

# LRRK2 GENE INFORMATION

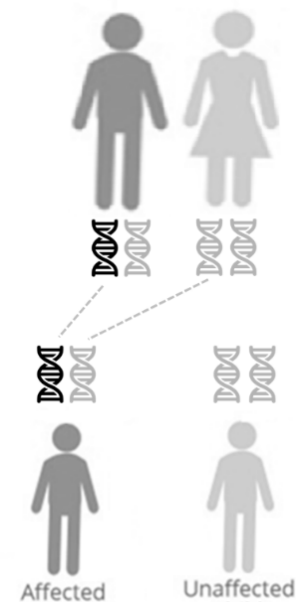
## PARKINSON'S DISEASE FACT SHEET

Parkinson's disease is multifactorial in most families; it is likely caused by an interplay of both genetic and environmental factors. A number of genes have been identified as risk factors for Parkinson's disease, with many others likely unknown. This fact sheet outlines basic information about the *LRRK2* gene as well as risk to individuals and their relatives. If you have a *LRRK2* variant or are concerned about your risk, speaking with a genetic counselor can be helpful.

### LRRK2 Variants

Individuals with *LRRK2* gene variants have a higher risk of developing Parkinson's disease than the general population, and this risk may vary depending on the type of variant. Risk of Parkinson's disease increases with age. However, many people with a *LRRK2* variant do not develop Parkinson's disease; this is called incomplete penetrance. It is likely other risk factors are needed for an individual to develop Parkinson's disease in addition to a *LRRK2* gene variant.

*LRRK2* variants are inherited in an autosomal dominant fashion (see figure). This means that a person only needs to inherit one *LRRK2* gene variant to have an increased risk of Parkinson's disease. This also means that both males and females can pass on and inherit the variant. Each child of a person with a *LRRK2* variant has a 50% (or 1 in 2) chance to inherit the variant. Similarly, this individual has a 50% (or 1 in 2) chance to not inherit the variant from their parent.



Several variants have been reported in the *LRRK2* gene that can contribute to Parkinson's disease risk. One important variant is the *LRRK2* G2019S variant. Approximately 1-2% of individuals with Parkinson's disease have the *LRRK2* G2019S variant. However, among some ethnic groups the frequency may be higher. For example, in groups who are of Eastern European (Ashkenazi) Jewish descent, approximately 15% of individuals with Parkinson's disease have this variant. *LRRK2* variants can be found in people of nearly any ancestry and genetic testing can determine if a person carries a particular *LRRK2* variant.

### Research Opportunities

Many research studies are interested in enrolling people with *LRRK2* variants. This is true whether or not that person or anyone else in their family has Parkinson's disease. Some studies are trying to understand more about the causes of Parkinson's disease. Other studies are working to develop new treatments. Trials of new medications for people with Parkinson's disease and *LRRK2* variants are ongoing.

Various research projects at the Indiana University School of Medicine include genetic testing and genetic counseling for Parkinson's disease. These projects enroll volunteers with and without Parkinson's disease. To learn more, please contact our team at wrd@iu.edu or call 888-830-6299.

### References

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