

DoD Peer Reviewed Medical Research Program (PRMRP)

Each year, the Department of Defense's office of the Congressionally Directed Medical Research Programs (CDMRP) assesses scientific opportunities to advance research in specific areas. The investigators supported by individual programs are making significant progress against targeted diseases, conditions, and injuries. This list is not intended to be a full representation of accomplishments, but rather a sampling of the broad portfolio of research and advances resulting from congressional appropriations.

Year	PRMRP Research Contributions	Additional Information and Hyperlinks
1999	Dr. Gregory Belenky developed an unobtrusive, wrist-worn actigraph with an embedded mathematical performance prediction algorithm for tracking activity and sleep periods.	
1999	Dr. Michael Roy conducted a clinical trial showing that short-term combination exposure to pyridostigmine, diethyltoluamide, and permethrin bromide, suggested as a cause of GWI, does not adversely impact physical or cognitive performance.	
2001	Dr. Kai Thomenius developed components for an ultrasound imager suited to remote emergency medical conditions for use in combat casualty care.	
2001	Dr. Jeffrey Mason developed a field-deployable liposome polymerase chain reaction assay to detect botulinum, cholera, and tetanus toxins in environmental and biological specimens.	
2002	Dr. Barbara Soller of the University of Massachusetts Medical School, with funding from an FY02 Investigator-Initiated Research Award, developed CareGuide™, a portable, fiber optic, near-infrared spectroscopic sensor system that noninvasively measures muscle pH, oxygen, and hematocrit. Dr. Soller and collaborators at the U.S. Army Institute of Surgical Research tested the system in a lower body negative pressure model of progressive hemorrhagic shock, and demonstrated that muscle oxygen levels may be an early indicator of blood loss. The CareGuide has received FDA clearance, and a ruggedized version for use on military aircraft is now in development.	
2002	Dr. David Sahn developed a method for the reliable and rapid assessment of newborn infants at risk for heart disease at remote health care facilities via teleradiagnosis.	<ul style="list-style-type: none"> ● PRMRP Research Highlight
2002	Dr. Mark Horwitz developed a novel tularemia vaccine against aerosolized F. tularensis bacteria and showed in animal tests that it is less virulent and more efficacious than the available, relatively toxic vaccine.	<ul style="list-style-type: none"> ● PRMRP Research Highlight
2003	Dr. Stephen Savarino, Naval Medical Research Center, showed that Bovine milk immunoglobulin (BIgG) collected from cows immunized with enterotoxigenic Escherichia coli (ETEC) antigens and administered orally provided protection against ETEC challenge (traveler's diarrhea) in humans, with support from an FY03 New Program Project Award. Based on the success of this study, he and his colleagues are now using the same approach to develop orally administered BIgG against an additional strain of ETEC, with the goal of developing a multi-valent, food-based anti-diarrheal supplement that will confer protection against the predominant cause of infectious diarrhea in deployed warfighters.	<ul style="list-style-type: none"> ● PRMRP Research Highlight

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2004	<p>Dr. Ronald Triolo of Case Western Reserve University used funding from an FY04 Investigator-Initiated Research Award to develop a prototype hybrid neuromechanical gait assist system that combines electrical stimulation of paralyzed muscles with a controllable hydraulic exoskeleton and demonstrated the system's successful ability to assist individuals with lower extremity motor deficits to perform a variety of activities such as standing, walking, and descending stairs. Dr. Triolo and colleagues are now developing a second generation, self-contained, portable system to allow for clinical testing outside of a laboratory setting.</p>	<ul style="list-style-type: none"> • PRMRP Research Highlight • PRMRP Video Highlight
2005	<p>Dr. Ai Lin optimized imidazolidinedione derivatives that are orally active with potential curative and prophylactic activity against the parasite that causes malaria.</p>	
2005	<p>Dr. Patrick Kochanek initiated development of a resuscitation fluid for TBI incorporating colloidal polynitroxylated pegylated hemoglobin, offering reduced fluid volume while maintaining effective arterial pressure and neuroprotection compared to lactated Ringer's or hypertonic saline solutions.</p>	
2005	<p>Dr. Roy Bloebaum developed an osseointegrated device that allows direct skeletal attachment of prostheses to amputated limbs. With funding from an FY05 Advanced Technology Award, he and his colleagues at the VA Salt Lake City Health Care System and the University of Utah designed and developed implants for human cadaveric and large animal models of above-knee amputation, and demonstrated loadbearing ability and lack of infection for up to 12 months in the animal model. An early feasibility study of the implants in humans is now being implemented. The technology offers great promise for individuals with amputations who, due to the nature of their limb loss or other complications, cannot rely on standard prostheses with socket-type attachment systems.</p>	
2006	<p>Dr. Joseph Rizzo developed a prototype retinal prosthesis that may be used to treat several forms of retinal blindness that are currently untreatable, including blindness caused by battlefield laser injury to the retina and military-related, blast-induced blindness.</p>	
2008	<p>Dr. Gabriele Gusella of Mount Sinai School of Medicine discovered that knocking out expression of the extracellular matrix receptor Integrin beta 1 in a mouse model of autosomal dominant polycystic kidney disease (ADPKD) prevents renal cystogenesis, identifying Integrin beta 1 as an essential mediator of cyst formation and a potential target for the first therapeutic to treat ADPKD.</p>	
2009	<p>Dr. Curtis Harris of the National Cancer Institute developed a prognostic classifier based on expression levels of four genes, BRCA1, HIF1A, DLC1, and XPO1, in stage I lung adenocarcinoma. Dr. Curtis validated the classifier in multiple independent, ethnically, and geographically diverse patient cohorts, resulting in a signature that can identify high-risk patients with early-stage lung cancer who may benefit from adjuvant chemotherapy.</p>	
2010	<p>Dr. Kathleen Sweadner of Massachusetts General Hospital created the first mouse model to exhibit consistent hallmark symptoms of stress-sensitive dystonia, and established two quantitative behavioral tests that will allow for future drug screening and testing using this model.</p>	

