Who will develop Parkinson’s disease?

One of the quests of the Parkinson’s Progression Markers Initiative (PPMI) is to find answers to this question. Our current inability to predict who will develop Parkinson’s slows research and vexes people with family history of the disease.

Today, with new findings grown out of PPMI data and samples, we may be a step closer.

Researchers from the National Institutes of Health (NIH) published a paper in *The Lancet Neurology* this summer that outlines five criteria they used to differentiate people with Parkinson’s disease (PD) from control volunteers: olfactory function (smell loss), genetic risk score, family history of PD, age and gender.

“The idea is that we could start to get at things that might be able to predict disease. These are things that we thought might be early markers of Parkinson’s disease,” said Andrew Singleton, PhD, lead author of the paper and a member of the PPMI Steering Committee.

Identifying the Five Criteria

Last year Dr. Singleton’s team identified 28 genetic mutations associated with Parkinson’s and found that individuals with more of these mutations have a higher risk of PD. The researchers developed a genetic risk scale that gave each person a composite score based on the presence of those mutations. People with more mutations received a higher score.

While the genetics score was informative, it was not enough to predict Parkinson’s. Could they include other factors? The NIH team went to the PPMI database and gathered information that could be easily assembled without visits to a lab or doctor’s office, instead focusing on data collected through mechanisms such medical records and surveys. They analyzed the possibilities to find criteria that differentiated people with PD from controls.

They found four other factors — smell loss, family history of PD, age and gender — that together with genetic risk score created an optimal model to “diagnose” someone with Parkinson’s disease.

After refining their model with PPMI data, NIH researchers used data from five other studies to validate their findings.

The NIH team also applied its formula to PPMI subjects without evidence of dopaminergic deficit (SWEDD). This population showed clinical symptoms of PD but not the trademark dopamine loss in brain scans upon enrollment in the study. One to two years later, however, five PPMI SWEDD volunteers showed dopamine loss in follow-up scans.

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A Step Closer to Predicting Parkinson’s

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Using their five-point system — and without previous knowledge of these patients’ actual diagnoses — the NIH researchers classified four of these five subjects as PD (versus control) and the final one on the cusp of PD classification. These findings give evidence for the predictive use of their five-point formula.

Accelerating Intervention for Greatest Impact

Researchers are interested in predicting who will develop Parkinson’s disease because earlier detection can mean earlier intervention. Many researchers believe that PD clinical trials have failed because they were not intervening in the disease process early enough to show substantial benefit.

“We know that when people begin showing Parkinson’s cardinal symptoms, there is already significant dopamine loss,” said Mark Frasier, PhD, MJFF senior vice president of research programs and PPMI Steering Committee member. “If we could predict who may develop Parkinson’s, we may be able to save those dopamine cells and stop PD.”

As for how they’ll find those people, Dr. Singleton thinks technology will help. “We’re collecting all this data in electronic medical records (EMR), and we’ll start to use that data to predict disease. Your smell status, genetics, age, gender will all be in your EMR. I think we’ll use this to highlight individuals who we should be keeping an eye on,” he said.

Opening Data Access for Discovery and Validation

“This study would not have been possible without PPMI and without open-source data. The value of PPMI is two-fold: it’s the fact that the data is there and that it’s been an example for others,” said Dr. Singleton.

His group is now working with a health care system to identify individuals without PD who may develop Parkinson’s in the future. While, today, there is no preventive intervention, this population could enroll in clinical trials and help develop those next-generation therapies to stop the disease. And it’s thanks to your contributions to PPMI.

PPMI Presented at Movement Disorders Meeting

Each year at the International Congress of Parkinson’s Disease and Movement Disorders the greatest minds in movement disorders research and care gather to share findings and spark collaborations. PPMI had a strong showing at the 19th International Congress held in San Diego, California June 14-18, 2015.

Principal investigator Ken Marek, MD, taught a course on “Imaging and Other Biomarkers of Prodromal Parkinson’s Disease.” PPMI Steering Committee member Danna Jennings, MD, led a skills workshop, “Practical Issues in Using Neuroimaging in Movement Disorder: What, When, Why.” And fellow Steering Committee member Tanya Simuni, MD, presented in a plenary session on “Late-Breaking Clinical Trials and Clinical Science in Parkinson’s Disease.”

Study investigators collectively presented 18 scientific posters at the Congress. The PPMI data and findings crossed poster topic areas from non-motor symptoms to genetics to treatments.

The immense representation at such a prestigious science meeting is a testament to the impact of your contributions. Researchers are discussing and learning from the insights born of your participation in PPMI.
Satellite Media Tour Promotes PPMI Across Country

On June 26, Tatiana Foroud, PhD, director of hereditary diseases and family studies in the Department of Medical and Molecular Genetics at Indiana University, and Jon Gilman, a PPMI participant, completed a day of satellite media tours (SMTs) promoting PPMI.

Jon joined the study after learning through a genetic test that he carries a LRRK2 mutation, which raises his risk of Parkinson’s disease (PD). PPMI is recruiting people with LRRK2 and other genetic mutations associated with Parkinson’s risk to understand the role of genetics in PD onset and progression.

SMTs allow individuals to speak to many reporters across multiple locations in one day using video conferencing. Jon and Dr. Foroud came to New York City and spoke to 27 news outlets in one day, appearing on TV broadcasts, radio shows and websites, as well as in print articles. The duo spoke to local media outlets in 14 states and numerous national media sources.

Their interviews reached a potential 22 million viewers, listeners and readers. Researchers hope this press will encourage more individuals to get involved with PPMI and build upon the critical work being done by current study participants.

Participant Profile: Linda Shares Her Story

Linda is a PPMI participant and a member of the PPMI Patient Advisory Committee. Located in Alaska, Linda travels frequently to Portland, Oregon for her PPMI visits.

How did you first get involved with PPMI?
Shortly after my diagnosis, I started reviewing clinical trials and had PPMI on my short list. My doctors stressed that I was in a unique position to join this type of study because I had not yet started Parkinson’s medication. When they mentioned that I would be “sought after” based on this status, I somehow felt honored!

Fortunately, Oregon Health & Sciences University (OHSU) was able to offer me a spot. I am ever grateful to Dr. Penny Hogarth and the OHSU staff for including me in their “family.” For me, it’s been worth every minute. And I have adopted Portland as my favorite place to visit!

What is your role with the Patient Advisory Committee?
I see my role as providing feedback on various topics related to the study from the patient/participant perspective. We also offer suggestions on how to best keep enthusiasm and motivation high among participants — resulting in high continued participation and low drop-out rates. With a background in veterinary medicine and public health, I enjoy being able to contribute in this capacity, in addition to my contributions as a study participant.

What has caused you to stick with the study and continue participating?
Selfishly, it provides me with a very positive aspect to my chronic disease. I reflect on how lucky I am to have been included and how privileged I am to now serve on the Patient Advisory Committee. It enables me to contribute in a very small way to this significant effort. I am very optimistic that tremendous strides in new treatments, delayed progression and even a cure for Parkinson’s disease are within reach during my lifetime. And I want to be a part of that!
Join Our Next PPMI Study Update Call!

**What:** Update on the PPMI Genetic Cohort  
**When:** Wednesday, December 9, 12pm ET  
**How:** Call (866) 901-2585 to join us!  
**Speaker:** Tatiana Foroud, PhD, Principal Investigator of the PPMI Genetics Coordination Center

Join us on Wednesday, December 9, to learn more about the role of genetics in PPMI and ask any questions you may have during an open Q&A session.

**Missed the last study update call?**  
As always, you can listen to past study update calls by visiting [www.ppmi-info.org/participants](http://www.ppmi-info.org/participants).

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**Be a PPMI Genetics Ambassador**

Recruitment is underway for the genetics arm of PPMI! There is no better advocate for PPMI than those of you who are already participating in the study, and you can play a critical role in spreading the word about this new effort.

**How can I help?**  
Ask your friends and family members to visit [www.michaeljfox.org/ppmi/genetics](http://www.michaeljfox.org/ppmi/genetics), and encourage them to take our genetics survey. PPMI is seeking individuals with or without PD who are of Eastern European (Ashkenazi) Jewish, North African Berber or Basque ancestry to take the survey to help determine eligibility for the genetics arm of the study.

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This is the portal for the scientific community to learn more about PPMI and to access the data and samples coming out of the study.