Expanding Knowledge of Genetic Risk Factors of Schizophrenia and Bipolar Disorder in Mexico: Neuropsychiatric Genetics of Psychosis in Mexican Populations (NeuroMex)

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Objectives

Large-scale genome-wide association study to uncover genetic variants associated with the development of psychosis in individuals of Mexican descent

1. SCHIZOPHRENIA
2. BIPOLAR DISORDER TYPE 1
3. SCHIZOAFFECTIVE DISORDER

Background & Significance

Lack of Diversity in Genotyped Populations

Hispanics/Latinos make up almost 10% of the world population, but only 1.3% of individuals that have so far been genotyped for GWAS.

Genetic Diversity in Latin America has one of the most genetically diverse populations in the world due to three-way admixture over thousands of years.

The Latin American population serves as an as-yet untapped resource for studying complex traits through genomic analysis.

Methodology

Sample Collection

DNA extraction

Creation of biorepository

Phenotypic Data

GWAS assay at Broad

Collection: May 2019–2022
5 collection sites across Mexico
- Consented using UBACC instrument
- Data collected:
  - Phenotypic interview
  - 10 mL blood sample
DNA extraction performed in Mexico
- Genotyping performed at the Broad Institute

NeuroMEX Collection Sites

Projections by 2022
- Study Design:
  - Case-Control
  - n = 8,000 total samples
  - Cases ≈ 4,000
  - Controls ≈ 4,000

Cases 4,000 samples

All participants:

UBACC Demographics
M.J.N.I.
ASSIST
CIDI
LEC-5
Physiologic Measures
Chart Review

Controls 4,000 samples

Case-Control Study

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Case-Control Study

Progress & Capacity Building

2018

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Case- Control Study

NeuroMEX Team: Stanley Center, Harvard, & the National Institute of Psychiatry in Mexico City, Campeche, Querétaro, Jalisco & León

NeuroMEX has been awarded the DCLAS Mexico Innovation Fund 2019!

1st Training: Interactive research + and analysis methods • 5 days in Campeche Workshop on the use of the R program

2nd Training: Symposium for INPRFM researchers • 3 days in Mexico City Lectures on genetic studies (GWAS) and current genetic science

Acknowledgments

This work is funded by the Stanley Center for Psychiatric Research at the Broad Institute of MIT and Harvard.

Figure: Martin et al. (2019). Ancestry of GWAS participants over time compared to global population.

Figure: Wang et al. (2008). Geographic patterns of genome admixture in Latin American Mexico.