

Genome-wide screen for modifiers of Parkinson's disease genes in *Drosophila*

Yong Rao

McGill University Health Centre, Canada

D*rosophila melanogaster* is a powerful genetic model system to understand evolutionarily conserved mechanisms regulating neural development, function and degeneration. Several neurological diseases such as Alzheimer's disease, Parkinson's disease and Huntington's disease have been successfully modeled in *Drosophila*. *Drosophila* has also been used in large-scale in vivo drug screens to isolate small molecules for the treatment of neurological diseases. By utilizing this model system, we have recently performed a genome-wide screen to isolate novel genes that interact with known Parkinson's disease (PD) genes such as Parkin and Pink1. parkin and Pink1 encode a ubiquitin-protein ligase and a mitochondrially localized serine/threonine kinase, respectively. Recent studies have implicated Parkin and Pink1 in a common and evolutionarily conserved pathway for protecting mitochondrial integrity. To systematically identify novel components of the PD pathways, we performed a genomewide F1 screen for modifiers of parkin and Pink1 mutant phenotype. From screening ~80% of the fly genome, we identified a number of cytological regions that interact with parkin and/or Pink1. Detailed molecular characterization led to the identification of a number of novel PD-interacting genes. We expect that further study of those novel PDinteracting genes will shed new light on the function of PD genes and help in the development of new therapeutic strategies for treating Parkinson's disease.

Biography

Yong Rao completed Ph. D. in 1994 at University of Toronto, and then did postdoctoral studies with Dr. S. Lawrence Zipursky between 1994-1998 at Howard Hughes Medical Institute, UCLA. He is currently an Associate Professor at Centre for Research in Neuroscience, McGill University Health Centre. He received Young Investigator Award from American Peptide Society, New Investigator Award from Canadian Institutes of Health Research, and Senior Research Scholar Award from Le Fonds de la Recherche en Santé de Québec. Research interests include neuronal circuit formation, aggression and Parkinson's disease.

yong.rao@mcgill.ca