

Spring 2023 Request for Applications Circuits & Cellular Targets for Parkinson's Symptoms – Pre-clinical Program



BACKGROUND

Parkinson's disease (PD) affects nearly 1 million people in the US and over 6 million worldwide, and those numbers are expected to rise over the coming decades. PD is highly heterogeneous: individuals experience a wide array of motor and non-motor symptoms, many of which depend on disease severity and duration. Though our understanding of PD and its causes is growing, many questions remain. There are no drugs available for Parkinson's that alter the progression of the disease, and current symptomatic treatments provide limited relief but come with complications and side effects.

The Michael J. Fox Foundation (MJFF) funds research to better define, measure, and treat Parkinson's disease as well as critical tools and other resources to advance that research. The purpose of this Request for Applications (RFA) is to gain a better understanding of the biological substrates & mechanisms that cause specific types of symptoms in Parkinson's disease. To this end, MJFF believes that supporting fundamental investigations into the neural circuits & cellular targets that contribute to the presentation of motor and non-motor symptoms of Parkinson's disease will yield crucial insights needed to eventually develop better symptomatic therapeutics.



PROGRAM GOAL

The Circuits & Cellular Targets for Parkinson's Symptoms – Pre-clinical Program seeks to further our understanding of the pathophysiological mechanisms that give rise to Parkinson's disease by building a stronger body of evidence in animal models to link specific brain regions, cell types, and signaling pathways to behavioral endpoints related to characteristic motor and non-motor symptoms of Parkinson's disease.

Funding will support projects that aim to:

- Characterize the emergence, time course, progression, and severity of behavioral symptoms in animal models of Parkinson's disease.
- Identify and manipulate neural circuits whose activity underlies or modifies behavioral symptoms in animal models of Parkinson's disease.

- Identify cell types, neurotransmitter & neuromodulator receptors, or intracellular signaling pathways that are enriched in the brain regions & neural circuits contributing to behavioral symptoms in animal models of Parkinson's disease.
- Test pre-clinical therapeutic interventions to ameliorate behavioral symptoms in animal models of Parkinson's disease.

For this program, MJFF **will not consider** the following:

- Proposals focusing on clinical or epidemiological studies to monitor and/or treat Parkinson's symptoms in human subjects.
- Proposals focusing on clinical studies to observe or manipulate neural circuits or brain regions contributing to Parkinson's symptoms in human subjects.
- Proposals focusing on *in vitro* cell culture models to study cells that may contribute to Parkinson's symptoms.
- Proposals focusing on the use of invertebrate animal models of Parkinson's disease, including *D. melanogaster* or *C. elegans*.



PROGRAM PRIORITIES

The Circuits & Cellular Targets for Parkinson's Symptoms – Pre-clinical Program supports projects proposing to use a variety of animal models of Parkinson's disease, including:

- Mouse, rat, and non-human primate systems.
- Genetic, toxin, lesion, or protein aggregation-based models of Parkinson's disease.

When considering proposals submitted to this program, MJFF prioritizes those that:

- Focus on behavioral endpoints & tasks in animal models that are aligned with core motor and non-motor symptomatic domains representing unmet clinical needs in people with Parkinson's.
- Focus on behavioral endpoints & tasks that may be translatable across species from rodent to non-human primate.
- Propose to study behavioral endpoints & tasks in balanced cohorts of male and female animals in a longitudinal design to monitor symptom emergence and severity over time.
- Propose to employ state-of-the-art methods to monitor neural circuit activity during behavioral task performance, such as high-density electrophysiological recording probes or genetically-encoded calcium indicators to gain insights into the single-cell and population-level patterns of activity that associate with behavioral task performance.

- Propose to test the causal contribution of specific neural circuits, cell types, or connections to behavioral symptom presentation in animal models of Parkinson’s disease, e.g. by using optogenetic, chemogenetic, or electrical stimulation techniques.
- Seek to identify novel, potentially “druggable” biological targets that are enriched in specific neural circuits shown to contribute to behavioral symptoms in animal models of Parkinson’s disease, such as unique cell types, neuromodulator & neurotransmitter receptor combinations, ion channels & transporters, or intracellular signaling pathways.
- Propose to test the efficacy of translational therapeutic interventions to modify behavioral symptom expression, severity, or duration in animal models of Parkinson’s disease, including DBS-like circuit stimulation, optogenetic or chemogenetic circuit activation and inhibition, and pharmacological or gene therapies targeting biological pathways shown to be enriched within an identified circuit contributing to a specific symptom domain.



FUNDING AVAILABLE

Duration: 12 to 24 months

Award Amount: \$250,000 – \$500,00 for studies primarily employing rodent model systems. Projects intending to use non-human primate model systems may request up to \$1,000,000. Requested support should be commensurate with work proposed.

These budgets include direct and indirect costs. For academic and for-profit institutions, no more than 15% or 10%, respectively, may go to indirect costs. Additional details about MJFF's indirect cost policy can be found in the [Application Guidelines](#) and [FAQ](#).



DEADLINES & REVIEW SCHEDULE

- Pre-proposals Due: Tuesday, September 27, 2022, 5 p.m. US ET
- Full Proposal Invitations: Week of November 14, 2022
- Full Proposals Due (by invite only): Thursday, January 12, 2023, 5 p.m. US ET
- Anticipated Award Announcement: Week of April 17, 2023
- Anticipated Funding: April 2023

Applicants are encouraged to apply early to allow adequate time to correct errors found during the submission process.



ELIGIBILITY REQUIREMENTS

Applications may be submitted by researchers or clinicians in:

- U.S. and non-U.S. biotechnology/pharmaceutical companies, or other publicly or privately held for-profit entities; and
- U.S. and non-U.S. public and private non-profit entities, such as universities, colleges, hospitals, laboratories, units of state and local governments and eligible agencies of the federal government.
- Post-doctoral fellows are eligible to apply as co-investigators with the designation of an administrative primary investigator who directs the laboratory in which the fellow will conduct research. The administrative PI will be responsible for assisting in providing all institutional documents required for the project and will be required to sign any award contract. Training or mentoring-only proposals will not be considered.



DIVERSITY, EQUITY AND INCLUSION (DEI)

In pursuit of our mission to accelerate the development of better treatments and a cure for Parkinson's disease, MJFF aims to support a rigorous research agenda reflecting a wide and diverse range of perspectives on Parkinson's disease and carried out in diverse populations. Diversity may refer to characteristics including, but not limited to, race, religion, ethnicity, sex, gender identity, sexual orientation, socioeconomic circumstance, nationality, geographic background, ability and disability, political ideology and age. Parkinson's is a complex problem; the more angles from which we attack, the greater the chances of finding innovative scientific solutions to benefit everyone living with the disease. As such:

- The Foundation encourages applications from diverse investigators representing groups historically underrepresented in the research enterprise.
- Because research shows that diverse teams outperform homogeneous ones, we urge applicants to share information about the composition of the team that will carry out the funded work.



ADDITIONAL INFORMATION

The [Application Guidelines](#) provide general guidance on applying for funding from MJFF, though the RFA always supersedes information contained in the Application Guidelines.

MJFF holds an [open access publication policy](#) requiring articles resulting from MJFF-funded work to be published in a preprint repository, then in an open access forum with free and immediate readership rights.

MJFF requires that the Principal Investigator be the primary applicant (i.e., the person who initiates and takes primary responsibility for the application). All application-related correspondence will be sent to the Principal Investigator.



INFORMATIONAL VIDEO

MJFF has made available an informational video to clarify and explain the goals of our funding opportunities and application process. The video is available to view on-demand on the [MJFF funding opportunities webpage](#).

For questions about the application process or project suitability for this call for applications, please email grants@michaeljfox.org.