Short Communication

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Epigenetic modifications, clinical symptoms, and evidence of resilience associated with the trauma and stress of enslavement and institutionalized racism

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Abstract

A brain tumor is a collection of abnormal cells in the brain. Brain tumors can be either malignant (cancerous) or benign The large-scale capture, forcible kidnapping, and subsequent forced labor associated with the historic enslavement of Africans in the Americas exerted tremendous stress on their biologies. These stresses provided the most important substrate for selection in New World African populations. The environmental and social conditions of enslavement, post-civil war reconstruction, and Jim Crow racism in the United States were a connected sequence of traumatic events that have had an enduring, multigenerational impact on African Americans and their descendants. Enslavement is manifested partially in elevated cortisol levels and, in turn, have served as catalysts for other adverse health outcomes. Elevations in circulating cortisol levels have been indicated as a significant influencing factor in psychological stress disorders such as depression and post-traumatic stress disorder. Stress responses were reinforced no doubt by the long-term food insecurity associated with enslavement. Chronic food deprivation and food instability are thought to have further exacerbated the trauma associated with other adversarial environmental effects during this period. The impact of these constraints during key stages of the lifecycle is examined and the resulting clinical symptoms and epigenetic changes documented. There is evidence of a link between intergenerational epigenetic trauma, environmental adversity, and resilience. Resiliency is an adaptive response associated with lower psychopathology and a suite of specific physiological changes including alterations in cortisol levels regulating the inflammatory immune response and resistance to telomere shortening in response to stress. The feedback loops linking environment and human genomes are modified by resilient behaviors. In Legacy African Americans, resilience has emerged as a continuum of responses within the context of family, community, and religious beliefs as a consequence of Intergenerational exposures to 250 years of chattel slavery followed by 150 years of systemic discrimination. This resilience has ameliorated but not eliminated the impact of this trauma over approximately 16 generations of exposure. We suggest that resilience can exhibit a range of sustainability with protracted resilience involving deep behavioral modifications and concomitant physiochemical changes whereas superficial resilience may also show surface behavioral adjustments but is skin-deep and lacks the consistent physiochemical alterations of successful long term adaptation.

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Biography

Fatimah Jackson received her Ph.D., M.A., and B.A. (cum laude with Distinction in all Subjects) from Cornell University. Her doctoral dissertation research was on The Relationship of Certain Genetic Traits to the Incidence and Intensity of Malaria in Liberia, West Africa. She has conducted research on (and is particularly interested in): 1.) Human-plant coevolution, particularly the influence of phytochemicals on human metabolic effects and evolutionary processes and 2.) Population substructure in peoples of African descent, developing Ethnogenetic Layering as a computational tool to identify human microethnic groups and differential expressions of health disparities. Trained as a human biologist, Dr. Jackson has published extensively in such journals as Human Biology, Biochemical Medicine and Metabolic Biology, Journal of the National Medical Association, American Journal of Human Biology, Annals of Human Biology, BMC Biology, and most recently the American Journal of Public Health. Dr. Jackson's research has been funded by: USAID, Ford Foundation, Huber Foundation, Rockefeller Foundation, NIH (NIMHD and NHGRI), Wenner-Grenn Foundation, and EPA.