

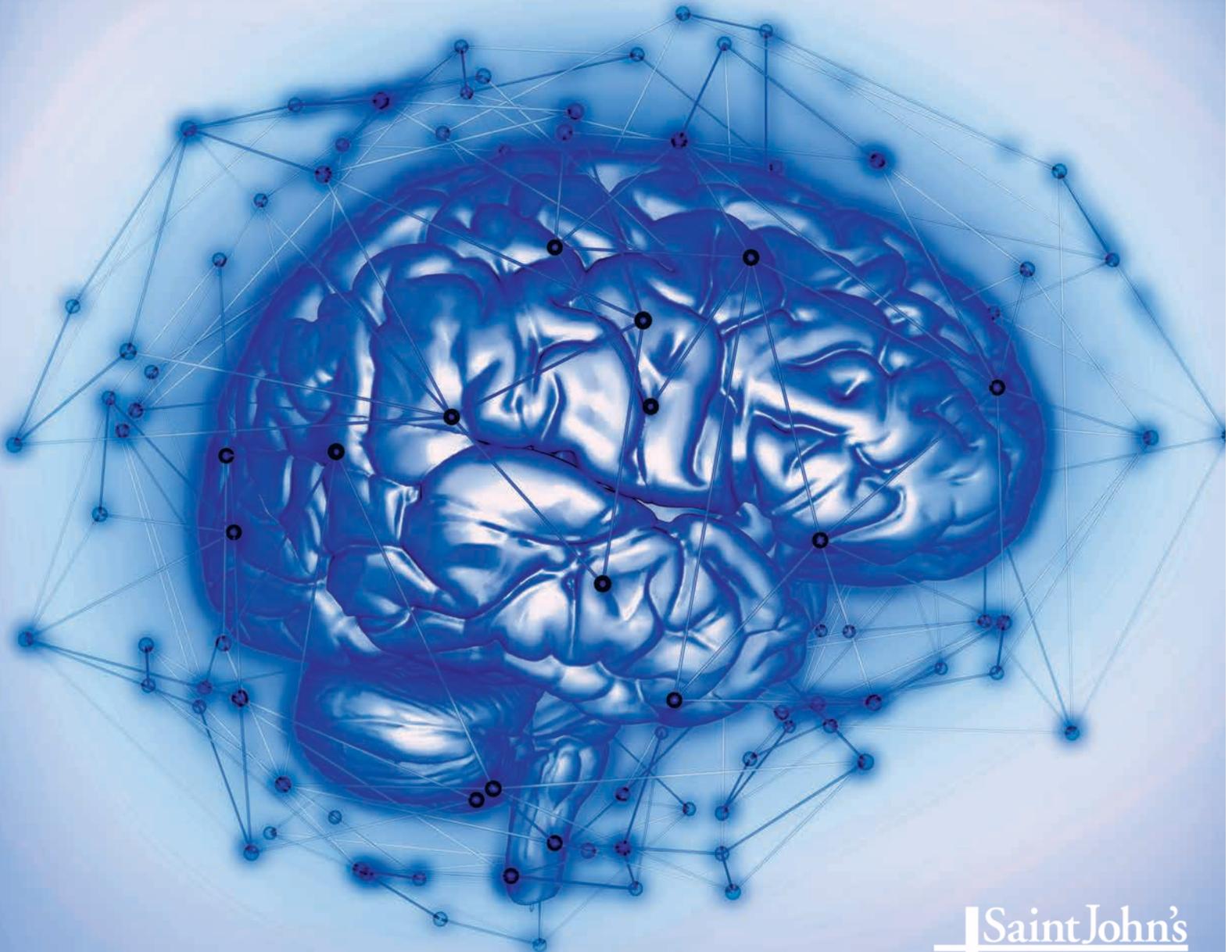
# BRAIN MATTERS

THE MAGAZINE OF SAINT JOHN'S HEALTH CENTER FOUNDATION • FALL 2018



PACIFIC  
NEUROSCIENCE  
INSTITUTE<sup>SM</sup>

DELIVERING PERSONALIZED  
PRECISION CARE TODAY.  
INNOVATING FOR TOMORROW.



 Saint John's  
Health Center Foundation

# PACIFIC NEUROSCIENCE INSTITUTE BY THE NUMBERS

## RESEARCH AND CLINICAL TRIALS SINCE JANUARY 2017



**56** Peer-Reviewed Publications,  
Books and In Press



**17** Grants and  
Awards

**42** Clinical Trials  
and Expanded Patient  
Protocols Current and  
Launching



**114**  
Clinical Trial  
Patients  
Enrolled

+  
Worldwide Leader for our  
Medicenna convection enhanced  
delivery clinical trial



+  
Worldwide Leader for our  
Sunovion stem cell clinical trial  
for stroke patients

## NEUROSURGERY CLINICAL TRIALS: QUICK FACTS

Patients traveled  
to PNI/JWCI from  
**16 STATES** to enroll  
in neurosurgery  
clinical trials

Including:  
CA, CO, CT, GA,  
HI, LA, MT, NJ,  
NM, NV, NY, OH,  
OR, TN, UT, WA  
and as far as  
New Zealand.



Total distance  
traveled:  
**38,136 MILES**

Average  
distance  
traveled:  
**908 MILES**

Farthest  
distance  
traveled:  
**6,519 MILES**

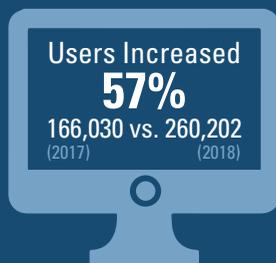
## WWW.PACIFICNEURO.ORG

Average monthly users:

**21.7K**



Users Increased  
**57%**  
166,030 vs. 260,202  
(2017) (2018)



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## ON THE COVER

PNI physicians probe the mysteries of the brain and treat a broad spectrum of neurological conditions.





# Pacific Neuroscience Institute Foundation

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## Welcome From the Founders

It is well-appreciated that complex medical conditions call for and, in fact, demand a collaborative approach to optimize outcomes and patients' quality of life.

Neurological and brain disorders are among the most complex challenges to the human mind and body and to treating physicians. Providing the most effective diagnosis and treatment requires wide-ranging technical skills and highly specific knowledge. The optimal way to bring such expertise to the bedside is by assembling a team of the best and brightest,

each with a great depth of training and experience.

The opportunity to create such an entity based on this core principal of collaboration arose, and it was the fulfillment of our dream and vision to unite and found the Pacific Neuroscience Institute (PNI) in Santa Monica, California. We believe that PNI will become the leading center in the region and one of the leaders in the country for diagnosing and treating a wide range of neurological conditions—from brain cancers to pituitary tumors to Parkinson's and Alzheimer's disease—while also conducting novel research and clinical trials that will fundamentally advance the neurosciences.

As the founders of PNI, we strongly believe that any entity that is willing to take on the mantle of an "Institute" carries

a clear responsibility to fulfill that purpose as defined by its vision. The four of us share a deep commitment to this vision and are united in our desire to collaborate, innovate and educate so that each patient we see receives the maximal benefit of our shared knowledge and experience under one roof. With our additional focus on research and training, we are also committed to sharing our understanding of these conditions and novel treatment approaches with our colleagues around the world.

Finally we are so grateful and pleased that PNI has found its ideal home as an affiliate of Providence Saint John's Health Center and the John Wayne Cancer Institute. Here there is a legacy of collaboration and cooperation, with strong

philanthropic support that facilitates innovative research efforts and fellowship training, generating genuine excitement about finding new approaches to these most complex conditions.

PNI exists because there is a need and an unfilled niche that holds great promise for improving patient care. Much is known, but much more remains to be learned and then applied to these challenging conditions. The future starts now. We are proud and excited to come together as the Pacific Neuroscience Institute and to make our collective knowledge available to every patient who comes to PNI and beyond.

### PNI Founders



## On Being Bold

Once in a very great while, the opportunity to benefit the community by taking a big, bold action presents itself. At that juncture, many institutions resist, preferring to simply continue doing what they are already doing.

We made a different choice. When the opportunity arose to have the Pacific Neuroscience Institute become an affiliate of Providence Saint John's Health Center, we committed wholeheartedly to the relationship. We are excited and energized by the potential of bringing together a world-class team of clinicians and researchers, all dedicated to

providing the best medical and surgical treatments for the full spectrum of neurologic conditions. This innovative, collaborative practice model holds enormous promise for not only providing *the best care*, but also more compassionate, patient-centric care—the hallmark of Providence Saint John's Health Center.

The founding physicians of Pacific Neuroscience Institute are known nationally and internationally for the research and innovative care they provide, making the institute an international destination for care. Our Health Center is pleased to be the home where this care is delivered.

The Centers of Excellence include Brain Health; Brain Tumor; Pituitary Disorders; Adult Hydrocephalus; Facial

Pain; Movement Disorders; Stroke & Aneurysm; Eye, Ear & Skull Base and Neuroscience Research. The physicians and care teams provide personalized care, getting to know each patient so that they can provide whole-person care.

In addition, a robust fellowship program allows surgeons to train under some of the best doctors who, in turn, are always employing cutting-edge techniques in order to teach the latest procedures and refine the skills of these up-and-coming surgeons.

PNI is already expanding their services into the region, providing care at Providence Little Company of Mary Torrance. The leadership teams at Providence Saint John's Health Center and Providence St. Joseph Health Southern

California are excited about its growth and take pride in making a commitment to support such a quality institute.

We are pleased to offer this level of care right here on the Westside, so our residents don't have to travel far from home in order to get well.

**Marcel Loh**

Chief Executive

Providence Saint John's Health Center and John Wayne Cancer Institute



## A Foundation of Success

Neurological conditions represent some of the most challenging medical frontiers. The complexity and delicacy of the human brain have made it difficult to know, understand and treat its disorders. Many of the leading causes of morbidity and mortality are neurological—Alzheimer's and other dementias, Parkinson's disease and other movement disorders, stroke, glioblastoma and other brain cancers. For far too long, we've known far too little about these disorders.

That's changing. The Pacific Neuroscience Institute (PNI) is improving the way these disorders are diagnosed and

treated. Some of the most pre-eminent physicians, clinicians and researchers in the world have gathered here, in this new Providence Saint John's Health Center affiliate, to do what has *not* been done until now. This is an extensive, collaborative, concerted effort to make significant progress in how we address these disorders.

It can be done, but not by us alone. The John Wayne Cancer Institute is a powerful research collaborator with PNI, and Providence St. Joseph Health System and Providence Saint John's Health Center are fully supportive partners, but in order to make the most of this opportunity we need *your* participation.

The Saint John's Health Center Foundation serves as the bridge connecting institutional

opportunities and community commitment. A substantial part of the facilities, programs and personnel that are today's Saint John's Health Center and its affiliated institutions—including the new Pacific Neuroscience Institute—exist because of philanthropic support from the community.

Philanthropic support enables us to be extraordinary in the care we offer. It is *your* support that has built Saint John's Health Center into an institution that is renowned internationally for not only its patient care but also its cutting-edge facilities and research.

The opportunity to have a significant, meaningful impact on neurological conditions exists because of this new affiliation. PNI's physicians, clinicians and researchers are

at work. How far and how fast they can proceed depends in substantial part on how committed the community is to providing philanthropic support.

We support PNI because it is promising, important and consistent with the Foundation's goals. We invite you to join us in this very exciting initiative.

**Robert O. Klein**  
President and CEO  
Saint John's Health Center  
Foundation

**Mary Flaherty**  
Chair  
Saint John's Health Center  
Foundation Board of Trustees

# Pacific Neuroscience Institute

Pacific Neuroscience Institute is comprised of nine Centers of Excellence providing precision medicine and the highest quality of care to patients with a wide spectrum of neurological and cranial disorders. With a broad array of medical and surgical sub-specialties, PNI is focused on all parts of the brain.

## WHAT ARE CENTERS OF EXCELLENCE?

Centers of Excellence consist of a cohesive team of dedicated experts who are committed to providing the highest standards of care, best practices, quality assurances, research, education and innovation to a specific field.

### Brain Tumor Center

Treatment of all types of benign and malignant brain and skull base tumors. Services include minimally invasive keyhole surgical approaches, novel targeted neuro-oncological treatments, radiosurgery and clinical trials.

### Pituitary Disorders Center

Treatment of the full range of pituitary tumors and related tumors and cysts. Neurosurgeons with one of the world's largest experiences in endonasal endoscopic minimally invasive surgery for pituitary adenomas, craniopharyngiomas, chordomas and meningiomas.

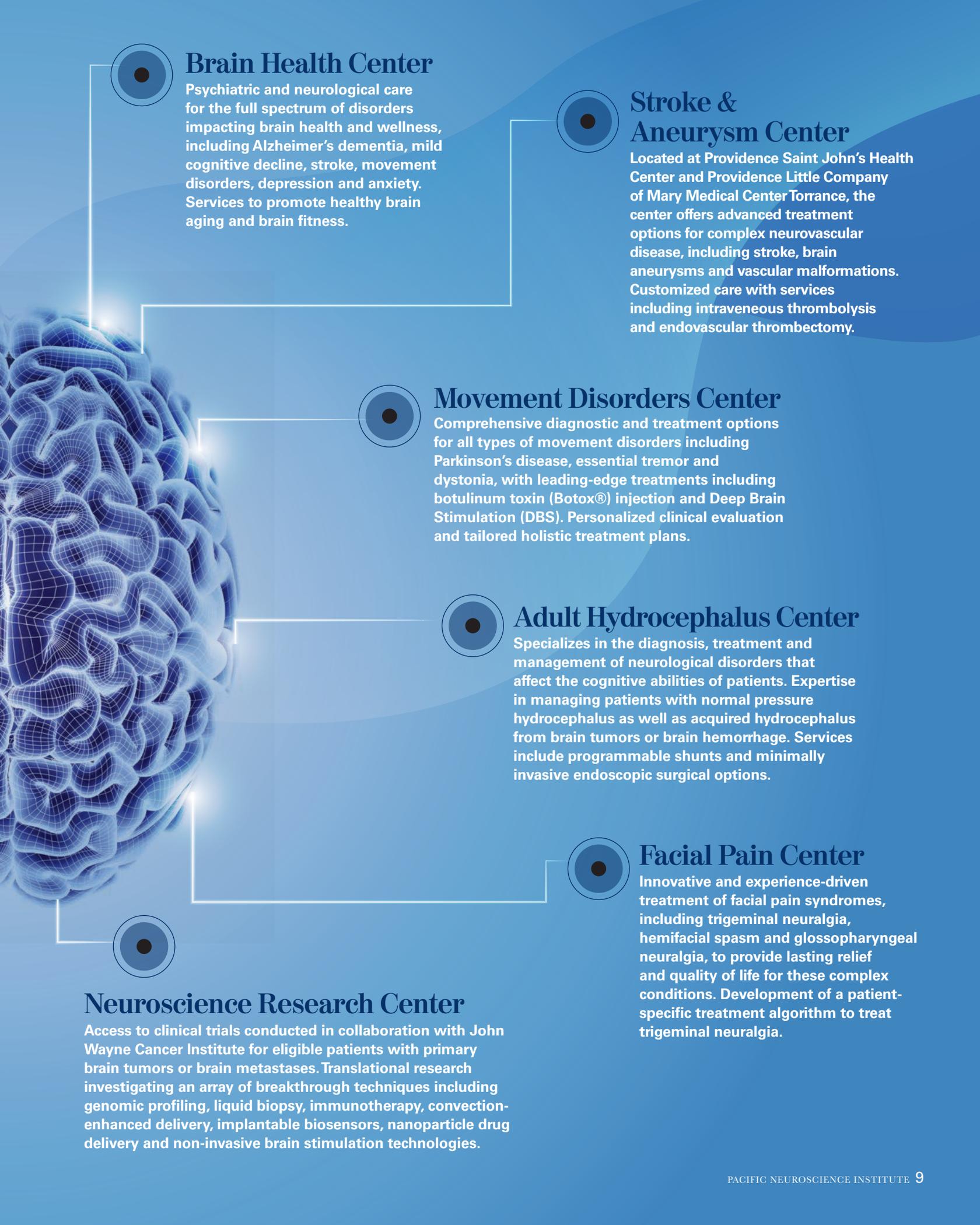
### Eye, Ear & Skull Base Center

Extensive range of diagnostic and treatment options for disorders that impact the sinuses, skull base, nose, ears, eyes, orbits (neuro-ophthalmology) and throat. Collaboration with the Brain Tumor Center and Pituitary Disorders Center to provide state-of-the-art care with a focus on minimally invasive techniques.



**DR. FRANCIS CRICK,  
SCIENTIST WHO CO-DISCOVERED  
THE STRUCTURE OF DNA**

**“There is no scientific study more vital to man than the study of his own brain. Our entire view of the universe depends on it.”**



## Brain Health Center

Psychiatric and neurological care for the full spectrum of disorders impacting brain health and wellness, including Alzheimer's dementia, mild cognitive decline, stroke, movement disorders, depression and anxiety. Services to promote healthy brain aging and brain fitness.

## Stroke & Aneurysm Center

Located at Providence Saint John's Health Center and Providence Little Company of Mary Medical Center Torrance, the center offers advanced treatment options for complex neurovascular disease, including stroke, brain aneurysms and vascular malformations. Customized care with services including intravenous thrombolysis and endovascular thrombectomy.

## Movement Disorders Center

Comprehensive diagnostic and treatment options for all types of movement disorders including Parkinson's disease, essential tremor and dystonia, with leading-edge treatments including botulinum toxin (Botox®) injection and Deep Brain Stimulation (DBS). Personalized clinical evaluation and tailored holistic treatment plans.

## Adult Hydrocephalus Center

Specializes in the diagnosis, treatment and management of neurological disorders that affect the cognitive abilities of patients. Expertise in managing patients with normal pressure hydrocephalus as well as acquired hydrocephalus from brain tumors or brain hemorrhage. Services include programmable shunts and minimally invasive endoscopic surgical options.

## Facial Pain Center

Innovative and experience-driven treatment of facial pain syndromes, including trigeminal neuralgia, hemifacial spasm and glossopharyngeal neuralgia, to provide lasting relief and quality of life for these complex conditions. Development of a patient-specific treatment algorithm to treat trigeminal neuralgia.

## Neuroscience Research Center

Access to clinical trials conducted in collaboration with John Wayne Cancer Institute for eligible patients with primary brain tumors or brain metastases. Translational research investigating an array of breakthrough techniques including genomic profiling, liquid biopsy, immunotherapy, convection-enhanced delivery, implantable biosensors, nanoparticle drug delivery and non-invasive brain stimulation technologies.

## Building the Dream Team

PNI's founders wanted a special place to practice medicine, so they created one.

WRITTEN BY  
SHARI ROAN

Dr. Howard R. Krauss has seen his field change significantly in his four decades of practice. Today he can say he's seeing the next era of neuroscience unfold before his eyes at Pacific Neuroscience Institute. Dr. Krauss, a surgical neuro-ophthalmologist and director of the PNI Eye, Ear & Skull Base Center, is one of the four physicians who co-founded PNI with the dream of providing patients personalized, state-of-the-art care.

"Back in the '70s when I started, neurosurgical outcomes were poor," he says. "Neurologists seemed to be more focused on diagnosing disease due to a lack of treatments. I always wanted to be in a multidisciplinary field and be surrounded with people who understood the neurology of vision and work together to develop successful treatments."

At the core of PNI is a unique, multidisciplinary, unsiloed structure that promotes collaboration and innovation across the neurosciences. Three of the four PNI founders have worked together for more than two decades.



"With the addition of Dr. Santosh Kesari in 2015, PNI is led by the collective energy of four different specialists: a neuro-ophthalmologist, an ENT surgeon (ear, nose and throat), a neuro-oncologist and a neurosurgeon," says Daniel F. Kelly, MD, neurosurgeon and director of PNI and of the Brain Tumor Center and Pituitary Disorders Center. "I know of no other neuroscience center anywhere, academic or private, with such diversely integrated leadership."

They united based on a vision of collaborating, sharing innovative ideas and offering

their patients team-based, comprehensive care under one roof, he says. "I don't think you could find four more different people, in terms of personalities. But ultimately, we are like-minded in our drive to be collaborative and caring for our patients, as well as innovative and efficient in changing the status quo. In many ways, we are all risk-takers."

The founders share similar ideas and attitudes about how to best care for patients while embarking on research that would give every patient the best possible outcome, says co-founder Santosh Kesari,

MD, PhD, a neuroscientist and neuro-oncologist and director of the Pacific Neuroscience Research Center. "We had to build it from the ground up based on our vision. It's rare to have a freestanding institute with a unified leadership whose goal is to make a difference as quickly as possible. Our vision is to accelerate new therapies for neurological disorders by studying one patient at a time."

"The founders rely on each other's experiences, creativity and energy," says Chester F. Griffiths, MD, director of PNI's Eye, Ear & Skull Base Center. Dr. Griffiths is an ear, nose and



throat surgeon and a facial plastic surgeon.

“The first step was saying, ‘We can do this better together as opposed to separately.’ It’s a melding of the minds,” he says. “We are incubators of best practices. We’ve been doing this for a long time successfully, and we learn from each other.”

The welfare of the patient is PNI’s guidepost, Dr. Griffiths says. He calls the dedication to both patient care and research/innovation “priv-ademic”—a blend of private practice and research-based academic medicine. “This priv-ademic concept is hard

to find. We’re all scientists, all physicians and healers.”

“It was all about bringing everyone together under one roof in a way that’s collaborative, not competitive,” he explains. “In academic centers they say they are collaborative, but in reality there may be competition among specialties—and it’s hard to navigate for patients. We decided to take the academic aspect and combine it with private-practice, patient-centric care.”

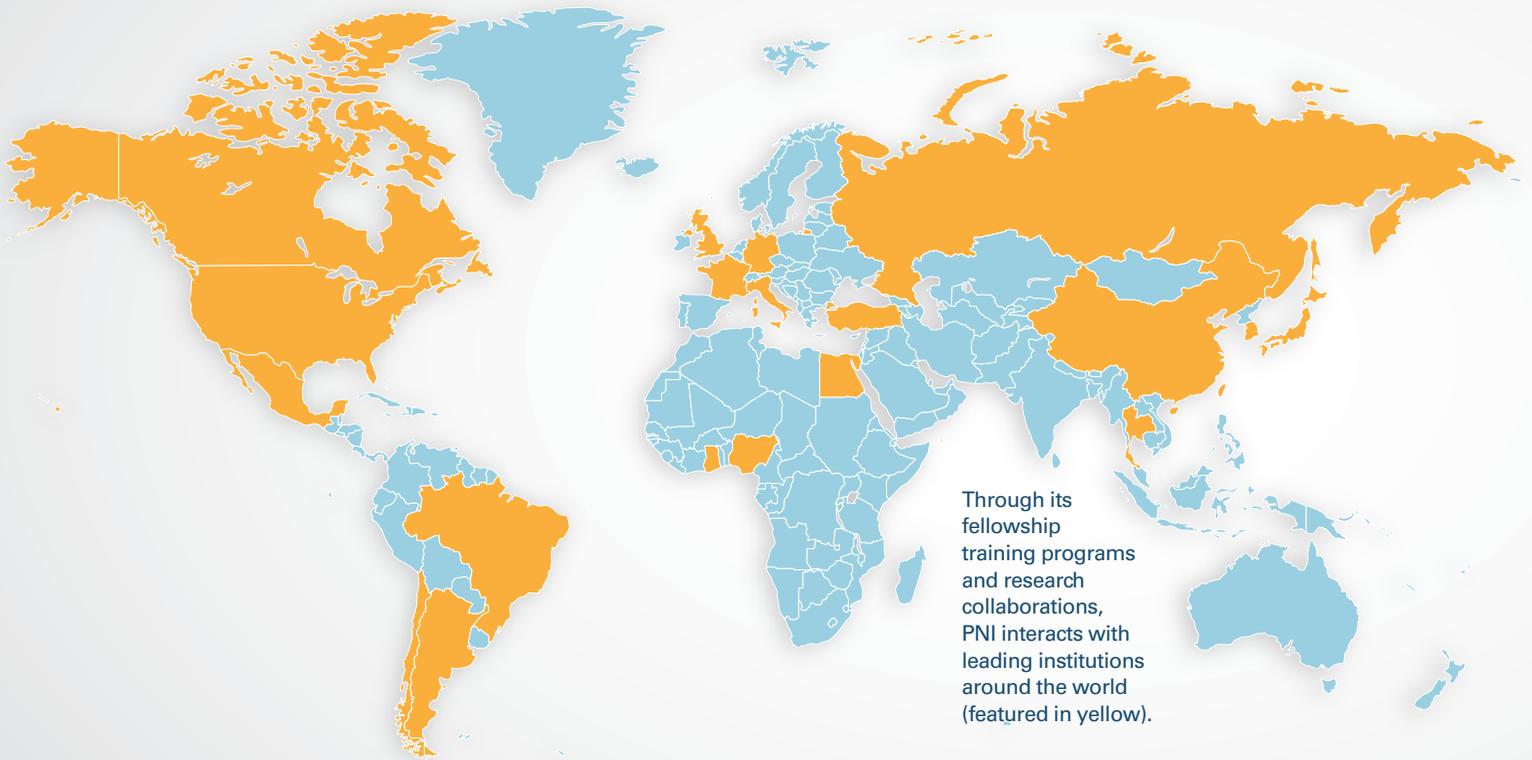
Being smaller than a typical academic institution facilitates collaboration and streamlines goal-setting, Dr. Krauss says.

“With this partnership we feel we have greater freedom to build these types of programs.”

PNI now includes a staff of 24 physicians hand-picked by the four founders, along with more than a dozen collaborators nationwide. While the early focus was on specialists dedicated to brain, skull base and pituitary tumors, over the last three years, PNI has added specialists with expertise in stroke care, movement disorders and hydrocephalus. Most recently, specialists with expertise in Alzheimer’s dementia, anxiety, depression, facial pain, fall prevention and

brain health have been added to create the ninth PNI Center of Excellence: the Pacific Brain Health Center. Plans are in the works to further expand services to cover disorders such as autoimmune disease and psycho-oncology.

“PNI Medical Group now encompasses nine different subspecialties,” Dr. Kelly says. “Further growth of PNI is clearly in our future, but it will be carefully and methodically planned as we fulfill our dream and commitment of comprehensive coordinated neuroscience care under one roof.” ■



## Training the Next Generation

From its own conference rooms in Santa Monica to cavernous meeting halls half a world away, Pacific Neuroscience Institute’s faculty has placed education—of themselves and others—high on the list of institutional goals.

For patients, PNI holds educational meetings and offers support groups on a broad spectrum of neurological conditions affecting the brain and spine. For doctors and scientists, PNI sponsors conferences on advances in neurology and neurosurgery. Faculty members teach and lecture at medical conferences nationally and internationally. They also take on young neuroscientists from



Dr. Garni Barkhoudarian

around the world for fellowships and are opening a state-of-the-art surgical skills laboratory for neurosurgeons both inside and outside PNI to learn minimally invasive and

other advanced neurosurgical techniques.

“These far-reaching efforts are about striving for excellence,” says Garni Barkhoudarian, MD, a neurosurgeon and director of the Multidisciplinary Neuroanatomical Surgical Skills Laboratory, co-director of the Pituitary Disorders Center and director of the Adult Hydrocephalus Center & Facial Pain Center. “Education is what drives excellence. If you’re not evaluating your own knowledge base or if you’re getting complacent, that is when you get behind the times; you’re not doing cutting-edge work, and it’s a disservice to the patients.”

Education is about sharing knowledge to benefit more people, says Daniel F. Kelly, MD, founder and director of PNI and director of the Brain Tumor Center and Pituitary Disorders Center. “Education and training are at the core of what we do at PNI. Our neurosurgery fellowship in minimally invasive brain surgery and our international visiting scholar program have been active for over a decade. We plan to add fellowships in neuro-oncology, ENT (disorders of the ear, nose and throat), neuro-ophthalmology and psychiatry

in the near future as well.”

The PNI faculty features top experts in neuroscience subspecialty areas who are dedicated to passing on their skills, says Dr. Barkhoudarian. “We’re aiming to perform a service for our fellow colleagues in the neurosciences, helping them reach a level at which we believe everybody should be performing. We want to advance the knowledge of our fellows and make them leaders in the field.”

Between training and lectures, PNI and the John Wayne Cancer Institute have an impact on medical care in about 80% of all countries, Dr. Barkhoudarian says. “When you teach a subject, it forces you to become a master of that subject—researching more and learning more about the field and becoming an expert. We improve our own knowledge by teaching others.”

The Multidisciplinary Neuroanatomical Surgical Skills Laboratory—an expanded and updated version of the original laboratory—will open at the John Wayne Cancer Institute in December. It features modular workstations designed to allow



## NEUROSCIENCE SYMPOSIUM

PNI's teaching philosophy will be on display January 24–27, 2019, when Dr. Barkhoudarian and Dr. Kelly will lead a PNI team along with collaborators from Ohio State University in an international three-day symposium entitled Pacific Rim Master Class in Endoscopic Endonasal and Keyhole Surgery for Brain, Skull Base and Pituitary Tumors in Santa Monica. For more information, go to [www.PacificNeuro.org/PacificRimHandsOnCourse2019](http://www.PacificNeuro.org/PacificRimHandsOnCourse2019).

“This is an intensive, didactic and hands-on course taught by an international faculty,” Dr. Kelly notes, “and illustrates how PNI is a leading force in neuroscience surgical education, striving to help our colleagues learn the latest techniques so that they can safely and effectively apply keyhole surgery concepts to their own patients.”

a diverse range of specialists to advance their technical prowess by working with cadaver tissues and organs. The space will allow training across multiple surgical disciplines including neurosurgery, skull base surgery, otorhinolaryngology, ophthalmology, as well as non-neuroscience specialties such as cardiothoracic surgery, robotic surgery (urology, gastrointestinal and gynecology) and orthopedic and spine surgery.

The primary aim of this laboratory is to offer faculty, surgical oncology fellows, international fellows and students hands-on instruction in anatomy as well as training in minimally invasive “keyhole” neurosurgical approaches. This type of experience helps surgeons learn novel approaches to surgery, including removing tumors from difficult-to-reach areas of the brain through the smallest possible openings with minimal disturbance to surrounding healthy tissue. Surgeons also have an opportunity to test surgical devices, as well as gaining access to new technologies and instrumentation before taking them into the operating room.

“We’re still learning new aspects of anatomy that weren’t evident even 10 years ago,” says Dr. Barkhoudarian. “Because of our advanced experience, we’re working alongside industry, improving devices to make surgery more efficient.”

Such surgical skills labs are uncommon, Dr. Barkhoudarian notes. “In Southern California we will be one of the first sites to have a multidisciplinary surgical skills laboratory of this kind. Technology for streaming high-definition video worldwide will also be available, extending our educational reach. We are trying to disseminate this knowledge and improve the capabilities of others in a noncompetitive way to advance skull base and keyhole surgery worldwide.” ■



### → find out more

For more information about how to support the Neuroanatomical Surgical Skills Laboratory and advance leading-edge neurosurgical techniques, please contact Cookie Galanti, development director, Saint John's Health Center Foundation, at 310-829-8423.

## Fueling the Revolution

Philanthropy propels Pacific Neuroscience Institute forward.

Over the last three years, Pacific Neuroscience Institute has assembled a world-class team, solidified a reputation as one of the region's finest neuroscience treatment and research centers worldwide and launched dozens of clinical trials on promising new diagnostic and therapeutic strategies. These achievements have been driven by a dedicated faculty leading the charge, made possible by the tenacious support from Saint John's Health Center Foundation's trustees, friends and donors.

"Philanthropic support was identified early on as an integral part of that which would drive the creation and innovation of PNI," says Robert O. Klein, PNI Foundation special advisor and president/CEO of Saint John's Health Center Foundation.



**"This kind of research can only be done because someone believes in the fight."**

"The innovation happening within PNI is unbelievably inspiring—taking a terminal brain tumor and trying to turn it into a chronic disease by looking outside the box. The Foundation wants to give them the resources needed to continue dreaming about how to do things differently and implementing fundamental care models to ultimately lead to cures and sustained remissions," Bob says.

"Part of the mission at PNI is to reject complacency and improve medical care for all patients dealing with

neurological diseases," says Daniel F. Kelly, MD, director and co-founder of PNI and director of the Brain Tumor Center and Pituitary Disorders Center. It's almost impossible to conduct research without philanthropic support, he says, adding: "What we do is complex and multifaceted and takes determination and additional resources to push the envelope and pursue new solutions."

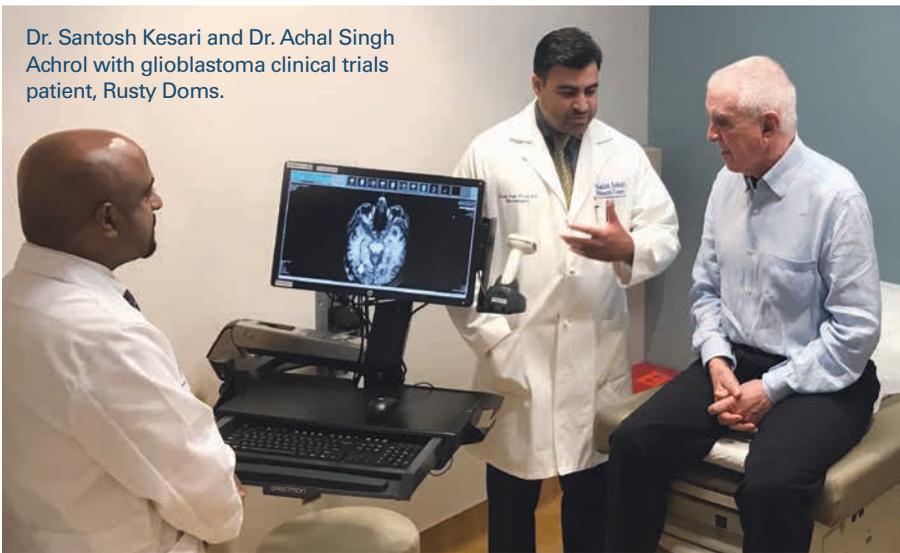
"There's a lot of suffering going on out there and we as an industry can do better," Dr. Kelly says. "So we've built

something unique that weaves together skill and expertise to fundamentally change patient care. But we can't do it without philanthropic support. The federal grants—like National Institutes of Health (NIH) grants—are becoming more and more limited. Because of that and because of our vision and tight timeline, we will rely heavily on philanthropy to propel us forward in finding better, less invasive treatments."

"Research is what makes PNI whole and brings it all together," Michael Avila, vice president of

development for the Saint John's Health Center Foundation says. "You have wonderful faculty, but it's the research and clinical trials that lift the faculty to the top of their game. They are publishing findings and presenting at conferences worldwide and then applying that research and innovation directly to the patient. All that adds to the uniqueness of PNI."

Physicians need time for discovery and technological tools and state-of-the-art laboratories to work toward finding solutions. The PNI team continues to



Dr. Santosh Kesari and Dr. Achal Singh Achrol with glioblastoma clinical trials patient, Rusty Doms.



Dr. Daniel F. Kelly and Dr. Chester F. Griffiths performing endoscopic endonasal surgery.

tackle problems facing patients from all angles and are focused on bringing about major impacts worldwide.

Philanthropy makes progress possible. “Progress in drug development, combination therapies, clinical trials and biomarker research will hopefully be leading us to a major breakthrough within the next five years and not just slowing the disease but modifying, fixing, stopping or reversing the condition,” says Verna Porter, MD, neurologist and director of dementia, Alzheimer’s disease and neurocognitive disorders at the Brain Health Center. “We are using clinical trials to speed up this process for finding the reversal and cures for some of the most daunting and challenging

conditions facing patients today.”

“Such support will set us apart from anywhere else and enable the team to explore novel ideas that might be the next game-changers,” Bob says. “This kind of research can only be done because someone believes in the fight, understands the urgency and wants to find a better way. We need people who are willing to pave the way for this revolution.” ■

➔ **find out more** .....

To support research at Pacific Neuroscience Institute, please contact Michael Avila, vice president of development, Saint John’s Health Center Foundation, at 310-829-8351.

## ENSURE PNI CAN DELIVER PERSONALIZED PRECISION CARE TODAY AND INNOVATE FOR TOMORROW

Now more than ever before, there’s an urgency to find ways to prevent, reverse and ultimately stop progression of neurological diseases. The Pacific Neuroscience Institute Foundation has identified the following comprehensive funding needs to further advance neuroscience clinical care, breakthrough research and education:

**EXPANSION & GROWTH:** Supports expansion in neuroscience clinical care, research initiatives and continued program development.

**BRAIN HEALTH PROGRAM:** Supports research and clinical trials focused on all aspects of neurodegenerative diseases including Alzheimer’s, fall prevention, mental health and cognitive health and fitness.

**NEUROSCIENCE RESEARCH:** Provides funding for clinical and translational research ranging from brain cancer to stroke to vision and hearing loss, clinical trials infrastructure, essential equipment needs and worldwide collaborations.

**OPERATING ROOM CAPITAL:** Support for state-of-the-art technology and equipment upgrades in Saint John’s Health Center neurosurgical/ENT/neuro-ophthalmological operating rooms for advanced minimally invasive surgery.

**TRAINING & EDUCATION:** Supports PNI fellowship and educational training programs, community outreach and expanded patient support.

**SURGICAL SKILLS LAB:** Supports a hands-on educational laboratory and technology center focused on training the next generation of surgeons and further developing innovative keyhole approaches and surgical instrumentation that help minimize surgical trauma and further accelerate patient recovery.



DONOR PROFILE

## Grateful Patient

Tom and Terri Grojean put their faith in PNI.

WRITTEN BY SANDI DRAPER

The Grojean family has a history with Providence Saint John's Health Center that dates back 40 years. Tom Grojean remembers when he and his late mother regularly attended Mass in the old hospital chapel with Sister Marie Madeleine Shonka, then president and chief executive officer of the Health Center, and Father Patrick Comerford, a pillar in the spiritual care department for 30 years.

"It's a Catholic hospital, and that means a great deal to us," Tom Grojean says. He admires the Health Center's "great

volunteers," but it is the family atmosphere that keeps them coming back. He has even seen his own family grow there too, with several grandchildren born at Saint John's.

To honor that special connection, the family has directed philanthropic support to the hospital as well as Pacific Neuroscience Institute. Tom is also a member of the Saint John's Health Center Foundation board of trustees, having joined in 2015.

The Grojean family began supporting the hospital when Tom's wife, Terri, was diagnosed with breast cancer 25 years

**“Terri’s friends mentioned that she seemed to be having trouble forming words. We went everywhere looking for help.”**

ago and turned to Saint John’s Health Center for successful treatment. The family expressed its gratitude with a donation for specialized mammography equipment.

Tom has enjoyed a long and successful career in transportation. Today he is the owner of Grojean Transportation and Hirschbach Motor Lines. He also invests in real estate.

Tom and Terri, who have been married 57 years, are

Chicago natives who moved to Southern California in 1975. In their free time they enjoy golfing and skiing, and they split their time between homes in Dallas, Texas; Beaver Creek, Colorado, and Los Angeles, California. They are parents of four adult children scattered around the country, 13 grandchildren and two great-grandchildren, whom they see as often as possible.

A few years ago, however, Terri was diagnosed with primary progressive aphasia, a type of frontotemporal dementia (a brain disorder that results in language issues). “Terri’s friends mentioned that she seemed to be having trouble forming words,” Tom recalls. “We went everywhere looking for help, including the University of California, Los Angeles (UCLA), and the University of California, San Francisco (UCSF).”

Ultimately, they turned to their medical roots, and Terri began treatment with Santosh Kesari, MD, PhD, chair and professor of the Department of Translational Neurosciences and Neurotherapeutics at John Wayne Cancer Institute, Providence Saint John’s Health Center, and director of the Neuroscience Research Center at Pacific Neuroscience Institute.

“In May 2017 we started Terri on nilotinib, a non-chemotherapy cancer drug called a kinase inhibitor that is used to treat leukemia,” says Dr. Kesari. “The rationale was based on early evidence of positive effects in dementia patients. Nilotinib is thought to affect the neuro-immune responses, neuronal cell death and synaptic function, so it may help people with neurodegenerative conditions



The Grojean family has supported the breast health program at Saint John’s and recently donated to PNI.

of various kinds. We also have a clinical trial of bosutinib, a newer kinase inhibitor, which is open to patients with various neurodegenerative diseases. Additionally we are working on regeneration of the brain by infusing neural stem cells or drugs that stimulate the patients’ own stem cells. Terri will be considered for these trials in the near future.”

Grateful for Dr. Kesari’s innovative research, the Grojean family recently made a donation to support his work. As a result of this generous gift, a neuro exam and consultation suite at PNI was named in their honor.

“Each part of the brain has specific functions, and depending on the degree of involvement of each

area of the brain, we often see specific deficits in one function over another,” Dr. Kesari explains. “But in these dementias, we often see more deficits over time since most of these neurodegenerative conditions lack approved therapies that slow or reverse the neurodegeneration. That is why innovative approaches—including lifestyle management and new drug development—are sorely needed.”

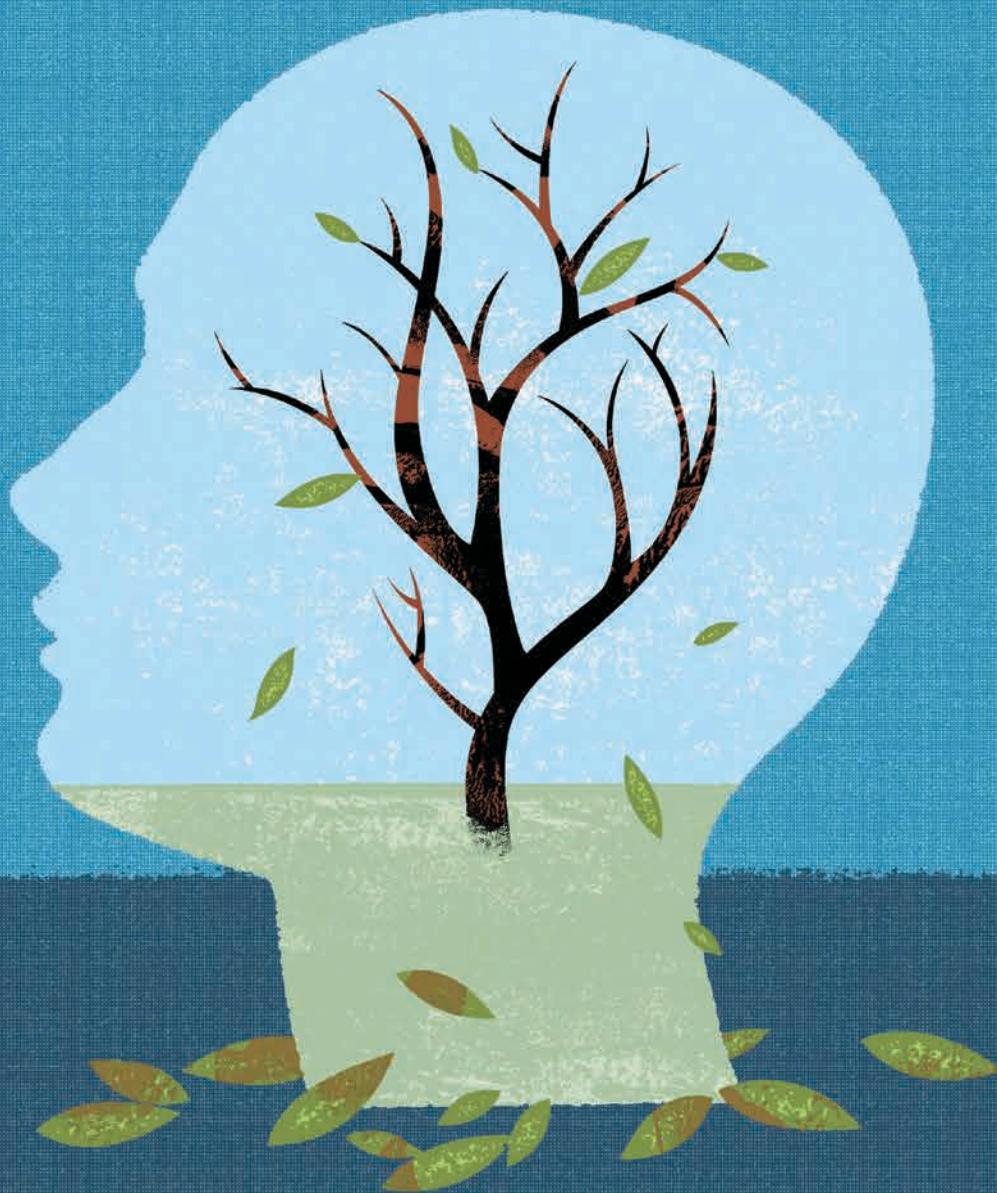
Tom appreciates that, once again, the family has been able to turn to Saint John’s and PNI for help.

“Terri can’t talk. She knows the words, but she can’t get them out,” Tom says. “But she can still sing and say the rosary. Dr. Kesari is our hope.” ■

# ALL TOGETHER NOW: BRAIN HEALTH BEGINS HERE

Experts at the Brain Health Center face challenges of increasingly prevalent disorders impacting mood, memory, physical health and vitality.

WRITTEN BY SHARI ROAN



**W**ith roughly 10,000 people turning 65 each day in this country, the rates of people with cognitive impairments and movement disorders are soaring. Meanwhile, among Americans of all ages, the prevalence of mental health disorders is at a record high.

To recognize this almost overwhelming challenge is one thing; to attempt fundamental change and help spur a paradigm shift in treatment is quite another. But that is the vision of the new Pacific Brain Health Center (PBHC) as conceived by PNI director and founder, Daniel F. Kelly, MD, and by PBHC director and geriatric psychiatrist, David A. Merrill, MD.

By bringing together a group of highly experienced psychiatrists, neurologists, gerontologists, cognitive neuropsychologists, as well as experts in physical fitness, the PBHC plans to tackle these significant health challenges. The focus is in four major areas:

- Alzheimer's dementia and related cognitive disorders
- Psycho-oncology, devoted to treating the anxiety and depression associated with cancer diagnoses
- Balance issues and fall prevention
- Brain wellness and healthy aging utilizing nutritional and hormonal approaches, exercise, meditation/mindfulness and other novel therapies

The team will also optimize brain recovery and minimize treatment-related insults in patients with benign and malignant brain tumors, stroke and traumatic brain injury.

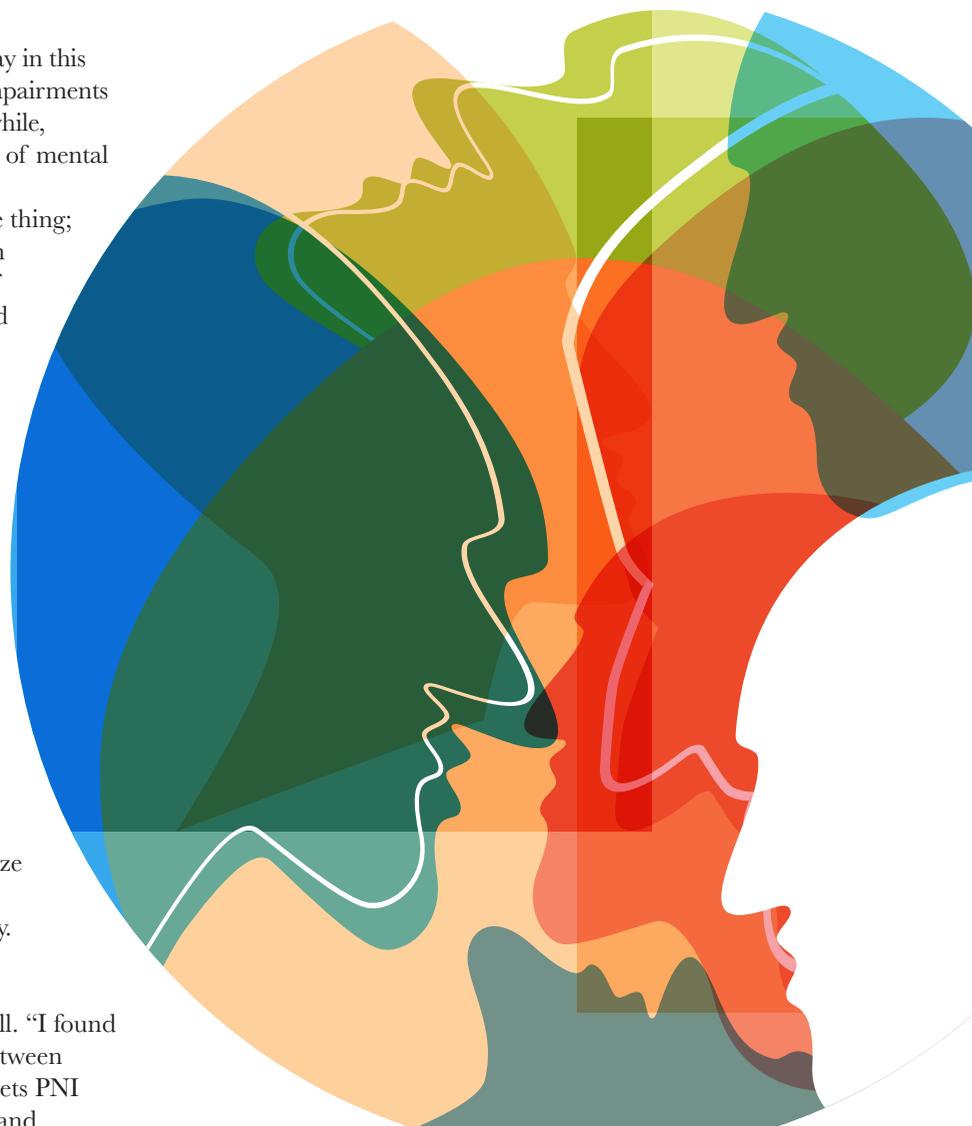
## EXPERTS WHO COLLABORATE

The center is unique in its team approach, says Dr. Merrill. "I found traditional medicine to be siloed, with clear separation between sub-specialties. But we have created a new dynamic that sets PNI apart from typical health systems by focusing on patient- and family-centered medicine together, simultaneously, under one roof. Neuroscience is interdisciplinary at its heart, and at PNI, we've broken down the previously existent barriers."

Embracing all aspects of brain health, PNI faculty think creatively about ways to improve patients' lives without being constrained by traditional service structures, says William G. Buxton, MD, neurologist and director of neuromuscular and neurodiagnostic medicine and fall prevention. "It gives us a chance to really explore new avenues that haven't been pursued in an environment like this before."

It's about doing what's best for the patient, he says. For example, some patients are adequately treated for a stroke but receive little support to deal with the after-effects that can dramatically influence quality of life, such as depression and movement or balance problems.

"Neurological disorders have an impact on people's ability to live full lives—more so than most other medical conditions," Dr. Buxton says. "Unfortunately most health systems aren't really geared toward treating the whole person and seeing the whole picture. At PNI we're able to get our patients back into the game of life faster and more easily—we're coordinating their treatment plans and seeing patients across specialties within one clinic visit."



## ANXIETY AND DEPRESSION

About  
**40**  
MILLION  
Americans  
have an  
anxiety  
disorder

Major depressive  
disorder affects about  
**6.7%**  
of the population

Source: Anxiety and Depression  
Association of America

## ONE-STOP CONSULTATION

Patients will receive a one-stop consultation with a neurologist, geriatric psychiatrist and geriatrician that will culminate with an individualized treatment plan. The team will rely on the latest technology to diagnose cognitive disorders, says Verna Porter, MD, neurologist and director of dementia, Alzheimer's disease and neurocognitive disorders. That includes neuro-cognitive testing,

psychometric health questionnaires, PET scans, MRI imaging, quantitative EEG and genetic testing.

“We’re going to leverage the latest tools and techniques to make the diagnosis as accurately and quickly as possible,” she says.

Besides medication, PBHC physicians emphasize additional science-based strategies including physical activity, nutrition, stress reduction, optimization of sleep and increased socialization to improve cognitive function and quality of life, Dr. Merrill says.

“The stigma of Alzheimer’s disease is that there is no cure, nothing that can be done,” he says. “But that can engender a hopelessness when there’s mounting evidence—translational research by our group and others—showing that adopting brain health approaches leads to better outcomes for people developing or at risk of memory loss.”

## PRESERVING COGNITIVE HEALTH

PBHC will provide innovative care to middle-aged and older adults worried about memory loss and people with treatment-resistant depression and anxiety disorders. Personalized interventions will include medication as well as novel nutritional, hormonal and exercise therapies, yoga and mindfulness training.

“We have a holistic perspective,” Dr. Porter says. “We’re interested in the interface of health and lifestyles and how that can augment your response to disease and optimize health. We’re interested in new and dynamic approaches, not just giving people medications.”

PBHC physicians favor a proactive approach to brain health. “I would encourage people with a family history of Alzheimer’s disease or memory loss over the age of 40 to consider preventive health services early on,” Dr. Merrill says.

Family physician and geriatrician, Scott A. Kaiser, MD, is director of Geriatric Cognitive Health and works to connect patients and their families with a broad range of social and community-based interventions to support people in living and aging well.

“We are focused on the needs of older patients. At PNI, I’m able to collaborate with colleagues to provide integrated and holistic care to address patients’ cognitive

concerns and challenges,” says Dr. Kaiser. “I am passionately committed to developing novel approaches to improving overall health and well-being. We will have the opportunity to advance innovations in geriatric care that are needed to best serve a rapidly aging population.”

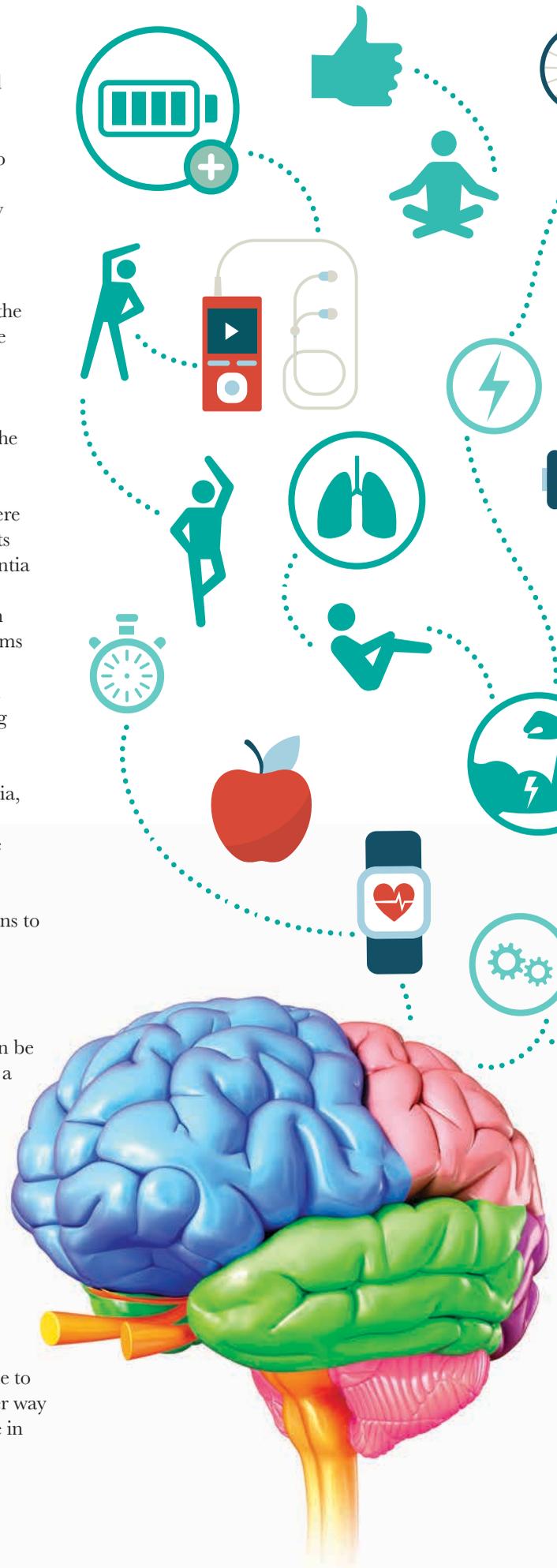
Sarah McEwen, PhD, director of Research and Programming is a cognitive psychologist, specializing in the study of physical activity and cognitive enhancement interventions as well as functional brain imaging. She will be leading clinical trials and research in the dementia and healthy brain aging at the Brain Health Center.

“Although there has been a tremendous amount of research, there remains a critical need for treatments to prevent, delay or even cure dementia and related cognitive decline, and evidence-based lifestyle modification and neuro-cognitive training programs to promote brain recovery and resilience,” Dr. McEwen notes. “I’m incredibly optimistic about designing state-of-the-art programs while contributing to clinical research and development in the fields of dementia, aging, neuro-oncology and human performance. We will bring multiple trials to the Brain Health Center in collaboration with the John Wayne Cancer Institute and other institutions to continue research in these areas.”

## FALL PREVENTION

Many neurological disorders can increase the risk of falling, which can be devastating, says Dr. Buxton, who is a specialist in fall prevention. “One-third of people with neurological disorders of all ages fall within a year,” he says.

Falls can be caused by problems with the feet, spine, muscles, eyes, inner ears or brain. “We’re poised to cover each of those fall risk fields and to collaborate, assess and tailor patient specific care,” Dr. Buxton adds. “The opportunity to identify those at an elevated risk and intervene to reduce the risk is exciting and another way we will make a meaningful difference in people’s lives.”





## DEMENTIA

Alzheimer's disease rates up  
**123%**  
between 2000-2015

Source: Alzheimer's Association

## SUICIDE

Rates up  
**30%**  
since 1999

Nearly  
**45,000**  
deaths by suicide in 2016

Source: Centers for Disease Control and Prevention

## ADDICTION

**200**  
people die everyday  
from opioid overdose

Source: NIDA, NIH 08/2018

## CAREGIVING STRESS

**43.5 MILLION**  
U.S. adults provide unpaid  
caregiving each year

**22%**  
of caregivers feel their health has  
worsened as a result of caregiving

Source: National Alliance for Caregiving

The Pacific Brain Health Center (PBHC) Team



Dr. William G. Buxton



Dr. Scott A. Kaiser



Dr. Sarah McEwen



Dr. David A. Merrill



Dr. Melita Petrossian



Dr. Verna R. Porter

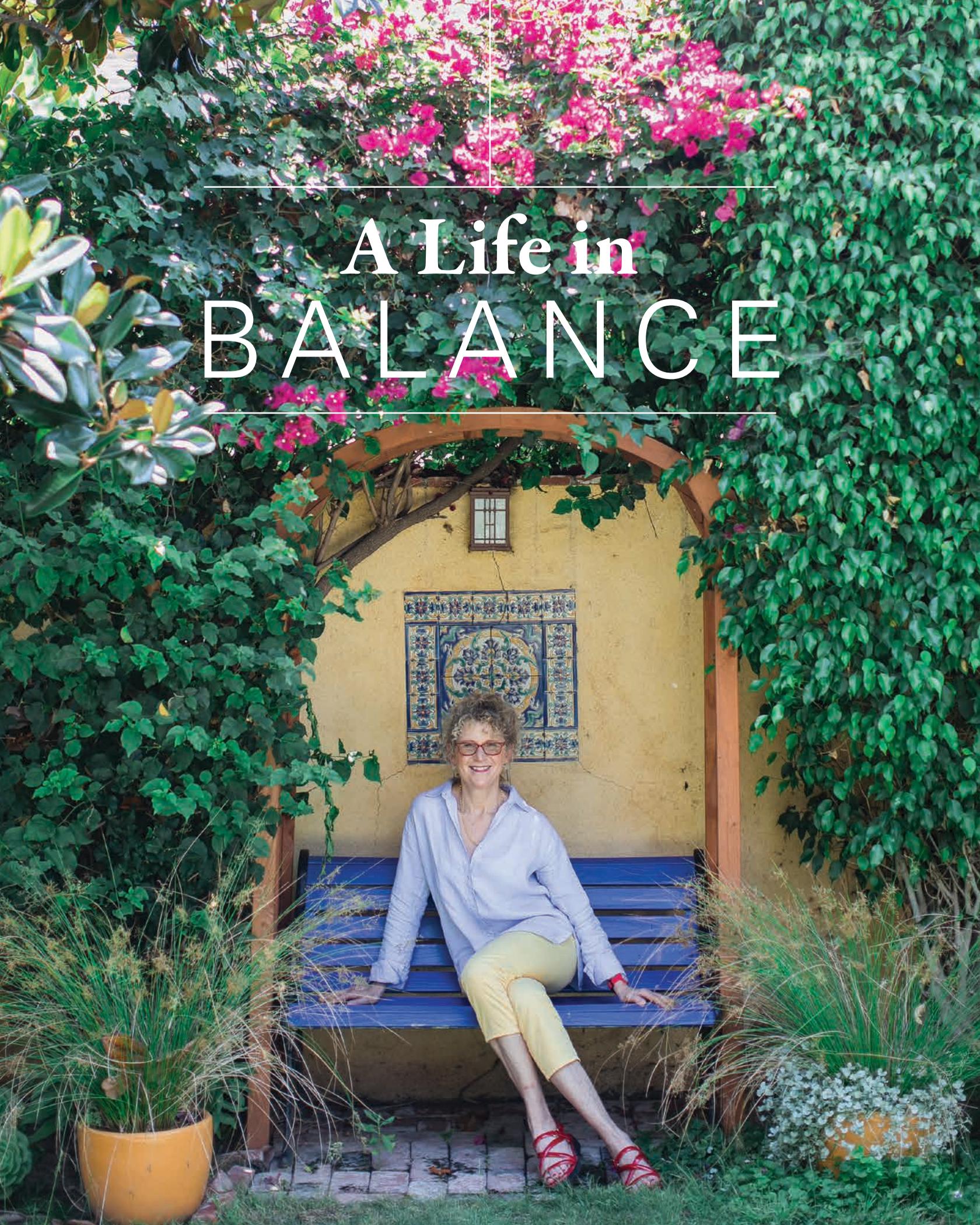
## BRAIN HEALTH – HERE FOR YOU

“In all aspects of the Brain Health Center, patients are our focus,” says Dr. Buxton, “Since the brain controls essentially everything, we want to surround the problem and look at it from all sides for a holistic view of how to help someone.”

“We are focused on understanding what makes people do what they do and why that occurs and what happens when things go awry like in Alzheimer’s and other forms of dementia, and how that is different from someone at peak brain performance,” Dr. Porter adds. “When optimizing the brain, you ideally want to optimize everything ... that is our goal.”

The Brain Health team is committed to offering world-class clinical care, novel and effective interventions, and leading research to meet critical and rising needs.

Says Dr. Merrill, “Being part of the PBHC team allows us to practice medicine the way we’ve always hoped to: working with a superlative team, embracing best practices and forging ahead to expand what’s known and what’s possible—all to make real and meaningful differences in people’s lives.” ■

A woman with curly hair and glasses is sitting on a blue wooden bench. She is wearing a light blue long-sleeved shirt, yellow cropped pants, and red strappy sandals. The bench is set against a yellow wall with a decorative blue and white tiled panel. Above the bench is a wooden archway. The scene is surrounded by lush greenery, including a large bush of pink flowers at the top and various plants in pots in the foreground.

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# A Life in BALANCE

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## Treatment at PNI reduces Parkinson's symptoms.

WRITTEN BY SANDI DRAPER  
PHOTOGRAPHED BY KRISTIN ANDERSON

Long before she was officially diagnosed with Parkinson's disease in September 2016, Farrel Levy had been living with symptoms for years. "I would get occasional feelings of unexplained dizziness, and it felt like I was walking with a big rubber band on my legs that made me have to push harder to walk," she recalls.

She had always exercised and been physically active, so she powered through the symptoms. When her problems worsened, she consulted with a cardiologist, neurologist, audiologist, physical therapist, internist, acupuncturist and naturopath. She also tried sugar-free, gluten-free and lactose-free diets.

"The doctors all told me they could not figure out what was wrong," Farrel says. "I think part of the reason for this was that I kept up my exercise routine as best as I could, so for the 15 minutes of my appointments I presented well."

After a misdiagnosis of myasthenia gravis—a rare muscular disorder—she was finally diagnosed with Parkinson's. She started on the medication Neupro and began seeing a movement disorders doctor. "Even with the medication, it was not making any difference. But I did have hope that my life would get better," Farrel says.

And it did get better when she began seeing Melita Petrossian, MD, a neurologist and director of the Pacific Movement Disorders Center at Pacific Neuroscience Institute. Farrel first heard of Dr. Petrossian while attending a women's Parkinson's support group where patients compared notes about doctors.

"Several of the women were patients of Dr. Petrossian and were very enthusiastic about her. I was—and continue to be—impressed with how she took the time to listen to me and answer all my questions, not rushing me along as most doctors do. That alone is powerful medicine," Farrel says. "I appreciate her deep knowledge of the disease and current research. Her

holistic approach, which encourages exercise and a sensible diet, is very much in sync with mine."

Dr. Petrossian believes Parkinson's patients benefit from consultation with a movement disorders specialist for up-to-date information about medical and surgical options. Movement disorder specialists are very familiar with emerging treatment options and professional guidelines on standards of care. For example, physicians who are not specialists may be less likely to recognize a patient who is a good candidate for a sophisticated surgical intervention called deep brain stimulation (DBS).

"Patients also need a forum to share their own experiences and recommendations with each other. Our free support group, moderated by nurse practitioner Giselle Tamula, is held in the evening to accommodate patients and their family members who work during business hours. We have a monthly meeting with an invited speaker and provide time for patients and family members going through similar circumstances to connect with each other," Dr. Petrossian says.

In addition to the Movement Disorders Center, PNI patients also benefit from eight other centers of excellence. "The easy and open communication between the centers allows for efficient consultation when non-movement issues come up or when patients with other neurological conditions have movement-related symptoms," Dr. Petrossian says. "For example, a patient may be treated in the Pacific Stroke & Aneurysm Center and then seek care for post-stroke spasticity at the Movement Disorders Center. Or a patient being treated in the Brain Tumor Center may develop an involuntary movement as a result of the tumor or treatment and require a movement disorders consultation."

Most commonly, the Movement Disorders Center works closely with the Pacific Brain Health Center, which focuses on dementia, Alzheimer's disease, memory, preventive brain health strategies, mood and anxiety disorders, fall prevention and recovery from stroke and traumatic brain injury. Patients with Parkinson's have a high rate of cognitive change and dementia, and patients with Alzheimer's disease may



Movement Disorders Center co-directors Dr. Jean-Philippe Langevin and Dr. Melita Petrossian offer innovative treatments to patients with Parkinson's disease and other movement disorders.

develop gait disorders, trouble with their balance or tremors that require further evaluation. Several other disorders, such as dementia with Lewy Bodies, involve both dementia and movement problems. The collaborative structure at PNI allows physicians from several specialties to work together on these complex conditions.

"At the Movement Disorders Center and the Brain Health Center, we hope to create a paradigm shift in the management of neurodegenerative diseases such as Parkinson's," Dr. Petrossian says. "Rather than simply reacting to the symptoms of the disease, we plan to identify people at high risk of these conditions and try to find truly preventive treatments."

Dr. Petrossian started Farrel on two medications. "Within a short period of time I felt like I was getting my life back," she says. Farrel works, exercises regularly and enjoys gardening, cooking, photography and painting.

"Unlike many other doctors, Dr. Petrossian is easily accessible through email and even on the phone," Farrel says. "She is not just someone who comes through a 'revolving door' to update a prescription and then is gone. She truly cares about each of her patients. She also has a great support staff. All this means a lot! I truly feel that I am under her care." ■

# LESS IS MORE

Innovative approaches to surgery  
define the Pacific Brain Tumor Center.

WRITTEN BY TRAVIS MARSHALL



Most people who develop a tumor affecting their optic nerve will experience symptoms over time—their eyesight gradually diminishes. For Susan Soskin West, the change came much more rapidly. “Late one evening in 2009, I felt a stabbing pain in my right eye,” she explains. “There was a flash of light, and when I opened my eyes I couldn’t see on the right side.”

The retired international banker and her husband split their time between Hong Kong and London. The next morning she went to a London eye hospital, and after seeing a number of specialists she was diagnosed with optic sheath meningioma—a tumor that had encircled and essentially strangled the right optic nerve.

The doctors in London recommended observation. However, by 2013 the tumor had progressed, so London doctors used gamma knife radiosurgery—a type of focused precision radiation therapy—in an effort to stop the tumor from growing further.

Unfortunately the tumor progressed. “I had to get it removed right away or I could go blind,” Susan says.

Susan immediately started researching her condition and made a short list of the best neurosurgeons from around the world. “I went to top hospitals in the U.S., London and beyond, but when I met Dr. Kelly, he went straight to the top of my list.”

Daniel F. Kelly, MD, is the director and co-founder of the Pacific Neuroscience Institute and one of world’s leading neurosurgeons performing minimally invasive surgeries for tumors like the one threatening to take Susan’s vision. “I found many talented neurosurgeons out there, all classically trained and skilled in craniotomy, but I wanted to know if there was a better option,” she says.

The procedure recommended by the PNI neurosurgical team was a keyhole surgery that allowed them to operate through a small opening made through her eyebrow, and using a high-definition endoscope and micro-instrumentation to see and remove the tumor inside the skull. A traditional craniotomy would have required a much larger skull opening with a scalp incision at least two to three times as long over the head and behind her hairline.

“Keyhole refers not to a size but rather a surgical concept that *less is more*, and that by

using smaller, more precise openings with a high-definition endoscope and low-profile instruments we can remove large and small tumors through small openings, with minimal to no brain retraction, and with less collateral damage to the surrounding brain and critical blood vessels and nerves. Such minimally invasive surgery has always been our focus at PNI,” Dr. Kelly says.

“We’ve been advancing and optimizing these techniques through the nose, the eyebrow, behind the ear and via other corridors for a long time. We constantly strive to improve our techniques,” he says.

Because of the collaborative, multidisciplinary approach at PNI, Susan got personalized attention from a full team of doctors, including PNI co-founder and neuro-ophthalmologist Howard R. Krauss, MD, who guided her through all the necessary tests and made sure she had full understanding of how the supraorbital eyebrow approach would protect her left optic nerve and vision.

“Thanks to Dr. Kelly’s teaching, we’re moving away from an era where huge parts of the skull are removed to using an endoscope through these smaller openings,” Dr. Krauss explains. “Another advantage of using the endoscope is that we’re not just operating through a smaller opening, but we also get wider field of view on the inside with the ability to find areas the tumor has crept into that we wouldn’t be able to see with a microscope.”



PNI neurosurgeons made a tiny incision in Susan Soskin West’s eyebrow to remove a brain tumor.



Dr. Daniel F. Kelly



Dr. Howard R. Krauss

**“We constantly strive to improve our techniques.”**

By minimizing manipulation of the scalp, muscle, bone and brain, these keyhole approaches promote faster, less painful recoveries, with most patients being discharged home two days after surgery.

At the Pacific Brain Tumor Center and Pacific Pituitary Disorders Center, physicians offer personalized, precision treatments for all types of brain and skull base tumors, including gliomas, meningiomas, pituitary adenomas, schwannomas and metastatic brain tumors—utilizing keyhole approaches whenever possible.

Susan’s tumor was effectively removed and the remaining tumor along the right optic nerve is stable for now. “My eyebrow incision healed beautifully, and people can’t even tell it’s there,” Susan says of the surgery, which she had in March 2018. “I can’t believe I had brain surgery a few months ago.”

She was equally amazed by the level of care she received—from the personalized care she got from PNI’s founders to the skilled and attentive ICU staff. “What impressed me most about Dr. Kelly and Dr. Krauss was how thorough they were in their examinations, their comprehensive explanation of my situation and their directness in addressing my questions, which inspired confidence and trust,” Susan says. “When I was rolled into the operating theater, I had a smile on my face because I knew I would be OK.”

Three days later she was discharged. “By the fourth day I was walking on the beach with my husband. Dr. Kelly and Dr. Krauss saved my eyesight and my life.” ■

# COMING TO THE RESCUE

Stroke care aims to limit brain damage and promote a full recovery.

WRITTEN BY **NANCY BRANDS WARD**

PHOTOGRAPHED BY **LAUREN PRESSEY**



When 54-year-old Russell Williams suffered a stroke in January, his bad luck was tempered by some good luck. Everything fell into place for him to survive and return to normal functioning.

January 8 started out like any other workday, but by the evening Russell would be in the emergency room at Providence Saint John's Health Center—blind, unable to speak or understand speech and paralyzed along his right side by a stroke. While cooking dinner with his husband, Luis, after returning home from his job in marketing at Skechers, Russell felt woozy and went to lie down.

If he'd made it to the bed, Luis might have assumed he'd gone to sleep and let him rest. Fortunately for Russell, who was in the first seconds of a stroke, he collapsed in front of Luis, smashing the wine glass he was holding, prompting Luis to call 911 right away.

Paramedics were just four blocks away and took Russell to Saint John's. Jason W. Tarpley, MD, PhD, a vascular and interventional neurologist and director of the Pacific Neuroscience Institute's Pacific Stroke & Aneurysm Center, was able to get to the Saint John's emergency room in minutes, gathering information from Luis and ER physician Marissa Zobrist, MD, by phone as he headed in.

"It was about 15 minutes from the time the paramedics got there until I was in the ER," Russell says. "Paramedics contacted the hospital, and they were ready for me when we arrived."

With any stroke, speed is critical. Neurologists say that "time is brain," meaning that the longer the brain is

deprived of blood that carries life-sustaining oxygen, the more of it is damaged by a stroke. Russell was rapidly evaluated in the emergency room where he was found to have a blocked left internal carotid artery.

He was raced to the neuroangiography suite, and using a minimally invasive surgical procedure Dr. Tarpley threaded tiny tubes and wires from an artery in Russell's thigh into the blocked carotid artery near the brain. He then placed a nickel titanium stent in the artery to prop it open. The procedure took an hour.

Dr. Tarpley calls Russell "a one-percenter" because he had a rare type of stroke called a dissection, or tear, in the left internal carotid artery. The medical team believes the tear likely happened in a fall Russell took in October 2017 and remained undetected until it formed a clot that blocked the artery. It's the most common type of stroke among younger people.

Most strokes—about 80%—are ischemic, caused by a clot or other blockage of blood to the brain. There are two ways to open a blocked artery: administering a clot-busting drug called tissue plasminogen activator (tPA) or performing a thrombectomy to remove a clot. They're often done together.

"We really pride ourselves on fast treatment," says Dr. Tarpley, noting that Providence Saint John's Health Center is an Emergency Medical Services-designated comprehensive stroke center, which reflects the highest standards of care. "From [emergency room] door to tPA, our record is 12 minutes. We consistently beat The Joint Commission's standards for elite stroke centers." The Joint Commission

is an independent, not-for-profit organization that accredits and certifies nearly 21,000 U.S. healthcare organizations and programs.

Saint John's also holds the Get With The Guidelines® – Stroke Gold Plus Quality Achievement Award and Target: Stroke Elite Plus Honor Roll from the American Heart Association in recognition of its success in implementing high standards of stroke patient care meeting national, evidence-based recommendations.

The Pacific Stroke & Aneurysm Center team provides neurointerventional and stroke services at Saint John's and other Providence hospitals across Southern California. One of its goals is to advance treatment through research.

Doctors are conducting two studies to help the 50% of patients with devastating large-vessel occlusion stroke who have neurological deficits after thrombectomy. One clinical trial evaluates a drug to help save brain cells during stroke; the other involves injecting stem cells into the brain to improve motor function and is being performed and led by PNI neurosurgeon Achal Singh Achrol, MD.

Russell's recovery, however, was remarkably swift. Today he's almost fully recovered. On the morning after his stroke, Renee Ovando, nurse practitioner and stroke/neurovascular program manager at the Health Center, opened the door to his room to check on him. She immediately closed it and double-checked the patient name.

"I thought I had the right room," she told Russell when she re-entered the room, "but I didn't expect you to be sitting up and talking!" ■

#### Pacific Neuroscience Institute's Neuro-Interventional Team



Dr. Robert Darfinger



Dr. Sam Hou



Dr. Jason Tarpley



Dr. George Teitelbaum



Dr. Ambooj Tiwari

# MAKING AN IMPACT

The research arm at PNI  
confronts some of medicine's  
biggest challenges.

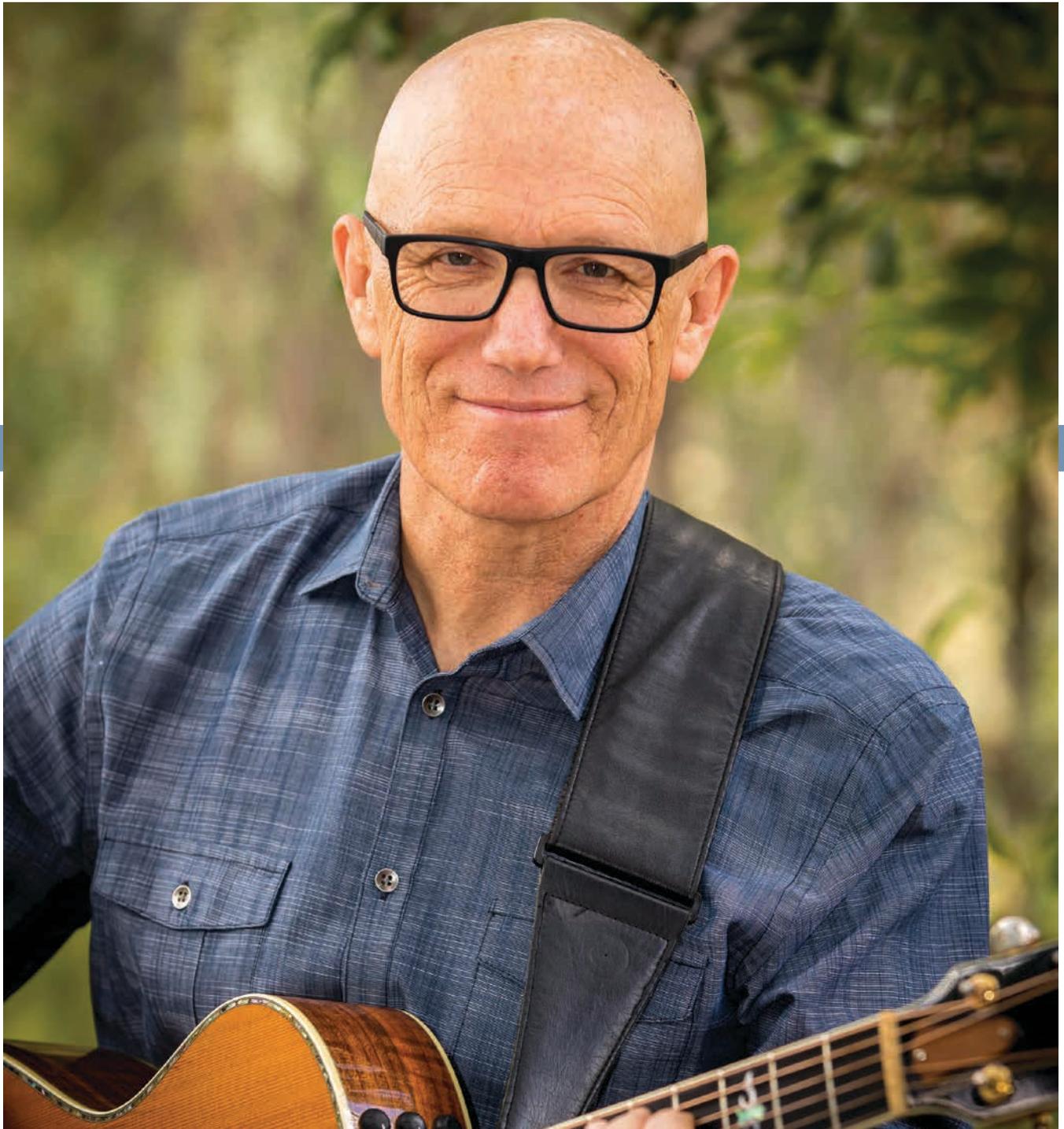
WRITTEN BY SHARI ROAN

**R**ick Muchow is a husband, father, pastor and musician with an abiding faith in God and a love of life. But last winter when he sat down at his piano or with his guitar, the music didn't flow as it usually did. He was dizzy, and his right arm lagged when he moved it. When he stood up, his right foot settled at an angle.

After talking it over with his wife, Laura, and making a trip to a local hospital emergency room, Rick learned in early February that he had a type of brain tumor called glioblastoma. The surgeon Rick initially saw in Orange County was candid; he said he could not attempt to remove the dangerous tumor because of its precarious location in his dominant motor cortex. This region

of the brain directly controls and coordinates movement, and the surgeon did not think he could extract the tumor without causing paralysis. Without removing the tumor, however, the cancer would advance lethally with an average survival of only a few months.

That sounds like a hopeless situation, but Rick is not a hopeless man and neither were the team of doctors he consulted a few weeks later at Pacific Neuroscience Institute. Today, six months later, Rick is a survivor of a complex but ultimately successful surgery to remove the tumor, directed by neurosurgeon Achal Singh Achrol, MD, chief of glioma surgery program. Rick is now participating in a state-of-the-art clinical trial under the leadership of neuro-oncologist Santosh



Kesari, MD, PhD, aimed at prolonging his life.

“One thing I like about working with Dr. Kesari is that he is open to all kinds of approaches,” Rick says. “He just wants to make headway and find a cure for brain cancer.”

Making progress against the most challenging neurological conditions is the goal of the Neuroscience Research Center at PNI. “For diseases like brain tumors, it’s hard to offer patients leading-edge treatments without doing research,” Dr. Kesari says. “It’s hard to push the boundaries and improve outcomes without research. It’s much more motivating and satisfying to take care of patients when you have innovative options.”

Multiple avenues of research are underway at PNI to advance diagnostic testing and treatments for a broad range of neurological diseases. Physicians and scientists are working together to research how specific changes in genes in our DNA can affect disease processes and how those changes can be targeted in each patient with specific, personalized therapies. They are helping advance blood testing technologies that can detect cancer at its earliest stages and are exploring the use of stem cell therapies to help promote healing of injured brain tissues in stroke and traumatic brain injury patients. And they are leading numerous clinical trials involving promising new

treatment options and personalized drug combinations to shrink brain tumors like glioblastoma.

“Our clinical trials can involve drugs, devices, stem cells or digital technologies,” Dr. Kesari says. “The growth of our clinical trials program over the past two years has been amazing and very rewarding. We currently have more than 20 open clinical trials and are continuing to open more every month.”

## MEET THE TEAM

More than 70,000 Americans develop a primary brain tumor annually, and another 250,000 are diagnosed with a metastatic brain tumor from a cancer that begins outside the brain, such as lung cancer or melanoma. Glioblastoma is one of the most common and lethal types of brain cancer. Rick knew what he was up against and sought a second opinion after his diagnosis. A friend suggested he make an appointment at PNI. He was impressed and heartened that PNI physicians seemed well armed for the challenge.

“We were looking for the best programs we could find in California,” says Rick, who served for 24 years as a pastor at Saddleback Church in Lake Forest, California, and is now a professor at California Baptist University. “The first place we interviewed was at Providence Saint John’s Health Center. The whole team at PNI greeted us, and we knew this was the place for us.”

The team approach is what makes PNI care exceptional, says Dr. Achrol, director of the PNI Glioma Surgery Program and of the Neurosurgery Clinical Trials Program and Neurovascular Surgery Program.

“This is a unique aspect of our approach; patients do not require multiple clinic visits. They get a comprehensive evaluation all at once from all our specialists in one clinic visit,” Dr. Achrol says, noting that the team often receives complex cases. “The vast majority of our patients have received other neurosurgical evaluations prior to seeing us—often multiple evaluations. In our glioma surgery and neurosurgery clinical trials program over the past six months, patients have traveled here for surgery from throughout California and at least a dozen other states or countries after receiving other medical opinions.”

## AT THE FOREFRONT OF TECHNOLOGY

Rick chose PNI for his care and underwent surgery on February 28. Dr. Achrol performed the procedure using a combination of highly advanced technologies including stereotactic MRI, intra-operative ultrasound and fluorescence-guided microscopic dissection with ultrasonic aspiration. Throughout the procedure, the team performed motor and somatosensory electrophysiologic neuro-monitoring and direct cortical mapping—tools that help ensure maximal tumor removal while minimizing risk of new brain injury.

“We have a high volume of experience with this particular type of brain tumor surgery. Rick’s tumor was a challenge given its growth directly in the dominant motor cortex, but we felt that it could be safely removed using a combination of the newest surgical technologies that we now use for these complex cases,” Dr. Achrol says. “The result of Rick’s surgery was the successful complete removal of the tumor mass. However even when no residual tumor



(Above left)  
Dr. Marlon  
Garzo Saria

(Above right)  
Ariana Waters,  
Dr. Venkata  
Yenugonda,  
Dr. Anubhab  
Mukherjee

(Right)  
Dr. Santosh Kesari  
and Dr. Dave S.B.  
Hoon



After his diagnosis of glioblastoma brain cancer, Rick Muchow gave testimony at Saddleback Church. Then he sought treatment at Pacific Neurosciences Institute.

is seen on imaging after surgery, glioblastomas are highly invasive cancers, so surgery is always followed by treatments that target the microscopic infiltrating tumor cells that remain, as these are the cause of recurrence and treatment-resistance.”

Before surgery, Dr. Kesari had hoped Rick might become a candidate for a newer therapy as part of an advanced clinical trial that aims to better target these microscopic tumor cells. In order to be eligible, though, it was necessary to remove the vast majority of the tumor.

After surgery, which successfully removed the tumor, Rick became eligible for a clinical trial where he receives infusions of two immunotherapy drugs on a rotating basis. The drugs, which have been shown to be effective for some patients with other types of cancer, are designed to allow the immune system to recognize his specific cancer and attack it. The hope is that the drugs, used together, will fight off any remaining cancer cells.

Rick didn't hesitate to try the new treatment approach which promises fewer and less extensive side effects. “The standard of care meant they would treat you for a while, and then you would die,” he says. “The new immunotherapy clinical trial at least offers a glimmer of hope. There are no guarantees, but there is hope.”

At PNI, research ranges from basic, laboratory exploration to studies on quality of life. Basic research in drug discovery for Alzheimer's disease, Parkinson's disease and other brain diseases is under the purview of Venkata Yenugonda, PhD, director of the drug discovery and nanomedicine research program at the John Wayne Cancer Institute. At the other end of the research

spectrum, Marlon Saria, PhD, RN, director of the Center for Quality Outcomes and Research at PNI, is leading research to understand the impact of neurological disorders on caretakers and on patient and caregiver quality of life issues.

By combining laboratory and clinical data through translational research programs, PNI can provide patient-specific therapies. “What we're interested in is really making a transformational impact in high-need areas, such as brain cancer, dementia and stroke,” Dr. Kesari says.

## GOING THE EXTRA MILE

Rick is doing well since starting the treatment in April. After one recent infusion, he walked 26 blocks down Santa Monica Boulevard to enjoy lunch on the beach. He recently resumed kayaking—a sport he loves. “I feel fantastic. I'm glad I'm not having side effects at this time that keep me from being productive,” Rick says. “It's very exciting to be a part of science like this. They are learning from my case. That's a cool thing.”

His PNI doctors are monitoring him closely and are pleased too. “The initial results from this trial are very exciting. We can see signs that the drugs are having an impact. But it's still in the early days, and the study will mature over the next year,” Dr. Kesari says.

The clinical trial that Rick is participating in was created and designed at PNI, and this initial study is funded by the Phase One Foundation—a Santa Monica-based organization that provides resources to launch promising, early-phase studies that may not receive federal research dollars.

“It's always tremendously rewarding getting our patients safely through these complex surgeries, improving their quality of life and overall survival. But our team will not be satisfied until we have achieved a cure for these patients,” Dr. Achrol says. “We are already hard at work comprehensively profiling and learning from the molecular data in Rick's tumor and launching new clinical trials that can hopefully help Rick and our other patients live longer, with better overall quality of life.” ■



## STATE-OF-THE-ART NEUROSURGERY

Rick Muchow's surgery included leading-edge technologies, such as:

- **Stereotactic neurosurgery:** A minimally invasive surgical technique that uses a three-dimensional image guidance system to precisely target the tumor.
- **Intra-operative ultrasound:** A technique to provide real-time, precise images during surgery.
- **Fluorescence-guided microscopic dissection:** An integrated microscope that provides high-resolution images to help the surgeon visualize and remove the entire tumor.
- **Cortical mapping:** A technique to identify which parts of the brain perform specific functions so that a tumor can be removed without damaging important brain structures.



# ENJOYING LIFE AGAIN

Successful treatment at the Pituitary Disorders and the Eye, Ear & Skull Base centers gives a man a new perspective.

WRITTEN BY  
**TRAVIS MARSHALL**  
PHOTOGRAPHED BY  
**TAMEKA JACOBS**

In the fall of 2016, Joseph Anthony Perez started seeing an unusual haze creep into his right eye. “I went to my ophthalmologist, and he said it was probably early cataracts—nothing unusual,” says Joseph, 58, who lives in Camarillo. “But by Christmas, it had become like a white frosted window covering about 50% of my field of vision.”

As a city planning consultant who helps communities around the country design neighborhoods, Joseph is passionate about road cycling and traveling the world to study architecture, so the prospect of losing his sight was particularly devastating. He consulted a retinal specialist, who referred him to a neurologist. After a brain MRI showed a large tumor stretching and distorting his optic nerves, his doctor referred him to Daniel F. Kelly, MD, founder and director of the Pacific Neuroscience Institute.

As one of the country’s leading neurosurgeons, Dr. Kelly helped pioneer the use of endoscopy for minimally invasive surgeries on tumors like Joseph’s, called a craniopharyngioma. The tumor

is often considered one of the most challenging and dangerous of all brain tumors to remove safely given its size and precarious location—nestled under the brain, intimately attached to the pituitary gland and surrounded by the optic nerves and essential blood vessels.

“Dr. Kelly explained there was a benign brain tumor near the pituitary gland crushing my optic nerve,” Joseph says. “I asked if we could do the surgery after an upcoming business trip, and he said it was likely severely compressing blood vessels supplying my optic nerve and if we didn’t do surgery very soon, I could lose even more of my vision.”

Dr. Kelly recommended a minimally invasive endonasal endoscopic approach, removing the tumor through the nose. “It made a lot of sense to me,” Joseph says of Dr. Kelly’s recommendation. “It was a seven-hour procedure, but I didn’t even know it happened. When I woke up, I felt so normal that I thought they were still prepping me.”

What makes PNI unique is not only the innovative and high-tech procedures offered by Dr. Kelly and his colleagues but also the multidisciplinary approach that brings together an array of specialists to collaborate on each patient, providing the best possible care.

PNI co-founder Chester F. Griffiths, MD, worked alongside Dr. Kelly in Joseph’s surgery. “In endoscopic skull base procedures with Drs. Kelly or Barkhoudarian, I handle the approach—opening a pathway through the nose to the tumor at the skull base or inside the skull,” Dr. Griffiths explains. “It’s an approach that provides direct access to almost all pituitary tumors and to many midline



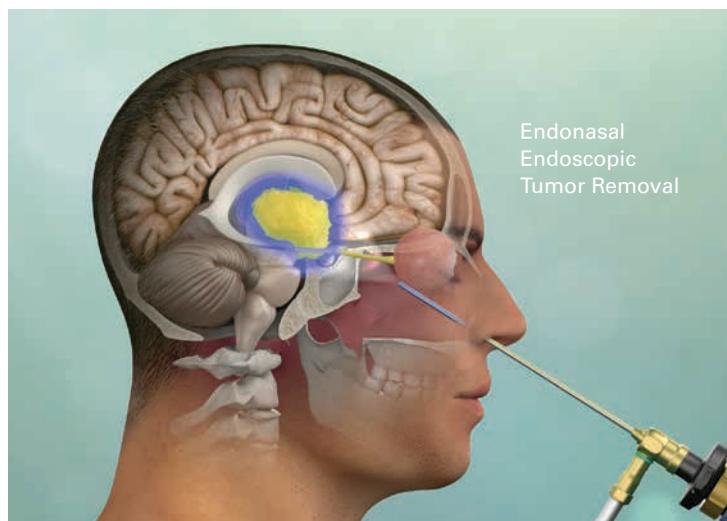
Joseph Anthony Perez is back on his bike after surgery to remove a tumor and restore his vision.

brain tumors, such as Joseph’s. Importantly, this technique which we have helped pioneer at PNI, is also mucosal-preserving, sense-of-smell preserving and virtually eliminates the risk of post-operative nose bleeds. Patients really appreciate the rapid healing and that they can still smell after this surgery.”

More than 98% of Joseph’s tumor was removed, being carefully dissected away from his optic nerves and his pituitary gland, both of which are functioning normally now, more than 18 months after surgery.

A small, thin tumor attachment left stuck to his optic chiasm has shown no signs of growth. That’s been a huge relief for Joseph, who has been able to resume biking and traveling.

“The recovery was normal. I’m blown away that I haven’t had any major side effects,” Joseph says. “So many people in my life were understandably scared for me. And after seeing the



neurologist, my mind was racing about what it could be. But from that moment to today, I’ve felt a peace I can’t describe.”

Joseph’s family is originally from Guadalajara, Mexico, and he’s currently seeking a publisher for a recently finished book about a unique style of architecture called Mexican patio houses. He is grateful that successful treatment allowed him

to resume this pursuit.

“That has been my biggest steady hobby, and I researched almost 40 buildings in Jalisco for the book,” he says. “They are houses built around beautiful courtyards. The people there have a great tradition of sitting out on the patio with brandy and Gouda, and just enjoying life. That’s something we can all do more of.” ■

# PNI Celebrates THE OPENING OF A NEW CLINIC



(From left) Dr. Santosh Kesari, Dr. Jeremy Levenson, Dr. Howard Krauss, Dr. Nathan Pierce, Dr. Chester Griffiths, Marilou Loreto, Dr. Jason Tarpley, Karter White, Gerald Lin, Dr. Daniel Kelly, Dr. Garni Barkhoudarian, Dr. David Merrill

Friends and supporters got their first look at the Pacific Neuroscience Institute clinic at 2125 Arizona Avenue on May 10 at a reception and ribbon-cutting celebration. The debut brought to fruition the vision of its four founding physicians: Daniel F. Kelly, MD, Chester F. Griffiths, MD, Howard R. Krauss, MD, and Santosh Kesari, MD, PhD. It also represents an extraordinary partnership between the founders and the PNI Foundation, Saint John’s Health Center Foundation, the John Wayne Cancer Institute, Providence Saint John’s Health Center and Providence St. Joseph Health.

“The clinic is truly designed to promote collaboration and innovation,” Dr. Kelly, PNI director, told the attendees. “Given the challenging conditions we deal with, a multidisciplinary team approach is essential to maximize patient outcomes and quality of life.”

Erik Wexler, Providence St. Joseph Health’s Southern California executive vice president and chief



Ted Schneider, Lisa Nesbitt, Su-Z Schneider, Catherine Corlin and Dr. Richard Corlin



Lynda Oschin and Jerry Epstein



Dr. Robert Amonic, William Turner and Dr. Daniel Kelly



(From left) Dr. Santosh Kesari, Marcel Loh, Dr. Chester Griffiths, Bob Klein, Dr. Dan Kelly, Dr. Howard Krauss, Mary Flaherty, and Erik Wexler



Linda Mann and Carla Mann Woods



Mary Ellen Kanoff and Michael Croft



Marlo Longstreet and Elliot Gottfurcht



Carole Schwartz and Dr. William Buxton



Rachel Ault, Tom Geiser and Donna Schweers



Michael Miller, Miriam Miller and Dr. Howard Krauss



John McLoughlin and Barbara McLoughlin



Mary Flaherty

executive, noted the trailblazing nature of PNI. “We’re the third-largest health care provider in the United States,” he said. “What’s happening here is defining for our entire organization.”

Also participating in the program were Mary H. Flaherty, chair of the Saint John’s Health Center Foundation board of trustees; Marcel Loh, chief executive of Providence Saint John’s Health Center; patient and ophthalmologist Ron Gallemore, MD, who received lifesaving treatment for a pituitary adenoma from Dr. Kelly and Dr. Krauss; and Robert O. Klein, president and chief executive officer of Saint John’s Health Center Foundation.

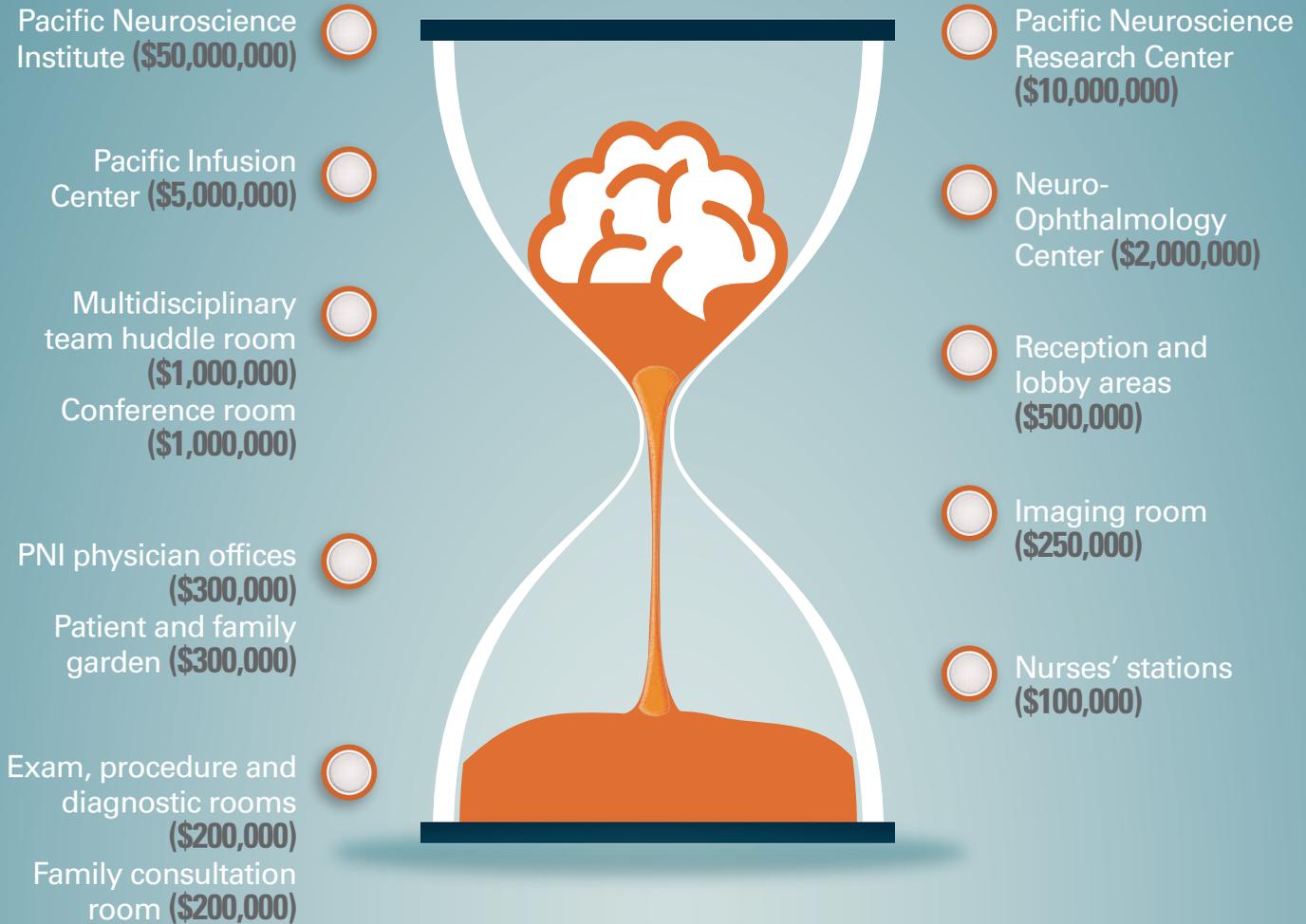
Attendees toured the technologically sophisticated facility, housed in a historic building constructed in 1952 and originally known as the Santa Monica Doctor’s Building. The structure’s new iteration maintains the Streamline Moderne style outside with a tastefully appointed contemporary interior. A preservation award from the Santa Monica Conservancy recognized PNI for bringing a historical building back into service.

“Every detail—including the flooring, the lighting and the paneling by the elevator—was selected by the founding physicians,” noted Dr. Krauss. “We were very sensitive about creating a healing environment that was modern yet comfortable and comforting to our patients.”

The facility includes 18 exam rooms, a CT scanner that can scan the brain in just 30 seconds, an audiology booth

## NOW IS THE TIME

Donors and friends of PNI have been essential to its formation and will be needed to support its continued trajectory. Naming opportunities remain available.



and a conference room with teleconferencing capabilities. At its inauguration, the PNI medical group included 17 doctors across eight sub-specialties and eight centers of excellence. An additional unit and new center of excellence, the Pacific Brain Health Center located at 1301 20th Street, opened in July. Now

with a total of nine centers of excellence, PNI is a dynamic multi-specialty practice of 24 physicians and six PhD scientists.

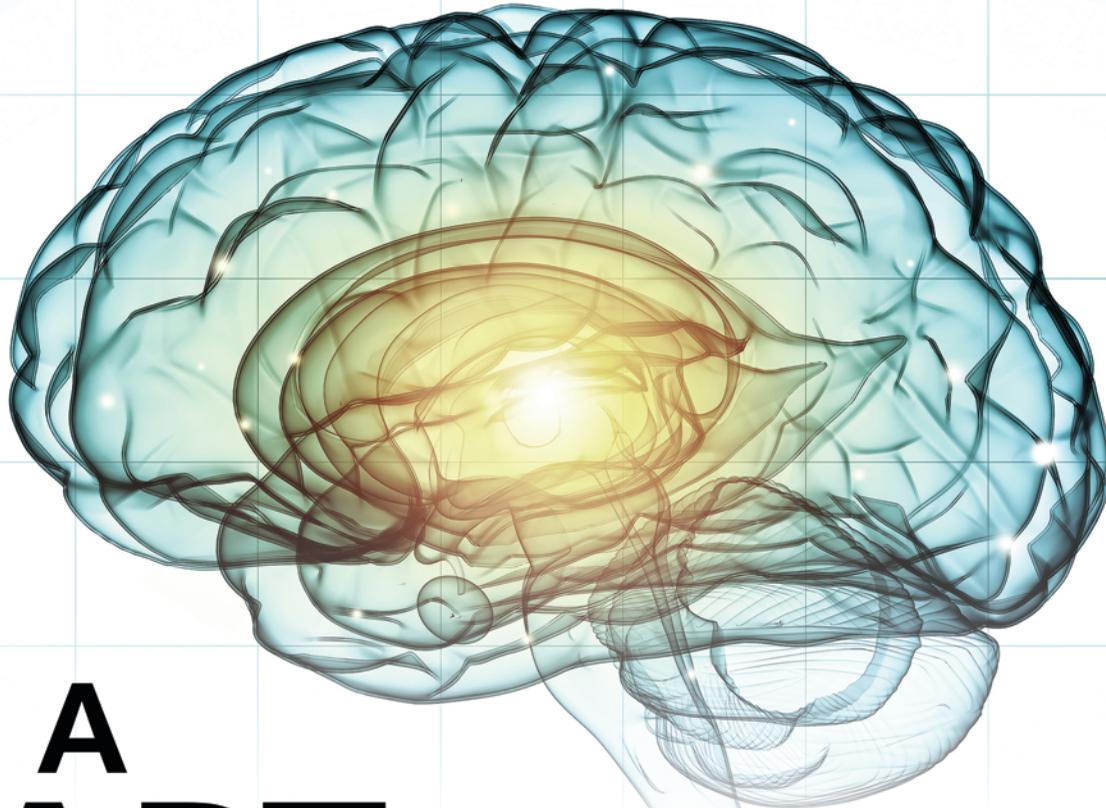
Contemporary art, displayed on a rotating basis, graces PNI's walls thanks to a partnership with Santa Monica's William Turner Gallery. The four founding physicians purchased

one work, *Diving Deep*, to permanently adorn the facility.

Attendee Carole Schwartz, a member of the boards of PNI Foundation, the John Wayne Cancer Institute and Saint John's Health Center Foundation, praised the synergy between those three entities and lauded the four PNI founders.

"I understand how truly blessed we are to have them in our community. They're the best at what they do."

Reflecting on the event, Dr. Kesari noted, "The building is not an end. It's a vehicle for transforming and accelerating progress in treating deadly diseases." ■



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## Keyhole Surgery

Removing a tumor through  
an eyebrow incision.  
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## Board of Directors

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