

Yasmine Silmon

Biology 294 - Genetics

Article: *Accelerated aging in bipolar disorders: an exploratory study of six epigenetic clocks*

Bipolar disorder, BD, is a life-long, chronic psychiatric disorder. Approximately 1% of the population is diagnosed with BD, and those with the disorder may experience episodes of hyper-mania and major depression. Studies have proven those who suffer from bipolar disorder have an average of a ten to fifteen year decrease in life expectancy. This can be due to a number of reasons such as suicide due to depression, and illnesses caused by the disease such as cardiovascular disease, diabetes, and chronic obstructive pulmonary disease. With these diseases, accelerated aging has been concluded.

Aside from illness related aging, the cellular aging of those with bipolar disorder is accelerated and epigenetics age poorly, according to Bourdon. To measure epigenetic aging, five epigenetic markers were studied and they are as follows: Horvath, Hannum, EN, PhenoAge, and GrimAge. DNAmTL, DNAm- based telomere length clock was also measured. This study explored variables that potentially accelerated epigenetic aging such as childhood maltreatment, sex, BMI, and smoking status. Results concluded that DNAmTL was significantly negatively correlated with age; AgeAccel was associated with smoking status, male sex, and maltreatment; DNAmTL and AgeAccel changes were associated with smoking. According to the study, “The strong correlations obtained between the six estimated epigenetic ages and the chronological age suggested the relevance of these epigenetic clocks to study accelerated aging in our sample. This is consistent with previously reported epigenetic age estimations in individuals with BD.”

The study also investigated decreased mitochondrial DNA copy number and telomere shortening. BD and telomere shortening are confirmed to be associated. This was done by an analysis which included 10 studies with 579 patients and 551 controls. Results in the meta-analysis of the association between mitochondrial DNA copy number and BD are inconsistent. This analysis was completed with 284 patients and 201 controls.

Citation: Bourbon Celine. et al. Accelerated aging in bipolar disorders: An exploratory study of six epigenetic clocks. ScienceDirect Psychiatry Research; <https://doi.org/10.1016/j.psychres.2023.115373> (2023).