



Department of Defense



Multiple Sclerosis Research Program

Multiple sclerosis (MS) impacts U.S. Service members and Veterans: According to the Defense Health Agency Medical Surveillance Monthly Report, 2,031 active duty Service members and 650 Reserve/National Guard members received diagnoses of MS between 2007 and 2016. In addition, as of 2014, the Department of Veterans Affairs reported that 28,000 Veterans have been diagnosed with MS. The rates of MS were higher for women Service members compared to their male counterparts and African American Service members compared to Caucasian American Service members.

VISION

To prevent, cure, reverse, or slow the progression, and lessen the personal and societal impact of multiple sclerosis

MISSION

To support pioneering concepts and high impact research relevant to the prevention, etiology, pathogenesis, assessment and treatment of multiple sclerosis for the benefit of Service members, Veterans, and the American public

PROGRAM HISTORY

The Department of Defense (DoD) Multiple Sclerosis Research Program (MSRP) was established in 2009 to support innovative and impactful research that addresses fundamental issues and gaps in MS. Since then, and for 10 years, with a Congressional appropriation totaling \$51.1 million (M), the MSRP has supported pioneering concepts and high-impact research to understand

the underlying causes of the disease initiation and progression, measure and assess disease activity, and prevent and treat MS. Most recently, the MSRP has funded clinical trials to alleviate the impact of MS-related symptoms, paving the way to lessen the personal and societal impact of MS for the benefit of Service members, Veterans, and the American public.

PILOT CLINICAL TRIALS SUPPORTED BY THE MSRP

Ellen Mowry, M.D., Johns Hopkins University	<u>Goal:</u> Evaluate whether insulin is safe and tolerable in people with MS and can improve their cognition: NCT02988401
Kottil Rammohan, M.D., University of Miami, Coral Gables	<u>Goal:</u> Define strategies that will raise histamine levels in the brain to overcome fatigue: NCT03266965
Joseph Finkelstein, M.D., Ph.D., Columbia University Medical Center	<u>Goal:</u> Assess the feasibility and impact of an innovative home-based physical tele-rehabilitation model in MS patients with significant mobility impairment: NCT03230903
Leigh Charvet, Ph.D., New York University School of Medicine	<u>Goal:</u> Evaluate the efficacy of a remotely supervised platform for in-home delivery of transcranial direct current stimulation to enhance hand rehabilitation in individuals living with progressive MS with reduced manual dexterity: NCT03499314

STRATEGIC PLAN

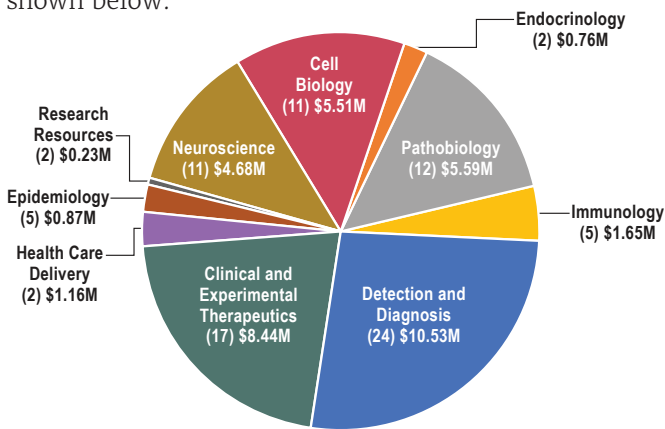
In 2018, the MSRP developed a Strategic Plan outlining the overall goals of the program, how those goals will be addressed, and how research outcomes will be tracked.

Details of the Strategic Plan can be found at: <http://cdmrp.army.mil/msrp/pdfs/MSRP%20Strategic%20Plan.pdf>

1. Williams VF, Stahlman S, Ying S. 2017. Multiple sclerosis among service members of the active and reserve components of the U.S. Armed Forces and among other beneficiaries of the Military Health System, 2007-2016. MSMR Aug; 24(8): 2-11.

PROGRAM PORTFOLIO

Through FY17, the MSRP funded 91 awards to support the exploration of innovative concepts or untested theories in high-risk/potentially high-reward research; development of readily accessible, cost-effective, validated analytical methods; multidisciplinary collaborations to move ideas into clinical applications; and pilot clinical trials to evaluate innovative interventions that could have a profound impact on the management of MS symptoms. MSRP investments by research area with award numbers in parentheses are shown below.



“By the conclusion of my own participation in MSRP Peer Review, I was more hopeful about the future. I saw that the evaluations of the next generation of fundamental MS research are being conducted in a systematic manner by scientists balanced by the direct input of the needs of the

MS community. I am confident that the limited MSRP funding is being applied to the most promising avenues of MS research.”

*Gary Pinder, MSRP Consumer Peer Reviewer,
National Multiple Sclerosis Society*

RESEARCH HIGHLIGHTS

Restorative Neuroimmunology in Experimental Models of Multiple Sclerosis via Directly Induced Neural Stem Cell Transplantation

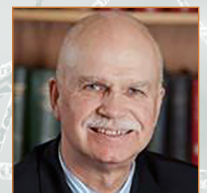


Stefano Pluchino, M.D., Ph.D., University of Cambridge; Regina Armstrong, Ph.D., Uniformed Services University of the Health Sciences; and Frank Edenhofer, Ph.D., University of Würzburg

Most therapeutic options currently available to MS patients target the relapsing-remitting form of the disease; very few are efficacious for progressive MS. Drs. Pluchino, Armstrong, and Edenhofer were awarded an FY14 Investigator-Initiated Partnership Award to identify the ideal source of stem cells for transplantation and to further define their mechanisms of action in the context of MS pathophysiology. The team’s most recent accomplishment includes demonstrating that induced neural stem cells (iNSC) injected into mouse models of chronic MS ameliorate neuroinflammation and improve function. The engrafted iNSC decreased specific inflammatory metabolites and reprogrammed immune cells to an anti-inflammatory phenotype. Understanding the interplay between engrafted iNSC and inflammation is a crucial step toward the possible future use of tissue-specific stem cells to treat progressive MS.

Mechanisms of Low Physical Work Capacity, Fatigue, and Reduced Mobility in Multiple Sclerosis Bo Fernhall, Ph.D., University of Illinois at Chicago

Dr. Fernhall received an FY17 Exploration - Hypothesis Development Award to study the causes of low physical work capacity (PWC) and fatigue symptoms in MS patients. He hypothesizes that autonomic dysfunction (i.e., impaired regulation of heart rate, blood pressure, and blood flow) could be a major contributor to these symptoms. He will evaluate autonomic function at baseline and during exercise in MS patients and in healthy controls to identify possible causes for low PWC and fatigue in MS patients. Understanding symptom etiology is important for developing appropriate interventions that improve the quality of life for MS patients.



MORE INFORMATION: cdmrp.army.mil/msrp or cdmrp.army.mil/funding/msrp
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