

# On the Role of Mining Exposure in Epigenetic Effects in Parkinson's Disease.

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## Abstract

To explore the possible influence of heavy metal mining on incidence of Parkinson's disease (PD), global DNA methylation was assessed in blood samples from a population of PD patients ( $n = 45$ ) and control subjects ( $n = 52$ ) in Antofagasta neighborhood, a Chilean city built for exclusive use of mining companies. Comparisons were made with PD subjects ( $n = 52$ ) and control subjects ( $n = 59$ ) from Santiago Chile, a city having little association with mining. All subjects were assessed by two neurologists and PD diagnosis was based on UK Parkinson's Disease Society Brain Bank Clinical Diagnostic Criteria. From blood samples obtained from each individual, a decrease in global DNA methylation was observed in PD patients either exposed (49% of control,  $P < 0.001$ ) or not exposed (47% of control,  $P < 0.001$ ) to mining activity. Although there was no difference in levels of DNA methylation between PD patients from the two cities, there was a lower level of DNA methylation in control subjects from Santiago versus Antofagasta.