



# Parkinson's Research Program

## VISION

To stop Parkinson's disease by funding research through a partnership of scientists and consumers

## MISSION

Support research to understand, prevent, diagnose, and treat Parkinson's disease in patients, including Service members and Veterans

## PROGRAM HISTORY

The Department of Defense (DoD) Parkinson's Research Program is the only federally funded program dedicated exclusively to the treatment and cure of the second most common neurodegenerative disease, a disease the Department of Veterans Affairs (VA) estimates affects more than 80,000 Veterans, a proportionately greater rate than that of the general population. The Parkinson's Research Program (PRP), which is funded under the Neurotoxin Exposure

Treatment Parkinson's Research appropriation, was initiated in fiscal year 1997 (FY97) to provide support for research of exceptional scientific merit leading to an understanding of the cause, prevention, and treatment of Parkinson's disease. From FY97 through FY17, approximately \$420.75 million (M) has been appropriated by Congress for Parkinson's research. The FY18 appropriation is \$16M. PRP appropriations for FY97-FY18 are shown below.



## MILITARY RELEVANCE

A preliminary study found that military deployment is associated with a 1.8-fold increased risk of Parkinson's disease. Peer-reviewed studies have identified several risk factors for the development of Parkinson's disease that are related to military Service. Significant among the risk factors are:

- exposure to chemicals (including pesticides, insecticides, and solvents);
- traumatic injury to the head;
- depression;
- prolonged physiologic and mental stress;
- repeated or prolonged disruption of sleep architecture; and
- repeated or prolonged disruption of autonomic nervous function.

To address these risk factors, the PRP has invested in research to better understand traumatic injury to the head, depression, and exposure to environmental chemicals. Research into military Service-related risk factors is critical for past, present, and future military generations who may be affected by the disease.

## RESEARCH HIGHLIGHTS

### Genetic Associations

- The PRP funded Dr. Andrew Singleton to conduct one of the largest genomic studies in Parkinson's disease, which he was able to accomplish by collaborating with many researchers across the globe. Genome-Wide Association Studies are a powerful research technique that typically require tens of thousands of individuals, and PRP funding has enabled needed collaborations and experiments. This project is successfully identifying genes that predict or predispose a person to Parkinson's disease. In addition, the identification of these genes is the first step towards understanding their role in the disease.

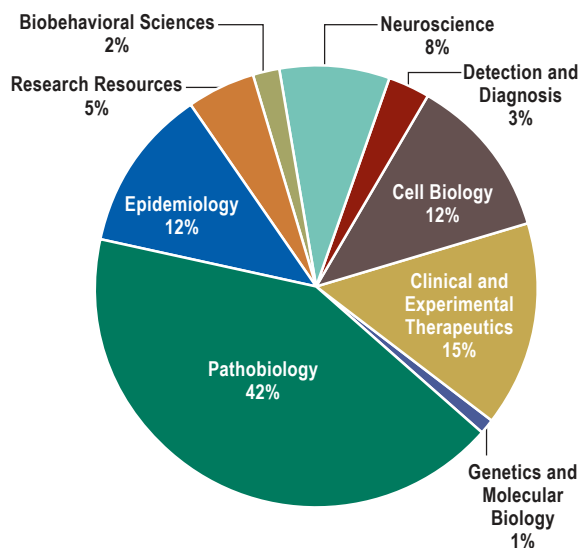
### Biomarker Development

- The PRP has funded studies to accurately identify people that have been exposed to Parkinson's disease risk factors, including organochlorine chemicals, acute mild traumatic brain injury, and depression.
- The PRP has worked to identify individuals at risk for Parkinson's disease years before the appearance of symptoms. The Parkinson's Associated Risk Syndrome (PARS) Study, led by Dr. Kenneth Marek, used the loss of smell combined with brain imaging to determine Parkinson's risk. Results have shown this approach of identifying individuals prior to the appearance of symptoms to be successful in determining individuals who ultimately developed Parkinson's. This is progress towards earlier diagnosis, understanding of the disease, and earlier treatment.

### Diagnostics

- Dr. Judith Potashkin discovered unique DNA combinations (splice variants) that are specific to Parkinson's disease. These unique DNA combinations can be found in a simple blood test. By improving diagnostics, the patient can receive an accurate diagnosis sooner and start treatment earlier.

The PRP research spectrum cuts across various categories. Specifically, the PRP research classification portfolio from FY10–FY17 includes the categories shown below:



**“PRP funding has been pivotal in our research on Parkinson’s disease. A key obstacle to finding an effective cure for Parkinson’s disease is that the neurodegenerative process develops insidiously over many years, so that by the time of diagnosis, patients have already suffered substantial and irreversible loss of brain cells. To address this problem, we have used PRP funding to identify and assess the presence of prodromal features suggestive of Parkinson’s disease in over 20,000 apparently healthy participants in two large cohorts of men and women who are now being prospectively followed for incidence of de novo Parkinson’s disease. This study is providing a critical contribution to the development of novel strategies for the early identification of Parkinson’s disease, thus improving the possibility of more effective therapeutic interventions.”**

*Alberto Ascherio, M.D., Dr.PH., Professor of Epidemiology and Nutrition, Harvard THC Chan School of Public Health, Professor of Medicine, Harvard Medical School*



**“Parkinson’s disease is often called a ‘snowflake disease,’ meaning everyone experiences the disease in their own way. Because Parkinson’s disease is a snowflake disease, it is a strong premise for patients to be involved as collaborators with researchers, clinicians, and regulators to help develop those new therapies that are desperately needed. This is why the U.S. Department of Defense funding of Parkinson’s research is so important and the inclusion of people with Parkinson’s disease as part of the review process is so critical. What you do matters!”**

*David R. Higgins, Ph.D., PRP Consumer Reviewer, Michael J. Fox Foundation*

For more information about the PRP, please visit <https://cdmrp.army.mil/prp/default>.

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