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## **ARDIEM MEDICAL, CASE, AND VETERANS AFFAIRS DEVELOPING PROSTHETIC ARM CONTROL FOR AMPUTEES**

### ***Bringing back natural movement is goal of new contract from U.S. Army to help veterans***

Indiana, PA – Bringing back natural movement to amputees is the focus of a new contract funded by the Telemedicine and Advanced Technology Research Center (TATRC) of the U.S. Army Medical Research and Materiel Command (USAMRMC) to Ardiem Medical Inc., of Indiana, Pa. Ardiem Medical will partner with Case Western Reserve University and the Louis Stokes VA Medical Center in Cleveland, Ohio through the Cleveland Functional Electrical Stimulation (FES) Center and the Advanced Platform Technology Center (APT) for development of this important technology.

Approximately six percent of wounded service personnel returning from the war in Iraq are amputees. While technology has advanced in other medical fields, treatment for traumatic limb loss and prosthetic interventions still provide only the most basic function. This new research effort will develop an advanced system that would provide a more natural grasp and functional control of motorized upper limb prosthetic devices. The new prosthetic control system would increase the chance of retention of active duty military for combat amputees, continued military career opportunities and overall increased well being. As the number and severity of traumatic limb losses increase, the goal of restoring amputees to a higher level of function in a more natural and intuitive manner becomes a critical mission.

The project will evaluate the significance of using existing neurotechnology to provide more natural control and functional movements of a powered prosthetic limb through a high performance interface with the nervous system. Adapting technology currently being developed for other applications will allow for an implanted system that simplifies donning of the prosthesis, a more sophisticated grasp pattern, transparent and effortless control interface for the user and allows at least three degrees of freedom (DOF) to be controlled simultaneously.

Following the design phase of this control system and integration into an existing multi-DOF upper extremity prosthesis, the new device will be provided to a number of individuals with transhumeral amputations to evaluate system performance.

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## **About Ardiem Medical Inc.**

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Ardiem Medical, Inc. is located in Indiana, Pa. The company offers research and development services and contract manufacturing, with expertise in electromechanical devices and implantable products. Ardiem Medical was previously involved in a research innovations program involving hypothermia therapy for the critically wounded and a robot eyes program with Case Western Reserve University. This program focused on the development of a system to define neural prosthesis limitations and improve eye to prosthetic hand coordination.

For further information about Ardiem Medical, Inc., visit [www.ardiemmedical.com](http://www.ardiemmedical.com) or contact Nancy Saxman, vice president of business development, at 724-349-0855.

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## **About Case Western Reserve University**

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Case is among the nation's leading research institutions. Founded in 1826 and shaped by the unique merger of the Case Institute of Technology and Western Reserve University, Case is distinguished by its strengths in education, research, service, and experiential learning. Located in Cleveland, Case offers nationally recognized programs in the Arts and Sciences, Dental Medicine, Engineering, Law, Management, Medicine, Nursing, and Social Work. <http://www.case.edu>.

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## **The Cleveland Functional Electrical Stimulation (FES) Center**

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The Cleveland Functional Electrical Stimulation (FES) Center, a consortium of the U.S. Department of Veterans Affairs, Case Western Reserve University, and MetroHealth Medical Center, provides innovative options for restoring neurological health and function by developing advanced technologies and integrating them into clinical care. The Center's focus is to improve people's lives by supporting fundamental research in the neuromuscular sciences, developing new technologies and methods, performing clinical evaluation and feasibility testing, and promoting the wide-spread deployment of new technologies through professional education and commercial partnerships. More information about the Cleveland FES Center is available at <http://fescenter.case.edu> or 216.231.3257. For specific information about the TATRC contract award, contact Robert Kirsch, Associate Professor of Biomedical Engineering at Case, at [robert.kirsch@case.edu](mailto:robert.kirsch@case.edu).

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## **The APT Center – Advanced Platform Technology Center**

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The APT Center is a VA Office of Rehabilitation Research & Development Center of Excellence awarded January 2005 in partnership with Case Western Reserve University. Clinicians, investigators, and staff work together to bring the clinical needs of veterans to the attention of the engineers and scientists pursuing new and emerging technologies in order to apply them for the purposes of reducing disability, improving daily functions, and enhancing quality of life. The APT Center supports rehabilitation research by adapting cross-cutting foundational technical platforms to meet specific needs for advanced prosthetic systems, sensory aids, and other clinical applications.

For additional information about the APT Center call (216) 707-6420 or visit our website [www.aptccenter.research.va.gov](http://www.aptccenter.research.va.gov)