OBITUARY

In Memory of Gary Heit: Pioneer and Humanitarian

Dr Gary Heit, PhD, MD, a pioneer in the field of functional neurosurgery, passed away on February 14, 2023, at the age of 66. Dr Heit was born in Los Angeles, California (March 15, 1956). He received his undergraduate degree in neuroscience from the University of California, Santa Cruz (1974–1977) and went on to pursue his doctorate (PhD) in neuroscience at the University of California, Los Angeles (1980–1985). During a postdoctoral fellowship in Paris, France, he made fundamental discoveries in neuroscience regarding ways words and faces are encoded in the human brain.1,2 Subsequently, he enrolled in medical school (1985–1989) and completed his residency in neurosurgery (1998) at Stanford University, where he continued to work on faculty as an attending physician and researcher in the Department of Neurosurgery (1998–2006). After pioneering and starting the functional neurosurgery program at Stanford University, he founded another functional neurosurgery program after joining the Department of Neurosurgery and Neuroscience at Kaiser Permanente (KP), Redwood City, CA (2006–2012). Alongside his clinical work, his breadth of expertise and knowledge allowed him to serve as a consultant, whereby he led many innovations and developments that have percolated into the industry of neuromodulation.

As one might expect, Gary’s inquisitive nature was evident long before college. As a child, he was fascinated with the world around him, and his interests ranged from botany to human physiology. His brother recalls him doing laboratory experiments in his bedroom as young as age 10, with his mom always checking to see whether he was safe. His ever-present curiosity and commitment to scientific rigor were a driving force throughout his career. He was a pioneer in developing and implementing new techniques for neuromodulation, including deep brain stimulation (DBS) and spinal cord stimulation, using these tools broadly to treat a wide range of neurologic, psychiatric, and pain disorders.

During and after his postdoctoral studies, Dr Heit was influenced by one of the forefathers of modern DBS, Dr Alim Benabid, in France, who reportedly stated, “Get the electrode exactly where it needs to be.” As such, Dr Heit was keen on precision and accuracy during DBS, bringing and further developing techniques from Dr Alim Benabid to both Stanford University and KP. This biplanar X-ray technique for intraoperative DBS electrode localization minimized radiation exposure to patients and optimized resolution. These techniques were used at Stanford during his tenure and subsequently at KP until recently. Furthermore, his passion for precision and accuracy was supported by including PhD-level medical physicists and bioengineers in his surgical team, Eric Sabelman and the late Bruce Hill, who were expected to calculate electrode positions within the brain in real time and provide novel technologies to enhance the procedures, directly affecting each patient’s outcome. His research in this field has been cited extensively in medical literature and has led to significant advancements in the treatment of conditions such as Parkinson’s disease, pain, epilepsy, and obsessive-compulsive disorder.3–6

Dr Heit’s impact on the medical community was not limited to his clinical work but encompassed his clinical innovations, friendship, and mentorship. After his departure from Stanford University, Dr Jaime Henderson and Dr Heit frequently collaborated. While Dr Heit was at KP, he played a vital role in establishing and growing the hospital’s functional neurosurgery program for the most complex patients throughout Northern California, even expanding the program to treat patients from Southern California and Oregon. During these times, he was an esteemed mentor to many young physicians in that specialty, teaching with expertise, compassion, energy, and humor that were infectious. In 2011, he continued to grow the KP functional program and recruited a colleague, Dr Mark Sedrak, whom he mentored. After his retirement from clinical practice in 2012, while battling prostate cancer, he continued his innovative medical insights with experimental neuroscience and contributed to numerous research and medical device development projects. Furthermore, he continued to be active in scientific societies and in mentorship for medical students, residents, and faculty in the community. His teaching included activities at Stanford University for medical ethics, for which he worked with the late Paul Kalanithi, MD. Although

Address correspondence to: Lawrence R. Poree, MD, MPH, PhD, Department of Anesthesia, University of California San Francisco, 2255 Post St, San Francisco, CA 94115, USA. Email: Lawrence.Poree@ucsf.edu

For more information on author guidelines, an explanation of our peer review process, and conflict of interest informed consent policies, please see the Journal’s Guide for Authors.

Source(s) of financial support: The authors reported no funding sources.
Throughout his career, Dr Heit was highly regarded by his colleagues and patients alike. He was known for his kind and compassionate demeanor and was always willing to go the extra mile to ensure his patients received the best possible care. Dr Heit was a true innovator in his field and was dedicated to advancing the field of functional neurosurgery through research and clinical practice. Even after his illness prevented him from performing clinical work, he continued to consult and provide input on the development of new neuromodulation technologies. He opened his home for group discussions and brainstorming sessions to explore novel clinical treatments while simultaneously treating his guest to his food delicacies because he was an excellent cook with a keen interest in French and Vietnamese cuisine.

Gary had a deep love of cultures and would, whenever possible, go off the beaten path to see more beyond the typical sights. He also had a profound love of nature. He had an ongoing tradition for his birthday to be outdoors, camping or backpacking. He held his birthday celebration at Plaskett Creek in Big Sur for eight or nine years until he could no longer do so as his health started to limit him. This passion for the outdoors was passed down from his father. As his father’s mobility was challenged over time, Gary would rent a small mobile home and construct a portable walking path so that his father could have access to the campfire. Finding ways to accommodate others was a theme in both his personal and professional life.

Although these were some of his interests and accomplishments, what was most important to Gary was his family and friends. He cherished all these relationships. He was generous and nurturing, thoughtful to all, and always willing to help facilitate care for family and friends.

Dr Heit is survived by his wife Jenn, brother Alan, sisters Karen and Lori, and in-laws Charlene, Gail, Joe, and Jose Luis, along with nieces and nephews. He will be greatly missed by his colleagues, patients, and loved ones.

### Acknowledgements

The authors thank Jaime Henderson, Taissa Cherry, Eric Halgren, Eric Sabelman, Ivan Bernstein, and Alan Heit for their contributions.

Mark Sedrak, MD\(^1\); Lawrence R. Poree, MD, MPH, PhD\(^2\)

1. Department Chief of Neurosurgery and Neuroscience, Regional Co-Chair of Neurosurgery, The Permanente Medical Group, Inc, Permanente Medicine - Kaiser Permanente, Redwood City, CA, USA; and
2. Department of Anesthesia, University of California San Francisco, San Francisco, CA, USA

### REFERENCES

