



Grant to Fund Expansion of Brainwave Studies at Wake Forest Baptist

WINSTON-SALEM, N.C. – Feb. 24, 2012 – The Susanne Marcus Collins Foundation has awarded a \$600,000 grant to Wake Forest Baptist Medical Center to expand the brainwave research program directed by Charles H. Tegeler, M.D.

A 2011 grant from the foundation allowed Wake Forest Baptist to launch a research study for migraine headaches using Brainwave Optimization™, a non-invasive technology that helps the brain achieve balance in neural oscillations.

Previous research work using the technology – known as High-resolution, Relational, Resonance-based, Electroencephalic Mirroring™ (HIRREM™) – for primary insomnia, was very promising. The new grant will allow Tegeler and his team to continue the migraine study and expand their work on insomnia, while adding research projects on mild cognitive impairment (MCI), and traumatic brain injury (TBI).

“This new technology is intended to facilitate greater balance and noise reduction in brain functioning, which may result in improved symptoms,” said Tegeler, the McKinney/Avant Endowed Professor of Neurology and the primary investigator for the study. “We hope to find new solutions for a number of conditions that are significant health issues for society, illnesses that affect large numbers of people and for which safe, effective, non-invasive treatments are lacking.”

Tegeler said if these new studies turn out as expected, Wake Forest Baptist will be able to compete for additional support, including federal funding, while expanding the research program to include other important clinical conditions. He said that the ongoing migraine study could not have been realized without the grant from Susanne Collins and her foundation.

“Her support made it possible to hit the ground running and cut years off the research timeline, which will make it available more quickly for people who need it,” Tegeler said.

Describing the processes behind brainwave research, Tegeler said the human brain is made up of the left and right hemispheres that work together as parallel processors— normally with balanced progression of amplitudes and frequencies from front to back as well as side to side. When a person undergoes trauma or a major stressor, he explained, the autonomic response for survival kicks in, and the brain pattern can become unbalanced as a result. If the brain fails to re-balance itself, Tegeler said, it can lead to further adverse health effects, such as difficulty sleeping, anxiety or post-traumatic stress disorder.

Brainwave Optimization™ uses sensors affixed to the scalp and connected to a computer to detect the brainwaves of various brain lobes. A brainwave is electromagnetic energy that can be broken down into amplitudes and frequencies. Higher frequencies have more cycles per second and, relative to sound, are at a higher pitch on a musical scale.

To reflect the brain's own balanced wave patterns back to itself, the frequencies are assigned a musical tone, and played back to the subject via ear buds. As the brain resonates with the transmitted sounds, changes occur in the neural network. Measuring these changes and scientifically evaluating their effects are important in determining whether there are positive outcomes, as well as for evaluating the possibilities of future treatments for health issues such as insomnia, MCI or TBI.

“We are learning how the brain can balance itself, or autocalibrate,” Tegeler said. “There had been many anecdotal reports of benefits with Brainwave Optimization™ but no randomized clinical research trials, performed under Institutional Review Board-approved protocols. Thanks to this generous grant from the Susanne Marcus Collins Foundation, we are on the way toward finding safe, effective, non-invasive solutions for the management or prevention of these important clinical disorders.”

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Wake Forest Baptist Medical Center (www.wakehealth.edu) is a fully integrated academic medical center located in Winston-Salem, N.C. The institution comprises the medical education and research components of Wake Forest School of Medicine; the integrated clinical structure and consumer brand Wake Forest Baptist Health, which includes North Carolina Baptist Hospital and Brenner Children's Hospital; the commercialization of research discoveries through the Piedmont Triad Research Park, as well as a network of affiliated community-based hospitals, physician practices, outpatient services and other medical facilities. Wake Forest School of Medicine is ranked among the nation's best medical schools and is a leading national research center in fields such as regenerative medicine, cancer, neuroscience, aging, addiction and public health sciences. Wake Forest Baptist's clinical programs are consistently ranked as among the best in the country by U.S. News & World Report.

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