



Parkinson's
Progression
Markers
Initiative

The Study That Could Change Everything

Robust, real-time PPMI data is open access to speed breakthroughs and support validation.

[LEARN MORE](#)[ACCESS DATA](#)

Researchers

PPMI is expanding to more than 4,000 volunteers, including 2,000 prodromal participants, recruited at nearly 50 international sites. The study continues to follow its earliest volunteers, enrolled beginning in 2010.

[LEARN MORE ABOUT THE EXPANSION →](#)

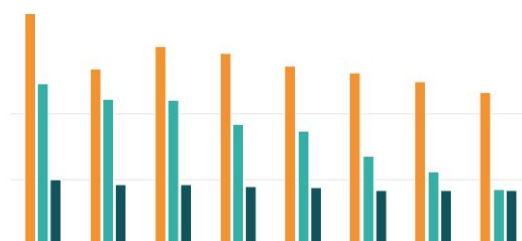
Participants

The study needs people with and without Parkinson's disease. Volunteers — people recently diagnosed or with certain Parkinson's risk factors — are critical partners in this research. Learn more and get started today.

[SIGN UP FOR THE STUDY →](#)

Data Dashboard

This tool provides interactive views of aggregate-level clinical data contributed longitudinally by 1,500+ participants around the world

[VIEW THE DASHBOARD](#)

Study Cohorts

PPMI follows thousands of individuals with varied connections to Parkinson's: clinical and genetic risk factors, recently diagnosed and with disease for over a decade, and control volunteers.

[LEARN MORE](#)

Selected Publications

PUBLICATION

Evolution of Alzheimer's Disease Cerebrospinal Fluid Biomarkers in Early Parkinson's Disease.

PUBLICATION

Clinical and dopamine transporter imaging characteristics of non-manifest LRRK2 and GBA mutation carriers in the Parkinson's Progression Markers Initiative (PPMI): a cross-sectional study.

PUBLICATION

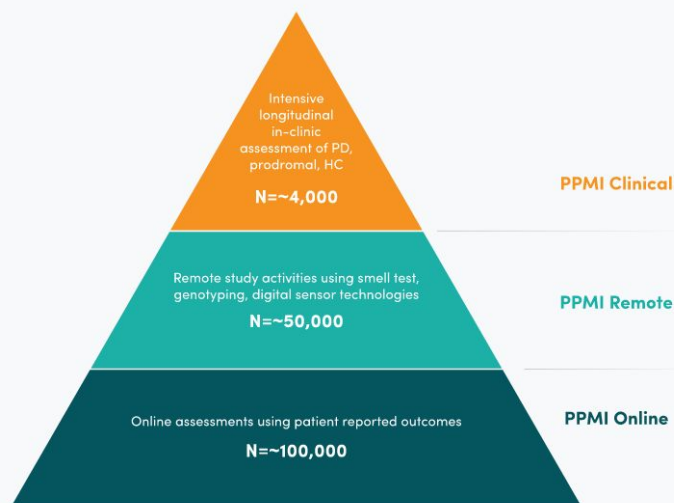
Neuropsychiatric symptoms and cognitive abilities over the initial quinquennium of Parkinson disease.

[VIEW ALL PUBLICATIONS](#)

Study Design

The Parkinson's Progression Markers Initiative (PPMI) is a longitudinal, observational, multi-center natural history study. PPMI assesses progression of clinical features, imaging outcomes, biologic and genetic markers, and digital outcomes of Parkinson's disease across all stages of PD from prodromal to moderate disease. The overall goal of PPMI is to identify markers of disease progression to accelerate therapeutic trials to reduce progression of PD disability.

The PPMI Clinical protocol is designed to acquire comprehensive longitudinal within-participant data in approximately 4000 participants enrolled at about 50 sites worldwide. PPMI clinical prodromal participants will largely be identified through a stage risk paradigm beginning with a custom-built remote platform called PPMI online. The prodromal pyramid is shown below and demonstrates the pathway from PPMI online to PPMI Remote and finally to PPMI clinical.



Study Cohorts



Research Documents & SOPs



PPMI Clinical

In-person longitudinal clinical and imaging assessments and biosample collection taking place at ~50 international sites.

PPMI Remote

Remotely administered olfactory and, in some, genetic testing among people selected based on patient reported outcomes (PROs) or information from clinical sites.

PPMI Online

Patient-reported outcomes collected online from people with and without PD.

Data Availability

PPMI has created a comprehensive uniformly acquired data set and biosample repository available to the PD research community. PPMI offers the opportunity to expand and transform the use of biomarkers to test hypotheses of the underlying molecular pathobiology of PD, enable modeling of PD progression to identify clinical and/or biologic data driven PD progression sub-sets, and inform studies testing PD therapeutics including clinical trials targeting synuclein, LRRK2, GBA and other targets.

Availability and analysis of these data and samples serves to:

- Identify biomarkers of PD progression to accelerate therapeutics to slow PD disability
- Develop quantitative measures that demonstrate optimum interval change from prodromal PD to diagnosis
- Demonstrate preferred study methodology to allow cross-study comparison

Study Synopsis - PPMI Clinical

Study Population* Target N = 4000+	Clinical Data Collection	Biologic Collection
1,000 Enrolled 2010-2018	<ul style="list-style-type: none">• Motor Assessments• Neurobehavioral/Neuropsychiatric Testing• Autonomic, Olfaction, Sleep Testing• DaTSCAN, MRI, and other imaging sub-studies• Digital Data• Online patient reported outcomes (PROs)	<ul style="list-style-type: none">• DNA, RNA• Whole Blood, Serum, Plasma, Urine• CSF• iPSC in Subset of 2010 - 2018• Skin biopsy• Post-mortem tissue
500 PD		
100 HC		
400 Prodromal PD		
3,000 Enrollment Goal 2020-2023		
900 PD		
100 HC		
2000 Prodromal PD		



Special Interest Groups

SIG Biomedical Image Analysis
Challenges (SIG-BIAC) ▾

SIG-BIAC members

**MICCAI registered
challenges**

Shape Modeling and Analysis ▾

SIG Medical Ultrasound (SIG-
MUS)

SIG Biomedical Image
Registration (SIG-BIR)

MICCAI registered challenges

Similar to how clinical trials have to be registered before starting, the complete design of accepted MICCAI challenges will be put online before the challenges take place. Changes to the design (e.g. to the metrics or ranking schemes applied) must be well-justified and officially be registered online (as a new version of the challenge design). Registering challenges is a big step towards higher quality challenges. It not only has the potential to lead to more thoughtful challenge designs but also provides all the information necessary for challenge participants. Furthermore, all changes will be transparent to the community, ensuring increased quality control. Below, the registered challenges are listed.

MICCAI 2022

Organizing a challenge based on an accepted challenge proposal may be time-consuming, especially when large-scale data annotation is necessary. To address the traditionally tight schedule between MICCAI challenge acceptance and organization, we offered an early review of MICCAI 2022 challenge proposals in the call for MICCAI 2021 challenges. Organizers interested to organize a challenge in 2022 were able to receive an early acceptance that leaves time for careful preparation of the challenge. Only convincing challenge proposals were accepted in this round. Other challenges were asked to resubmit in the next call for challenges.

Challenge name	Acronym	DOI
3D Teeth Scan Segmentation and Labelling Challenge	3DTeethSeg22	10.5281/zenodo.4575210
Baby Steps	BabySteps	10.5281/zenodo.4575215
Diabetic Foot Ulcers Grand Challenge 2022	DFUC2022	10.5281/zenodo.4575227
Whole-heart and Great Vessel Segmentation from 3D Cardiovascular Magnetic Resonance Images in Congenital Heart Disease (Part II)	HVSMR-II	10.5281/zenodo.4575237

MICCAI 2021

Challenge name	Acronym	DOI
2021 Kidney and Kidney Tumor Segmentation	KITS21	10.5281/zenodo.3714971
Brain MRI reconstruction challenge with realistic noise	RealNoiseMRI	10.5281/zenodo.4572639
Cross-Modality Domain Adaptation for Medical Image Segmentation	crossMoDA	10.5281/zenodo.4573118
Deep Generative Model Challenge for Domain Adaptation in Surgery 2021	AdaptOR 2021	10.5281/zenodo.4572678
Diabetic Foot Ulcers Grand Challenge 2021	DFUC 2021	10.5281/zenodo.3715019
Endoscopic Vision Challenge 2021	EndoVis	10.5281/zenodo.4572972
Diffusion-Simulated Connectivity Challenge	DisCo	10.5281/zenodo.4572682
Fast and Low GPU Memory Abdominal Organ Segmentation in CT	FLARE21	10.5281/zenodo.4573114
Federated Tumor Segmentation	FeTS	10.5281/zenodo.4573127
Fetal Brain Tissue Annotation and Segmentation Challenge	FeTA	10.5281/zenodo.4573143
HEAd and neCK TumOR segmentation in 3D PET/CT images	HECKTOR	10.5281/zenodo.4573154
Learn2Reg - The Challenge (2021)	L2R	10.5281/zenodo.4573967
Medical Out-of-Distribution Analysis Challenge 2021	MOOD	10.5281/zenodo.4573947
Mitosis D0main Generalization Challenge 2021	MIDOG	10.5281/zenodo.4573977
Multi-Disease, Multi-View & Multi-Center Right Ventricular Segmentation in Cardiac MRI (M&Ms-2)	M&Ms-2	10.5281/zenodo.4573983
Quantification of Uncertainties in Biomedical Image Quantification 2021	QUBIQ 2021	10.5281/zenodo.4575203
RSNA-MICCAI Brain Tumor Segmentation (BraTS) Challenge 2021	BraTS2021	10.5281/zenodo.4575161
SARAS challenge for Multi-domain Endoscopic Surgeon Action Detection	SARAS-MESAD	10.5281/zenodo.4575196
Towards the Automatization of Cranial Implant Design in Cranioplasty: 2nd MICCAI Challenge on Automatic Cranial Implant Design	AutoImplant 2021	10.5281/zenodo.4573985
VAScular Lesions DetectiOn	Where is VALDO	10.5281/zenodo.3715641

MICCAI 2020

Challenge name	Acronym	DOI
2nd Retinal Fundus Glaucoma Challenge	REFUGE2	10.5281/zenodo.3714946
3D Head and Neck Tumor Segmentation in PET/CT	HECKTOR	10.5281/zenodo.3714956
Anatomical Brain Barriers to Cancer Spread: Segmentation from CT and MR images	ABCs	10.5281/zenodo.3714981
Automated Segmentation of Coronary Arteries	ASOCA	10.5281/zenodo.3714985
Automatic Evaluation of Myocardial Infarction from Delayed-Enhancement Cardiac MRI	EMIDEC	10.5281/zenodo.3714997
Automatic Lung Cancer Detection and Classification in Whole-slide Histopathology	ACDC@LungHP	10.5281/zenodo.3715000