The New York African Burial Ground Collection contains the remains of enslaved Afro-descendant people living in colonial New York City in the 17th and 18th century. Previous investigation of those buried in the New York African Burial Ground Collection offers some indication that African and African Americans (forward referred to as Afro-descendants) had poor health. This conclusion was arrived at secondary to analysis of skeletons for stature, biomechanical stressors, and craniosynostosis, nutrition, biomechanics, and infection relationships (1). These data suggest that Afro-descendant people living at that time did not reach their full growth potential (1). In addition, mortality rates for Afro-descendant people during the 18th century in Philadelphia, indicative of other colonies in the U.S. show an increased rate relative to whites (2). The living and working conditions for Afro-descendant people living in urban areas were also more squalid and violent than those for whites and therefore increased the risk of diseases and death during these times. This is indicated by the high mortality rate for males and females assessed from the remains of the New York African Burial Ground population-15.8 % in 30-34 age group (3).

The Cobb Collection contains the human skeletal remains of primarily Afro-descendant peoples living in 19th and 20th century Washington DC.

Use of the Cobb Collection to Study Health Disparities Today

Marisela B. Gomez, M.S., Ph.D., M.D., M.P.H. (mb-gomez@hotmail.com)

Abstract

The investigation of the Cobb Collection and New York African Burial Ground Collection for patterns of stress-mediated changes in biomedical markers may offer some insight into the existence of health disparities today. Specifically, genetic analysis of the extent of DNA methylation of key genes which code for biological mediators, increased or decreased by stress, would help in understanding potential trans-generational epigenetic phenomena increasing the risk for diminished health outcomes in Afro-descendant people living in the U.S. today. Analysis for epigenetic changes or consistency of genes affecting the physiological pathway of stress in past and present Afro-descendants would help to understand risk factors for current health disparities.
It has largely been understudied but what research has been done suggests that the Afro-descendants had poor health (13, 14).

Current health inequities in the Afro-descendant population include differences in rates of death from stroke, coronary heart disease, infant mortality, and homicide; occurrences of pre-term birth, diabetes, periodontitis and life expectancy relative to whites (4). Populations today living in poverty also exhibit health inequities including asthma attacks, obesity, preventable hospitalizations, periodontitis, and diabetes (4). Because a greater percent of Afro-descendant people continue to live below the poverty line, attend college, and are employed when compared to their white counterparts this presents a double set of risk factors for health disparities in Afro-descendant people, not unlike the conditions faced by Afro-descendants of previous centuries. Research shows that when adequate emotional and environmental support are not in place, chronic stress can have an adverse effect on cardiovascular health, metabolism, waist circumference, autonomic and sympathetic nervous system (ANS, SNS), hypothalamic-pituitary axis (HPA), and inflammation (5). While some stress is normal and can be protective, prolonged stress results in a shift in the physiological homeostasis of the mind and body mediated through these systems or the allostatic load. Chronic stress results in an allostatic load or greater burden to be balanced and accommodated through greater demand of energy—referred to as allostasis (5) (figure 1). In chronic stress mediated through challenging environmental conditions the body and brain continuously attempts to maintain this allostasis or balance thereby placing greater demand on the physiological functions of the body and mind. Such chronic states of accommodation places the body at risk for illnesses otherwise managed or minimized when the body is not in such chronically active states. Recent research shows that the allostatic load is greater in African Americans adult and adolescents, neighborhoods of poverty, and social conflict with lower allostatic loads in people with social support and higher education (6, 7, 8, 9, 10). Such data support previous studies on increased blood pressure in African Americans attributed to racial discrimination and other minority groups facing stress of exclusion (11, 12).

Assessing the possible epigenetic effects from stress in colonial times of Afro-descendant people may help to elucidate causal pathways to current health disparities in Afro-descendants today. Many of the health outcomes in this population today are affected by various systems of the allostatic load mediated through stress. Previous research hint at differential effects on health outcomes on Afro-de-

---

**Figure 1**

A diagram illustrating the allostatic load and its components, including environmental stressors, major life events, trauma, and perceived stress, leading to physiological responses and adaptation.
scendant people in Africa and the United States suggesting variation in causal pathways affected by environmental conditions, such as slavery. The continued environmental stressors faced throughout slavery and subsequently provide a psychosocial causal pathway worthy of investigating in an effort to understand and address health inequities to day.***

References


8. Rainisch BK, Upchurch DM. 2013. Sociodemographic correlates of allostatic load among a national sample of adolescents: findings from the National Health and Nut-


