain their sense of spatial orientation, but adds that its head-tracking and motion-tracking capabilities also make it valuable for other therapeutic applications.

“For our phantom limb pain study with the Vive, we’ve partnered with Sheffield Hallam University to help design the software,” Chau says. “They previously used a similar setup to help train amputees on how to use a prosthetic hand device through

VR training.”

Since virtual reality training uses the same muscles as a patient would use in real life, it’s helpful for re-educating muscles in stretching, reaching and grasping. When Zidek tried it, she says she was fooled by how real everything seemed.

“I put the headset on and I was in a kitchen,” she says. “Things looked very real. I reached into the cupboard and pulled out a plate. Then I wondered what would happen if I dropped it, so I did. It shattered in pieces all over the floor. I had to bend down and pick them up, just like at home.”

Despite all the new technological resources at the ANRC, Brandstater says several conditions are necessary for successful

rehabilitation, including the brain needing to retain enough cognitive function to learn new methods, as well as the body being in overall good physical condition to work with repetitive motions.

And, for patients who may have missed out on therapy immediately following a stroke, Brandstater says many can still have the opportunity to gain restoration.

“Some patients are able to improve years later with the right kind of therapy,” he says.

INNOVATION HISTORY

LOMA LINDA UNIVERSITY HEALTH HAS BEEN HOME TO MEDICAL INNOVATIONS THAT HAVE MADE A DIFFERENCE IN LIVES AROUND THE WORLD



TURP PROCEDURE

Roger W. Barnes, MD (School of Medicine, Class of 1922), developed a surgical procedure that has been widely used throughout the world. The device deals with obstructions in the flow of urine because of the enlargement of the prostate gland.

Dr. Barnes enhanced and popularized the trans-urethral resection of the prostate (TURP) on the Los Angeles campus of the College of Medical Evangelists, the precursor to Loma Linda University Health. The procedure has had a major impact on patient care over many decades.

BIOPURE (MTAD)

Mahmoud Torabinejad, DMD, MSD, PhD, developed a cleanser that chemically cleans and disinfects a person's root canal system, greatly enhancing the success of the procedure. Torabinejad's cleanser is now being marketed to dental practices as a product called BioPure (MTAD).

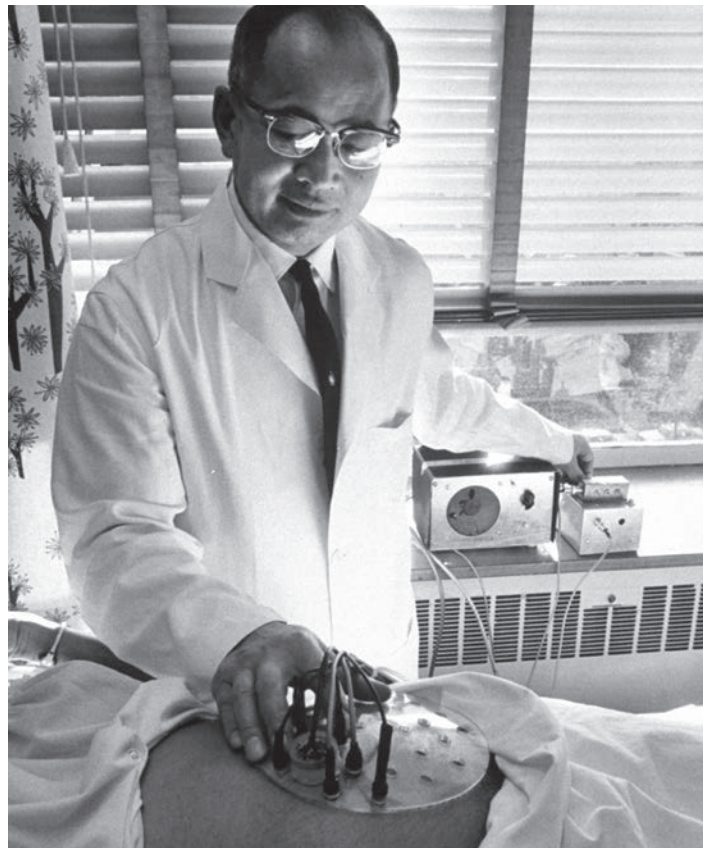


PHOTO BY RALPH CRANE/THE LIFE PICTURE COLLECTION/GETTY IMAGES

FETAL MONITORING

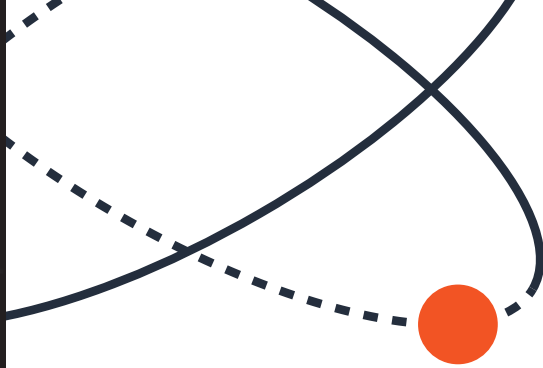
Edward H.G. Hon, MD (School of Medicine, Class of 1950) pioneered the use of electronically monitoring fetal status through his development of fetal monitoring equipment. His innovations have significantly reduced the dangers associated with childbirth. Although he began his research while a faculty member at Yale, Hon continued his research at White Memorial Medical Center from 1960-1964.

DENTAL PAIN CONTROL

A specialist in anesthesia, Niels Björn Jörgensen, DDS, advanced the dental profession through his innovative approach to patient anxiety and pain. Jörgensen employed moderate intravenous sedation in conjunction with a local anesthetic to minimize the stress and discomfort associated with dental treatment.

Often called "conscious sedation," Jörgensen's technique, unlike general anesthesia, leaves the patient with an intact and protective cough reflex but relaxed and capable of responding to the dentist's instructions.

While others in the dental profession referred to his approach as the Jörgensen Technique, he modestly promoted it as either "Intravenous Premedication" or the "Loma Linda Technique." The late Judson Klooster, DDS, the School of Dentistry's third dean, said, "Dr. Jörgensen's contribution to the profession will go down in history as one of the giant steps in dentistry."



SELECTIVE CORONARY ARTERIOGRAPHY

While Melvin P. Judkins, MD (School of Medicine, Class of 1947), did not invent coronary arteriography, he did develop techniques and catheter designs that simplified the procedure. In 1966 he introduced the Judkins Technique of coronary arteriography, which creates x-ray pictures of the heart's blood vessels. Catheters based on Judkins' designs are still used today. And while patenting his inventions would have made Judkins a wealthy man, he chose to give them to the world of medical science in order to make safe coronary procedures available at low cost to as many patients as possible.

VCS MICRO CLIP

One of the smallest surgical devices in use today, the VCS (Vascular Closure System) Micro Clip was designed by Wolff M. Kirsch, MD, and associate Yong Hua Zhu, MD. The clip is an important substitute for sutures in various types of surgery. Studies show the clip reduces time in the hospital and lessens recovery time. Zhu believes the clip will have a significant impact in developing countries. Mass-produced clips cost just a few cents each. The VCS Micro Clip was first used at Loma Linda University Medical Center in June 1989.

DENTAL USE OF MINERAL TRIOXIDE AGGREGATE

Mahmoud Torabinejad also researched and developed mineral trioxide aggregate (MTA), a material that has received world-wide acclaim because of its ability to save teeth that previously would have been lost. Used on pulp exposures, it triggers the body's production of dentin, and shortens from many months to a few days the treatment of injured teeth.

PROTON THERAPY

James M. Slater, MD (School of Medicine, Class of 1963), was a pioneer in bringing proton therapy to Loma Linda University Medical Center, which treated its first patient in 1990. The program remained the only hospital-based treatment center of its kind in the United States until 2003. Proton radiation treatment, or proton beam therapy, is the most precise and advanced form of radiation therapy available today. It is a painless, non-invasive treatment that allows patients to maintain their quality of life and quickly resume normal activities. This is because proton therapy allows physicians to deliver full or higher treatment dosages that destroy the main tumor site without causing harm to surrounding healthy tissue or organs.



INFANT HEART TRANSPLANTATION

Born in October 1984, the child who became known as Baby Fae suffered from hypoplastic left heart syndrome. At Loma Linda University Medical Center, Leonard Bailey, MD (School of Medicine, Class of 1969), had been conducting intensive research in the area of newborn heart transplantation for seven years. He was exploring the concept of xenografts (transplanting organs from one species to another). Bailey's research convinced him baboons could be a source of new hearts for babies, and could be particularly useful in treating infants with Baby Fae's condition.

On October 26, 1984, Bailey and a highly trained team transplanted a baboon heart into Baby Fae. Worldwide media attention focused on Loma Linda University Medical Center almost immediately. Baby Fae lived three weeks with her new heart. The Baby Fae experience ushered in a new era in infant heart transplantation at Loma Linda and indeed around the world. In late 1985 the first successful neonatal human-to-human heart transplant was performed at Loma Linda University Medical Center. Loma Linda has performed more pediatric heart transplants than any other center.



PHOTO BY DENNISE PARK

VISION 2020

the Campaign for a Whole Tomorrow

A BOLD PHILANTHROPIC INITIATIVE supporting Loma Linda University Health's vision of transforming health, education and wholeness in our community and world. We're more than halfway through the effort.

With God's blessings, much has been accomplished. Still, much remains to be done.

We invite you to follow the progress of the construction of two new hospital towers through our onsite cameras, which you can view online at <http://lluhs2020.org/live-construction-feed>.

HERE'S A TIMELINE OF VISION 2020'S PROGRESS SINCE ITS LAUNCH.

2013

January

The Board of Trustees votes to approve the first comprehensive campaign, Vision 2020 – The Campaign for a Whole Tomorrow. This is the largest campaign in the history of Loma Linda University Health.

2014

May

The Neuro Neonatal Intensive Care Unit at Loma Linda University Children's Hospital treats babies who have, or are at risk for, neurological injury. The Riverside Community Health Foundation has funded projects at Loma Linda University Children's Hospital, with the Neuro NICU as its signature project.

2014

July

From around the world, over 2,000 alumni, employees and friends gather on the Loma Linda University Health campus for the Vision 2020 Reveal event and the emotional announcement of a \$100 million gift from Dennis and Carol Troesh. This is the largest gift in Loma Linda University Health's history as well as in the history of the Inland Empire region.

2014

December

The groundbreaking for the innovative Loma Linda University Health – San Bernardino campus and San Manuel Gateway College is held, announcing a significant \$10 million gift from the San Manuel Band of Mission Indians.

2015

August

Doctors perform unprecedented facial re-implantation surgery on a 2-year-old dog bite victim. Doctors say the size of her facial injury is rare. The case becomes one of the largest evulsion injuries successfully re-implanted on a patient this young.

LEAVING A LEGACY TO HELP FUTURE STUDENTS



Individuals interested in exploring ways to support the programs of Loma Linda University Health are invited to contact the Office of Planned Giving online at <http://www.llulegacy.org> or by phone at 909-558-4553.

GEORGIA HODGKIN, EdD, HAS BEEN SOMETHING OF AN INSTITUTION AT LOMA LINDA UNIVERSITY SCHOOL OF ALLIED HEALTH PROFESSIONS SINCE SHE FIRST JOINED THE ORGANIZATION IN 1978. HER CURRENT OFFICIAL TITLE OF ASSOCIATE CHAIR OF THE DEPARTMENT OF NUTRITION AND DIETETICS BARELY HINTS AT THE SIZE AND SCOPE OF HER RESPONSIBILITIES OR HER INFLUENCE ON THE WORLD OF NUTRITION.

Perhaps the most prolific author in the school's history, Hodgkin has written upwards of a dozen chapters in popular books on vegetarian nutrition. She has also edited numerous other publications, including volumes II and III of the popular "Apple a Day" vegetarian cookbook, which has sold more than 40,000 copies. In addition, she has participated in dozens of research studies related to nutrition and health.

The hyperkinetic Hodgkin shows no signs of slowing down anytime soon. Currently in her 39th year at the school, she teaches a number of popular classes, assists students with career decisions, and advocates tirelessly for nutritional accountability.

As she contemplates the future,

Hodgkin sees retirement coming up "one of these days." No definite plans now, but the overachiever with the laconic wit will probably find plenty of things to occupy her time. It would hardly be appropriate for someone with her native North Dakotan work ethic to just sit around doing nothing. "I ought to do gardening," she says. "My poor plants are gasping for water. They've not only turned brown, they've turned black."

The other thing Hodgkin has been thinking about lately as she contemplates the future is how she can leave a legacy at the school she loves with all her heart.

"My vision since 1978 has been to have a wood base with a crystal Swarovski apple sitting on my desk," she jokes. "But actually, the

university is in my will. Such a little amount that it's not worth mentioning. It should be much more.

"But our students pay so much in tuition that I thought this might be a slight help," she says. "Plus, I actually thought our students might like to have a scholarship available for those with financial exigencies. Our department is well-equipped. We have a new kitchen, computers and textbooks. It seems unfair to students to leave here with \$75,000 to \$80,000 in debt and to earn what dietitians earn. If we can prevent some of that indebtedness, it would be a good thing."

2015 December

Terror strikes San Bernardino less than three miles from Loma Linda University Health. Within minutes, teams at Loma Linda University Medical Center's Level 1 Trauma Center, the only one in our region, are caring for the victims.

2016 March

The first endowed chair in the School of Public Health is established by Don (SPH Classes of 1973 and 1979) and Trish Hall to advance health discovery through the Adventist Health Study, the longest-running longevity study of its kind.

2016 May

More than 3,000 dignitaries, community members, employees, alumni and donors gather to celebrate the groundbreaking for the new Adult Hospital and Children's Hospital expansion.

2016 June

The ribbon-cutting is held for the Loma Linda University Health – San Bernardino campus and San Manuel Gateway College.

2016 September

The National Institutes of Health awards a grant in the amount of \$1.8 million to support Loma Linda University's research on "targeting CRLF2 and Ikaros alterations to reduce health disparities in childhood leukemia."

November

\$200
MILLION MARK

APARTMENT DONATION SUPPORTS EDUCATION



CLYDE ROGGENKAMP, DDS, MSD, TURNED THE EARLY LEARNING EXPERIENCES OF HIS LIFE INTO DESIRABLE OUTCOMES.

By the time he enrolled in dental school at Loma Linda University, Roggenkamp supplemented his resources by vacuuming carpets in the medical center at night and waxing cast gold crowns and making full dentures part-time.

"The pay was only \$1.40 per hour," he recalls, "but the practical knowledge and gained proficiency were invaluable!"

After graduation, Roggenkamp determined to practice dentistry in an area of great need, so he moved to Vermont, the least populated of the United States and the one with the lowest ratio of dentists per members of the general population.

But after six years in the Green Mountain State — where he earned enough to make a living, but not to pay his school bills — Roggenkamp enlisted in the U.S. Air Force.

Although he enjoyed Air Force life, it proved financially challenging until it was realized that it could be turned into equity.

Roggenkamp chose to maintain ownership of each house purchased at each station and turn them into rental properties. When he retired from the Air Force, he had three rental homes, each of which had significantly appreciated in value.

"When I came to Loma Linda as a new faculty member," he adds, "the proceeds were enough to purchase 10 rental apartments near the campus." The former dental student resolved to rent exclusively to dental students and to keep rates as low as possible.

After 15 years, the apartments had created more than \$1 million in gross receipts, but they had also appreciated in value to approximately that same amount. Roggenkamp evaluated the situation and in the summer of 2016 decided to donate six apartments to the School of Dentistry.

"When it came to supporting the school, I wanted to make a contribution that would benefit students," he says. He stipulated that the income be used to purchase an Instron testing machine, a scanning electron microscope and a micro CT scanner. The Roggenkamp gift is a part of the School of Dentistry's Vision 2020 research priority.

"These items of equipment will advance capability for significant research by students and faculty within the dental school," Roggenkamp says. According to Tim Sherwin, MS, senior development

officer for the school, the gift will help ensure that future generations will have access to the finest in dental technology.

"That Clyde and Kirsty Roggenkamp are willing to share the benefits of Clyde's hard work marks this as a very special gift," Sherwin says. "They have set an example of faithfulness and accountability."

Looking back, Roggenkamp senses the hand of Providence at work.

"It is inspiring to perceive divine influence in our lives, leading in certain ways over time," he says. "If the mission of the university will be benefited as a result, it is certainly all to the credit and glory of God."

2016

September

Loma Linda University researcher Gordon G. Power, MD, together with a team of researchers from several other universities, receives a patent from the U.S. Patent and Trademark Office for the use of nitrite salts to treat specific cardiovascular conditions.

Thanks to a significant gift from the Henry L. Guenther Foundation, the Center for Imaging Research opens at Loma Linda University School of Medicine to enable Inland Empire physicians to employ new and promising diagnostic and treatment tools in the war on cancer and other diseases.

Loma Linda University researchers announce they have identified growth hormone/insulin-like growth factors (GH/IGF) critically important for the regulation of bone formation.

2016

October

Loma Linda University Health President Richard H. Hart, MD, DrPH, is named by Becker's Hospital Review as one of "110 Physician Leaders to Know in 2016."

2016

November

The groundbreaking is held for Loma Linda University Health's first expansion clinic in the Coachella Valley serving underserved children and families.

2016

December

The Deferred Mission Appointee program endowment exceeds \$10 million, providing 40 dental and medical students the opportunity to serve as medical missionaries and still manage their responsibility for student loans.

Information about how to join the club is available at www.lluch.org/BirthdayClub.

VISION 2020 INSPIRES THE YOUNGEST PHILANTHROPISTS

SUPPORTERS OF ALL AGES ARE STEPPING FORWARD TO SUPPORT THE “VISION 2020 – THE CAMPAIGN FOR A WHOLE TOMORROW.” TWO JUNIOR PHILANTHROPISTS RECENTLY DECIDED THEY WOULD ASK FRIENDS FOR DONATIONS TO SUPPORT THE CONSTRUCTION OF A NEW HOSPITAL TOWER RATHER THAN UNWRAPPING BIRTHDAY PRESENTS.

Ulysses Hsu, 9, of Eastvale, told his friends that he wanted to help support Vision 2020 – The Campaign for a Whole Tomorrow. He raised over \$1,600.

Hsu stopped by Loma Linda

University Children’s Hospital and presented a check for \$1,636 to Children’s Hospital mascot Luke the Lion in the lobby. Patients and staff also came down to meet Hsu, who was accompanied by his parents.

“Loma Linda University Children’s Hospital is not an ordinary hospital,” Hsu said. “It is a place of happiness, love, comfort and warmth.”

This is not the first time Hsu has delivered a check to the hospital. The junior philanthropist first donated money from his eighth birthday in 2016 in honor of a friend who had cancer.

Hsu also inspired another young philanthropist, 10-year-old Max Hilliard, who attended the Vision 2020 groundbreaking event in May 2016.

“I saw a video of a kid (Hsu) who donated money to the Children’s Hospital,” he said.



Wanting to help, the enterprising fourth-grader from Redlands Adventist Academy came up with a plan of action.

“I decided for my 10th birthday that I wanted to donate money to Children’s Hospital,” he reports. “I had everything I needed, so I asked my friends if their parents would donate to the hospital instead of giving me a present.”

His friends, family members and classmates responded in a big way.

“Everybody was very kind and we got over \$600,” he says. “I feel very happy with the donation!”

Max was honored during a check presentation ceremony held

recently in the lobby of the hospital. His mom, Tammy Hilliard, was there as was his grandfather, Henry Lambertson, PsyD, associate dean for student affairs at Loma Linda University School of Medicine. Luke the Lion, the bright yellow mascot of Children’s Hospital, stopped by to give Max a hug and pose for a picture.

In giving his donation, Max specified that the funds should be used to help construct the new Children’s Hospital tower.

A new birthday club has been launched for other young fundraisers who want to support the hopes of better health for patients in the Children’s Hospital.

The new Institute for Genetics and Translational Genomics is launched through a lead gift from Charles A. Sims, MD, expanding capabilities for discoveries in wholeness, prevention and translational care.

2017
January

The new Center for Understanding World Religions, which was launched through a gift from William Johnsson, PhD, MA, holds the inaugural event to promote interreligious understanding.

November

\$250
MILLION MARK

2017
April

Loma Linda University Medical Center is approved as a Comprehensive Stroke Center, the first hospital in the Inland Empire to earn this designation. The designation — approved by the Joint Commission, the American Heart Association and the American Stroke Association — means the medical center has attained the highest level of stroke care certification for hospitals that meet care standards for the most complex stroke cases on a 24/7 basis.

2017
May

The Neuropathic Therapy Center opens, offering hope to sufferers of neuropathy caused by a number of conditions. This unique therapeutic approach is only available at Loma Linda University Health.

VISION 2020
The Campaign for a Whole Tomorrow is Loma Linda University Health’s comprehensive campaign to transform lives locally, regionally and globally. If you or a loved one has experienced educational opportunities, or benefits provided through innovative research, or health and wellness provided through one of the many clinical care programs, we hope you will share your story.



/ Gallery /

COMMENCEMENT 2017





c



d



a. President Hart smiles while Steven D. Newton, DPT, laughs as Dean Craig Jackson, JD, proclaims him 2017 Alumnus of the Year at the second of two School of Allied Health Professions commencement ceremonies.

b. A School of Nursing graduate shares a handshake and smile with Dean Elizabeth Bossert, PhD.

c. A social work graduate shares a grin with School of Behavioral Health Dean Beverly Buckles, DSW.

d. A graduate smiles while crossing the stage to receive her diploma

at the School of Allied Health Professions commencement ceremony.

e. Robert E. Lemon, MDiv, retired treasurer of the Seventh-day Adventist world church, was awarded the honorary doctor of humanitarian service degree during the commencement ceremony for the School of Dentistry.

f. Blessings were placed upon the graduates from School of Pharmacy's class of 2017 during the invocation at the commencement ceremony on May 28.

g. A graduate of the School of Public Health proudly displays his diploma.

h. The School of Medicine paid tribute to Leonard Werner, MD, who is stepping down as senior associate dean for medical student education after 34 years. During his service he impacted the lives of 40 percent of the total number of School of Medicine graduates. He will continue to teach.

i. Assemblyman Jim Wood, DDS, presented the commencement address "Living a fulfilling life: a commitment to community."



i



j



k

j. President Richard Hart, MD, DrPH, bugs legendary nurse Maxine Darling, MS, as she receives the Lifetime Service Award from the School of Nursing.

k. Her entourage makes sure their favorite graduate knows she's appreciated at the first of two School of Allied Health Professions commencement ceremonies.

l. Shaunna Siler, left, received the School of Nursing Dean's Award for PhD graduates from Dean Elizabeth Bossert, PhD, and Richard Hart, MD, DrPH, president of Loma Linda University Health.

m. Aurianna Danielle Anobile listens as Provost Carter announces

that she is the 2017 winner of the President's Award at the first School of Allied Health Professions commencement ceremony.

n. Michelle Wheeler is the School of Medicine's 11,000th graduate. She's a third-generation School of Medicine graduate.

o. As she prepares to march out, a graduate of the School of Public Health flashes a smile.

p. Richard Hart, MD, DrPH, Loma Linda University Health president, presents the School of Medicine's Distinguished Service Award to Melissa Kidder. The award honors Kidder's commit-

ment to quality medical education and excellent patient care. She has served as chair of the Department of Gynecology and Obstetrics since 2014, the first woman to hold that position.

q. Graduates from the School of Pharmacy recited the Oath of a Pharmacist during the commencement ceremony on May 28.

r. Daniel Sandy, PhD, addresses graduates of the Schools of Religion and Behavioral Health about the importance of empowering and engaging with partners for effective mission service. He also was named Alumnus of the Year for the School of Behavioral Health.



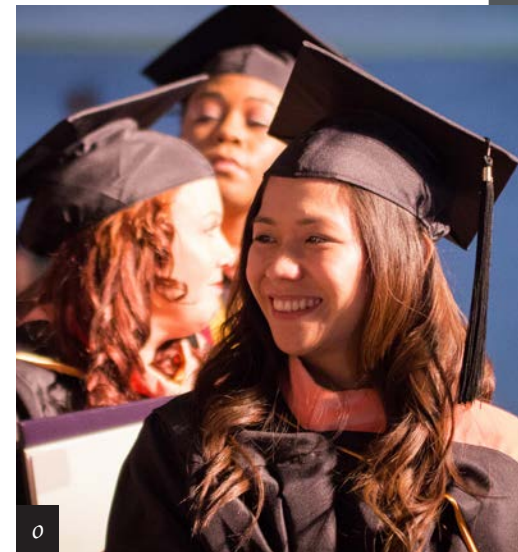
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p



q



FAMILY ON A MISSION

By **CLIFFORD GOLDSTEIN**

THE FAMILY HAD BROUGHT THE PREGNANT YOUNG WOMAN INTO THE HOSPITAL FOR MALARIA. WORSE, HER BLOOD SUGAR HAD BEEN DROPPING SO LOW THAT SHE WENT INTO A COMA. BUT THE FAMILY THEN CHANGED THEIR MINDS AND WANTED TO TAKE HER BACK HOME FOR TREATMENT BY THE WITCH DOCTOR. AFTER ALL, THEY BELIEVED SHE FIRST BECAME SICK BECAUSE SHE WAS UNDER A CURSE FOR SOME INFRACTION, WHICH WOULD REQUIRE THE INTERCESSION OF THE WITCH DOCTOR ANYWAY. DANAЕ NETTEBURG, MD, HOWEVER, KNEW THAT IF THEY TOOK HER AWAY, SHE WOULD DIE. SO, RIGHT THERE, IN THE HOSPITAL HALL, SHE GOT INTO A SHOUTING MATCH WITH THE FAMILY.

The yelling continued until the family, finally, relented. Because the hospital didn't have a glucose intravenous, medical staff had to use frosting from a birthday cake. When they put the frosting in her mouth, she started getting better. The young woman went on to recover, and, a few days later, Netteburg delivered the baby.

The story is somewhat typical of what life is like for Drs. Olen and Danae Netteburg, Loma Linda University School of Medicine graduates

(Olen 2007, Danae 2006) working, since 2010, as missionaries in the African country of Chad at Bere Adventist Hospital. The 100-bed facility is nearly 25 miles away from the closest paved road.

Another pregnant woman was once brought to the hospital by her family — however reluctantly. She was from the Fulani tribe. The nomadic Fulani were distrustful of Westerners, whose ways and lifestyle seemed so different from theirs. After all, a thousand years ago the Fulani didn't live much different than their descendants do today.

However, even her family members could see that the young woman was dying. The baby she was to deliver had been stuck in place for 10 hours. By the time they arrived, it was touch and go. The Drs. Netteburg delivered the baby. The issue now was to save the mother, whose uterus had ripped in half by the time she arrived at the hospital. Danae Netteburg performed a hysterectomy and the mother stabilized.

But the family still didn't trust the hospital, and the Netteburgs feared that they would, at the first chance, take the woman away before she was, medically speaking, ready to leave. That happens a lot at the hospital, Olen says. Patients just leave before they should. Fortunately, the family let her stay long enough for a full recovery.

For the Netteburgs, saving lives and helping people survive tragedies are all in a day's work.

Of course, the question is, *Why do they do it? Why would two physicians, now with four children, give up the material comforts of living in the United States to work in austere conditions for a fraction of what they could be earning elsewhere?*

PHOTOS COURTESY OF OLEN NETTEBURG







Danae Netteburg, left, works with another physician to treat a patient at Bere Adventist Hospital.

"It's just the chance to serve," says Danae. "There's a satisfaction from this that money can't buy."

They know that people are alive today who, but for the work of the Netteburgs, would be dead. They know that there are people who are well who, but for the work of the Netteburgs, would still be sick, even dying.

And, adds Olen, "We have food, clothing, a roof over our heads. We are not lacking what we need."

Growing up, Olen hadn't really thought about being a doctor. He graduated from Andrews University in Berrien Springs, Michigan, in 2001 with a BS degree in mathematics education and biophysics and a BA in German studies with religion and chemistry minors. However, after graduating college, he spent some time at Heri Adventist Hospital in Tanzania where he watched missionary doctors working. At the time, he still had no idea what he wanted to do in life.

After leaving Heri, he took a train ride and a thought occurred to him. "It suddenly hit me on the train," he said, "that if I don't do this, that is,

medical missionary work, I will miss it. At that point, I decided not only did I want to become a doctor, I wanted to be a missionary one as well."

His future wife, Danae Bland, who graduated from Southern Adventist University in Collegedale, Tennessee, in 2002 with a BS degree in biology, spent a year at a missionary outpost in Zambia. She had the conviction to work as a missionary doctor as well.

When the door opened for Chad, the Netteburgs took it, and haven't looked back since.

Because of the challenges, however, hardly a week goes by, both admit, without one of them thinking, *That's it, that's enough — we need to go home, now!*

"It can get discouraging," says Olen, "when some of the locals, for instance — usually the politicians — accuse us of all sorts of things that are just untrue."

Some have accused them of not being real doctors, not having finished medical school, or only working there to practice on the locals. Some even accuse the duo of working there only for the money. "Talk about ironic," Olen says.

But they haven't left because, at least for now, Chad is where they believe the Lord would have them be. They love the work, they love the people, and they love the kind of medicine they get to practice, knowing that they are making a difference in people's lives in a way that, perhaps, they couldn't at home in the United States.

And for those studying medicine or who are doctors already, and who are thinking about medical missionary work, Olen says, "Get in touch with missionary doctors as soon as you can. Learn from them about the system. It's easy to get sidetracked and lost amid the red tape. But, you are really needed out there, believe me."

FLORIDA'S SURGEON GENERAL, CELESTE PHILIP, LED STATE'S ZIKA CONTAINMENT EFFORTS

Washington D.C. native graduated from schools of medicine and public health

By **EDWIN GARCIA**

JUST MONTHS INTO HER JOB AS THE TOP ADVOCATE FOR WELLNESS AND DISEASE PREVENTION FOR MORE THAN 20 MILLION FLORIDA RESIDENTS, CELESTE PHILIP, MD, MPH, WAS THRUST INTO THE HIGHEST-PROFILE ROLE OF HER CAREER.

The World Health Organization had declared Zika a Public Health Emergency of International Concern in February 2016, due to transmission in Brazil, the Caribbean and other regions. And by July, the virus, which can cause birth defects, was reported in Florida.

The world was watching.

Under the best-case scenario, the virus could be curbed; at worst, due to Florida's international population and high tourism rate, it would spread fast and far.

As the Surgeon General and Secretary of the Florida Department of Health, Philip activated her team and launched a massive public education campaign and worked closely with the White House, Centers for Disease Control and Prevention and numerous other public agencies to largely contain the virus.

She credits her training at Loma Linda University School of

Medicine and School of Public Health for helping diminish the spread of Zika.

Philip graduated from medical school in 2003 and became board certified in family medicine and preventive medicine; she also received her MPH, specializing in maternal and child health.

When all eyes focused on the public health crisis in South Florida, Philip harkened back to her days at Loma Linda University where the concept of whole person care and the importance of community health had left a lasting impression.

"There was a tie back to that part of my training," she said. "Lots of things aligned."

Although there were hundreds of Zika cases reported in Florida in 2016, and dozens so far in 2017, the virus has been largely contained, thanks to additional government resources, public education and mosquito control efforts over the summer, when disease-carrying mosquitoes increase their presence in the Sunshine State.

Rising through a public health career that took her from residency at Florida Hospital, to several local positions in various counties, to then become Florida's top health official is a dream come true for Philip — and in stark contrast to what she had envisioned.



Philip, the daughter of Indian immigrant nurses, was raised outside Washington, D.C., and had junior high dreams of becoming a hairstylist. But a job as a hospital clerk during summers between her high school years at Takoma Academy, and the influence of family members, steered her toward public health and medicine.

She is an appointee of Florida Gov. Rick Scott, whose term ends in January 2019. Philip doesn't know where her career will take her next, but she's noticed that her plans and God's plans don't always coincide, at least not initially.

"You can't always plan your next opportunity, so I'm staying open, prayerfully," she said. "I feel like God put me in this position for a reason."



PHOTO BY TANJA MUSGRAVE

A GREAT HONOR

Carson Whinnery, left, and Nick Sanchez, doctoral students from the Neurosurgery Center for Research, Education and Training at Loma Linda University School of Medicine, recently received Alzheimer's Greater Los Angeles 2017 Young Investigators Awards. Whinnery is researching cerebral amyloid angiopathy, while Sanchez focuses on the role of copper ions and oxidative stress in Alzheimer's disease.

Wolff Kirsch, MD, director of the Neurosurgery Center and a professor in the School of Medicine, said the awards highlight the importance of what Whinnery and Sanchez are doing.

"To be recognized for what they're doing encourages students to persist," Kirsch said. "Laboratory work can be a very lonely endeavor, with more failures than successes. I'm glad Alzheimer's Greater Los Angeles has chosen to honor them in this way."

Don Hall, Doctor of Public Health in Preventive Care
Strategies: Gift of Stock and
IRA Charitable Rollover



Powerful Strategies

FOR PEOPLE WHO CARE

Don Hall has a gift for multiplying good outcomes. Since *TIME Magazine* recognized him and his cutting-edge, computerized, Health Risk Assessment in its January 1983 issue, the father of the Corporate Wellness industry continued to evolve WellSuite, attracting clients like Vanderbilt University, Nike and Aramco. The multiplication factor is impressive: One insurance company alone enrolled 1.5 million customers in one month.

Don has also found a way to leverage his giving for impressive outcomes. Don created a trust that both includes his family and ensures that Loma Linda University Health's Adventist Health Study will continue. In addition, a gift of stock and annual IRA charitable rollovers efficiently fulfill his Vision 2020 pledge.

Let us help you discover your Powerful Strategy.

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View Don's video and story at llulegacy.org/ps



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