



SUCCESS

COOPERATIVE RESEARCH AND DEVELOPMENT AGREEMENT

**CONTRACT
NUMBER:**

16-218-RH-01CRD

**COMPANY
NAME:**

Rio Grande Neurosciences
Albuquerque, NM

**TECHNICAL
PROJECT
OFFICE:**

AFRL/711 HPW,
WPAFB, OH

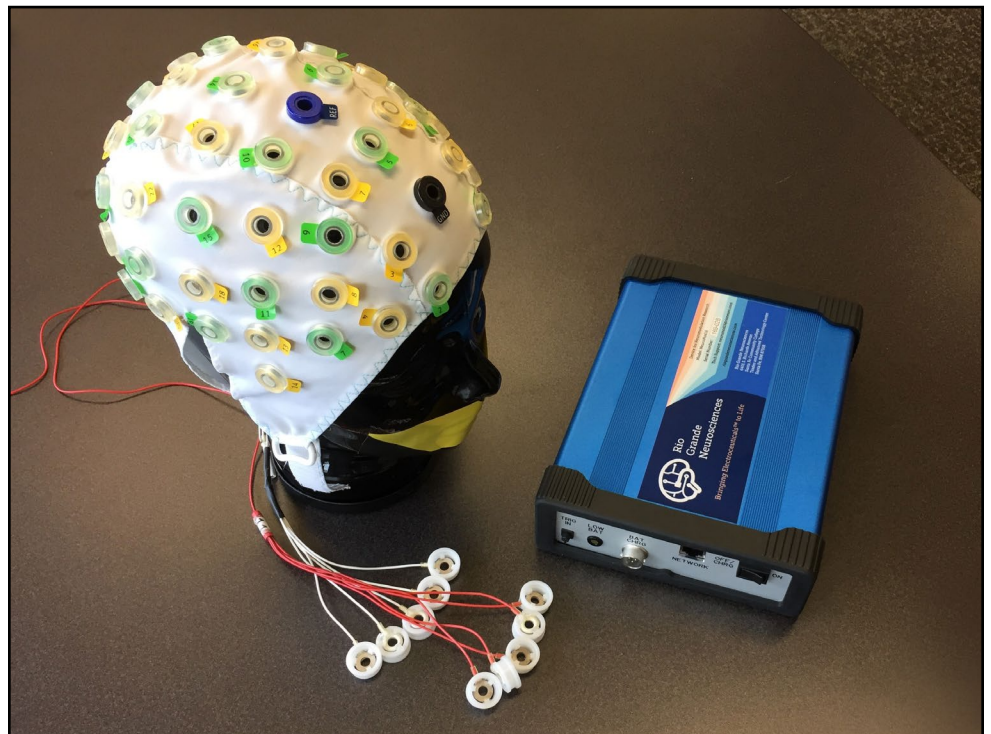
PUBLISHED:

October 2016

AIR FORCE PARTNERS WITH Rio Grande Neurosciences on Transcranial Stimulation Research

WRIGHT-PATTERSON AIR FORCE BASE, Ohio –Air Force researchers are investigating ways to enhance Airmen attention, vigilance, learning and memory without relying on prescription medications.

The 711th Human Performance Wing (711HPW) recently signed a Cooperative Research and Development Agreement (CRADA) with Rio Grande Neurosciences of Albuquerque, New Mexico, to expand its work in the field of transcranial direct current stimulation (tDCS) to include new stimulation methods. Specifically, the project will expand the 711HPW's work by focusing on the development and



*A standard EEG cap with electrodes alongside the NeuroMod16.
(Photo courtesy of Rio Grande Neurosciences.)*

evaluation of pulsed electromagnetic field (PEMF) stimulation, new tDCS paradigms, and transcranial alternating current stimulation.

A CRADA is one type of technology transfer agreement that provides quick access to extensive government-funded research and development resources that can be leveraged to create powerful results while also providing intellectual property protection for both parties. These types of agreements are facilitated by the Air Force Technology Transfer Program and its affiliated Office of Research and Technology Applications (ORTA). An ORTA is embedded at many Air Force research locations.

Under the agreement, the 711HPW will use Rio Grande Neurosciences devices to conduct tests on 36 recruited participants. The results will be shared with the company. If shown to be effective in this project, these technologies/techniques may provide a new treatment for medical patients, as well as a simple and cost-effective method for sustaining Airmen performance in critical Air Force jobs such as image analysts, cyber operators, and remotely piloted aircraft operators.

“This CRADA allows us to receive valuable product feedback from a research team who we have great respect for and whose input will be very beneficial to what we do,” said Dr. Michael Weisend, senior scientist at Rio Grande Neurosciences.

The 711HPW has been studying tDCS for nine years in order to learn the method’s effect on learning, memory, visual search, creativity, and decision making. The research has shown that the method can facilitate learning and improve attention span and reaction time. It is also pain-free and non-evasive. One issue with this method is that it requires the use of a gel for electrical conductance, which can be difficult to apply and remove completely from the hair. In addition, it requires a trained technician to set-up and conduct the treatments.

The new agreement will allow Air Force researchers the opportunity to examine similar methods developed by Rio Grande Neurosciences and cleared by the Federal Drug Administration. PEMF does not require conductive gels or solutions because it readily permeates tissue and changes brain activity by using magnetic stimulation. Historically, PEMF technology has been used to aid wound healing, but this CRADA will address its use as a neuromodulation technique.

The company has improved tDCS electrode designs and technology making application easier and more comfortable for the user. Similar to tDCS, PEMF appears to change brain activity by modulating the excitability of brain tissues.

The company has also developed advanced multiple coil transcranial magnetic stimulation (TMS) technologies to influence brain activity. The higher powered TMS technique directly activates brain tissue at the site of influence. TMS and PEMF application are as simple as placing insulated wires close to the scalp.

“Technology Transfer agreements like this CRADA are extremely important,” said Mr. Andy McKinley, 711HPW Biomedical Engineer. “They allow the Air Force to leverage new technological advances in industry to advance scientific discovery here in the laboratory. Then we can transfer our discoveries back to industry to provide an acquisition pathway for the end-users here in the Air Force.”

For more information about technology transfer opportunities with the Air Force, call the Air Force Technology Transfer Program Office at 937-904-9830.

Linking technology with the mission and marketplace.

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