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UAMS Neurosurgeon Erika Petersen Granted Patent for Device To Treat Head, Neck and Facial Pain

LITTLE ROCK — Erika Petersen, M.D., a neurosurgeon at the University of Arkansas for Medical Sciences (UAMS), has been granted a patent for a nerve stimulator specifically designed to treat chronic pain and migraines in hard-to-treat areas like head and face.

Petersen's efforts to patent and develop the device have been supported by BioVe LLC, a technology licensing and commercializing entity that helps UAMS faculty innovative medical ideas from the drawing board to the marketplace.

Petersen specializes in implanting devices into the body that interact with the nervous system to address issues like chronic pain or movement disorders like Parkinson's disease. It's a growing area of neurosurgery that can have a dramatic impact on patient quality of life.

Despite the many advances in the field, Petersen noticed that when it came to chronic pain in the head and neck, she and her colleagues were having to make due with devices already on the market but designed for other parts of the body, like the spinal cord.

"These stimulators interact with the nervous system similar to the way a pacemaker interacts with heart rhythms, sending small pulses to keep the body acting the way it should," Petersen said. "Also similar to a pacemaker, the stimulator device itself and its wires are implanted under the skin and can leave a bump you can feel outside of the body."

Although designed for the head and face, Petersen believes her device could also be useful in other areas of the body like the shoulder or arm – anywhere a low-profile device would provide an advantage.

“Neuromodulation is an area where there’s huge room for innovation, and one of the challenges is trying to take the devices that are already available to solve problems for individuals, and there’s not always the tool to tackle the problem you’re trying to address,” Petersen said. “The wider variety of device design we have to choose from is better, because ultimately that will help us best serve our patients and their individual needs.”

Petersen gave ample credit to BioVentures for helping her develop the idea and get through the patenting process. Health care providers often have invaluable perspectives about what devices or treatments would best serve their patients, but they often lack their medical training with little to no business education.

“Examples like this are exactly why we started BioVentures,” said Nancy M. Grainger, Ph.D., president of BioVentures. “We have brilliant faculty and health care professionals at UAMS with ideas that could mean a world of difference for patient care. It’s our job to help them turn those ideas into products that will ultimately benefit our patients.”

The process so far has taken five years. The next step for Petersen, with the help of BioVentures, is to partner with a manufacturer to develop the product and prepare for clinical trials.

The patent is U.S. Patent No. 10,688,299 B2: Electrode for Peripheral Nerve Stimulation.

UAMS is the state’s only health sciences university, with colleges of Medicine, Nursing, Pharmacy, Health Professions and Public Health; a graduate school; hospital; a main campus in Little Rock; a Northwest Arkansas regional campus in Fayetteville; a statewide network of regional campuses; and seven institutes: the Winthrop P. Rockefeller Cancer Institute, Jackson T. Stephens Spine & Neurosciences Institute, Harvey & Bernice Jones Eye Institute, Psychiatric Research Institute, Donald W. Reynolds Institute on Aging, Translational Research Institute and Institute for Disability Health & Innovation. UAMS includes UAMS Health, a statewide health system that encompasses all of UAMS’ clinical enterprise including its hospital, regional clinics it operates or staffs in cooperation with other providers. UAMS is the only Level 1 trauma center in the state. *U.S. News & World Report* named UAMS Medical Center the state’s Best Hospital; ranked its ear, nose and throat program among the top 50 nationwide; and named six areas as high performing — COPD, colon cancer surgery, heart failure, hip replacement, knee replacement and lung cancer surgery. UAMS has 2,876 students, 898 medical residents and four dental residents. It is the state’s largest