



GENETICS and ENVIRONMENTAL RISK WORKING GROUP of the PARKINSON STUDY GROUP

Introduction

The risk of developing Parkinson's disease (PD) relates to a combination of genetic factors and environmental exposures, as well as gene-environment interactions whereby an individual's susceptibility to environmental factors is determined by various genetic factors. Further complicating this field is the fact that the key environmental and genetic factors differ between individuals and across different populations. Epigenetic influences provide yet another layer of complexity.

A primary goal of the Genetics and Environmental Risk Working Group (GERWG) is to facilitate laboratory and clinical studies that will improve our understanding of genetic variants, epigenetic factors, environmental exposures, and gene-environment interactions that influence the risk of PD or clinical features of PD. The PSG has a well-developed research infrastructure and wide interdisciplinary membership across many institutions with diverse geographic locations and scientific strengths. Thus, the PSG, facilitated by the GERWG, is uniquely poised to advance laboratory and clinical research on genetic and environmental factors in PD.

Goals of GERWG:

- 1) To provide education and guidance regarding the role of genetics and environmental factors in PD within the PSG, among clinicians, researchers, and funding agencies.
- 2) To provide a forum for the generation, development, execution, and dissemination of interdisciplinary laboratory and clinical research studies that lead to improved understanding of genetic and environmental factors in PD.
- 3) To foster the development of new investigators across multiple disciplines with expertise on genetics and environmental factors of relevance to PD.
- 4) To counsel appropriate PSG bodies (e.g., Executive Committee, Scientific Review Committee, Mentoring Committee, steering committees of clinical trials) and collaborate with other working groups of PSG on laboratory and clinical studies that will enhance our understanding of genetic and environmental factors in PD.
- 5) To facilitate banking of DNA and other samples, as well as associated clinical data, to facilitate future studies of genetic and environmental factors in PD.

Potential Scope of the GERWG activities:

To achieve these goals, the Working Group will periodically solicit and review proposals for projects or discussions put forward by individuals or groups (see Procedures for Proposals below).

Examples of topics addressed by GERWG: Common and rare genetic variants; epigenetic changes; influence of race, ethnicity, socioeconomic status; diet; and environmental exposures. Exposures may include medications (such as ibuprofen, isradipine), dietary factors (caffeine) and other factors (urate, pesticides, head trauma, exercise, etc...). The role of these genetic and/or environmental factors in the risk of PD, the influence of these factors on clinical features of PD, interactions between these factors.

Project classification:

1. Interventional Trials (relating to genetic or environmental factors):
 - a. Pharmaceutical
 - b. Neutraceutical
 - c. Gene therapy
 - d. Other (e.g. exercise)
2. Non-interventional Studies
 - a. Retrospective
 - i. Secondary analysis of PSG databases (“data mining”)
 - ii. Analysis of external databases
 - b. Prospective (descriptive or experimental)
 - i. Epidemiology
 - ii. Genetics
 - iii. Clinical features (course, features, associated factors)
 - Environment-phenotype correlations
 - Genotype-phenotype correlations
 - Influence of gene-environment interactions
 - iv. Imaging
 - v. Pathology
 - c. Clinical practice parameters
 - i. Review/consensus panels for evaluation/development of diagnostic or risk assessment tools
 - ii. Review/consensus panels for treatment strategies

Procedures for Proposals

The procedures for application for PSG studies and for conduct of the approved studies are explained in the [PSG Constitution & Bylaws](#), Article X. All PSG proposals have to be reviewed by the Scientific Review Committee, and then a decision will be made by the Executive Committee, based on the recommendation of the Scientific Review Committee. However, before this formal stage is reached, the GERWG can act as a facilitator for the discussion and development of the project as a “pre-proposal”. The process of arranging for discussion and feedback for a proposal for a preliminary idea can be initiated by completing the DISCUSSION/REVIEW REQUEST FORM on the PSG website (www.parkinson-study-group.org) and sending it by email to the GERWG chair. GERWG leadership will periodically announce requests for pre-proposals that can be submitted using the discussion/review request form and be discussed with the interested WG members by e-mail, conference calls, and eventually at the WG meeting during the annual PSG meeting.

Article XII of the PSG Constitution & Bylaws explains the Publication Policies that result from PSG projects.

Link to more information on the GERWG website: <http://www.parkinson-study-group.org/parkinson-research/genetic--environmental-risk-factors-in-pd-working-group/>.