

# Study to Identify Genes

## for Parkinson Disease

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**R**esearchers at many institutions in North America have been working together over the past decade to help identify additional genes that increase the risk for Parkinson disease. This research study is sponsored by the National Institutes of Health and is called **P**arkinson's **R**esearch: The **O**rganized **G**enetics **I**nitiative, also known as **PROGENI**. This study is coordinated by researchers at Indiana University, but includes scientists at Cincinnati Children's Hospital Research Center, the University of Rochester, the University of California, San Diego, and over 50 neurologists who specialize in Parkinson disease.

To identify new genes that increase the risk for Parkinson disease, the PROGENI study is recruiting families throughout the United States, Canada, and Puerto Rico who have at least two living siblings (i.e. two brothers, two sisters, or a brother and a sister) who have been diagnosed with or are showing symptoms of Parkinson disease. There are already over 585 families who have completed the study. To participate, individuals with Parkinson disease are asked to complete a neurological examination at one of the 50 centers involved in the PROGENI study. If they are too ill to travel, a study doctor may see the individual in their home. In addition to completing a neurological examination as part of the study visit, subjects will also provide a blood sample from which DNA will be obtained. They will also complete several additional questionnaires. Over 1,575 individuals have already participated in the study.

The data collected from this study have been used for two purposes. First, to identify new genes that increase the risk of Parkinson disease. The PROGENI study focuses on a region of chromosome 2 where strong evidence has been found for a gene that increases the risk of Parkinson disease, particularly in those families that have three or more

members with the disease. To identify the gene in this chromosomal region, analyses are underway comparing the DNA sequence from individuals who have Parkinson disease and are from families with at least three members who have the disease, with the DNA from individuals who have been carefully examined and do not have any symptoms (healthy control). These analyses require a large number of segments of DNA to be tested in a large sample of individuals, typically several hundred people in each group. To date, we have identified several genes in which we are performing additional analyses.

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The other goal of the PROGENI study has been to better understand how the five genes already identified increase the risk of Parkinson disease. Through the study of many families participating in the PROGENI study, it now appears that not all mutations in these genes are equally influential in causing Parkinson disease. In fact, several of the DNA sequence changes in these genes, particularly some in LRRK2 and parkin, potentially have no clinical consequences and do not increase the risk for Parkinson disease. The PROGENI study has also found that individuals who have only one mutation in the parkin (PARK2) gene may be at increased risk. This



makes it very important that all genetic testing in Parkinson disease be performed in conjunction with a genetic counselor or other health professional trained to interpret genetic information.

It is only through the active involvement of families with Parkinson disease that we will be able to understand why some individuals develop this disease. Our hope is that, through the efforts of study participants, we will one day unravel the mystery of devastating diseases. The PROGENI study is always eager to accept new families. If you are interested in learning more, please call **1-888-830-6299**, or visit **<http://progeni.iu.edu>** ■

