



US slaves' families were deliberately broken up, so it is hard for descendants to trace their roots.

GENOMICS

DNA and diasporas

Fatimah L. C. Jackson weighs up a study on the cultural politics of genetic testing among African Americans.

Genetic analyses, including research on the origins of Europeans, have been invaluable in clarifying disputed or unresolved aspects of population history. Yet studies of the genetics of African diasporas, including those in the Americas, are in their infancy. This is largely down to a lack of interest among majority-population researchers, limited historical knowledge of the groups' origins and dispersions, and a paucity of meaningful interdisciplinary collaborations between researchers exploring population substructure in the various African diasporas.

The Social Life of DNA by sociologist Alondra Nelson addresses the cultural politics associated with the nascent genetic insights into African American history. She competently explores many of the sociological ramifications of relying on commercially available genetic data that promise to fill in the genealogical gaps in African American lineages and provide the potential to heal the psychological wounds of lost ancestral knowledge. However, two fundamental elements are missing from the book. One is a robust

critique of the quality of the genetic findings discussed. The other is a thorough, up-to-date examination of the medical mistrust that is likely to grow among this vulnerable population once the fallacies and limitations of the current genetic-ancestry paradigm are more broadly recognized. The main problem is that 'precision medicine' is tailored on the basis of ancestry. So, because the ancestry data for people of African descent is incomplete and sometimes incorrect, the potential for providing precision medicine to these individuals is extremely limited.

Interest in the genetic history of African diasporas was spurred by complaints from African Americans that they had initially been excluded from both the Human

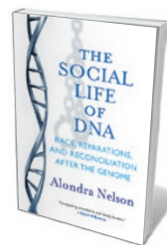
Genome Diversity Project and the Human Genome Project. These complaints led a group of African American social and life scientists to issue the Manifesto on Genomic Studies among African Americans in 1994. Soon, more federal funding became available to study health disparities in this group, primarily through the emergence in 2010 of the National Institute on Minority Health and Health Disparities (NIMHD), part of the US National Institutes of Health in Bethesda, Maryland. These infrastructural changes have resulted in increased funding for, and hence recognition of, the contributions of African American genetic and, later, genomic studies to differences in health outcomes. This body of research indicates that there are high levels of genomic heterogeneity within this population, so studies that take a more detailed account of an individual's geographic and historical background are required.

Improvements in technology and sampling have allowed researchers to detect 'ancestry-informative markers', such as the significant differences in population frequency of particular blood group alleles. The question of whether we can meaningfully set parameters on African American diversity took on a genetic focus with the rise in direct-to-consumer genetic testing and interpretations based on limited uniparental markers.

By 2004 it became clear that some ancestral verification could be achieved for African Americans through the study of mitochondrial DNA (mtDNA) from New York City's African Burial Ground National Monument. An estimated 15,000 people were buried here during the seventeenth and eighteenth centuries; more than 400 bodies have been recovered and evaluated. The database of mtDNA, Y-chromosome and autosomal markers has grown, but remains incomplete and inadequate for comprehensive 'root-seeking': moreover, the contemporary surrogates for a meaningful number of African American ancestral populations are not yet included.

Nelson does not mention it, but the Cobb Research Laboratory (which I direct) at Howard University in Washington DC has begun to augment that database by extracting DNA from skeletal, dental and bioarchaeological samples going back over 400 years in African American history. Although there have been significant improvements in our understanding of the identity and distribution of several African diasporic populations, we are far from understanding the source populations of Africans in the Americas, or the environmental factors that influence gene-expression patterns of African Americans today.

The peculiarities of US slavery and the cruelties of Jim Crow racism — the enforcement of state and local laws that allowed segregation into the 1960s — after emancipation systematically destroyed not only families but the foundations of a robust knowledge of



The Social Life of DNA: Race, Reparations, and Reconciliation After the Genome
ALONDRA NELSON
Beacon: 2016.

▶ ancestral identity among African Americans. In his 1845 *Narrative of the Life of Frederick Douglass*, the eponymous, formerly enslaved abolitionist and statesman exemplified the quest for that identity, writing: “A want of information concerning my own was a source of unhappiness to me even during childhood.”

The inability of African Americans to access their original names, language, tribe and clan affiliations or regional origins in Africa has left wounds in the psyches of many, and has made ancestry reconstruction a high priority. The intentional destruction of families during slavery contributes to the damage, and to the complexity of the search. Finding relatives separated by enslavement was usually a person’s first task after emancipation; often full reunification was impossible.

In the United States, identity is disproportionately linked to phenotype, and in ethnic-minority groups is associated with levels of self-confidence, performance, and overall positive life outcomes and behaviours. Commercial purveyors of ‘direct-to-consumer’ genetic-ancestry testing have identified a vulnerable and accessible market in many African Americans. Unfortunately, the results fall



Researchers at Howard University extract DNA from samples.

decidedly short of the marketing hype. Many scientists deem these tests and their interpreted results ‘recreational genetics’; they are not peer-reviewed, and work with unknown reference databases. Companies have sequestered information from public databases to build their own proprietary databases, which are inaccessible to scientific scrutiny.

Today, a perfect storm rages at the nexus of commercial opportunism (targeting, moreover, a socio-economically disadvantaged

group), biomedical and technological inadequacy, historical naivety and the scars of the institutionalized loss of ancestral ties. How will inaccurate and inadequate genetic-ancestry information be reconciled with the promise of personalized, precision medicine when the latter depends on accurate and comprehensive genetic ancestry data? Perhaps this will be the topic of another sociological study.

The Social Life of DNA is a lucid, if insufficiently critical, chronicle of the sociocultural maturation of a population as its individuals use new resources to recognize and develop an expanded set of identities. The book will date quickly because this process, and the science undergirding it, is dynamic. Still, it is an admirable first

effort to explore the initial implications of genetic root-seeking among people of African descent, with much room left for adding a necessary, in-depth biological perspective on the topic. ■

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MULTIDISCIPLINARITY

Collaborative to the core

Rick Rylance applauds a study on the lean new model for research teamwork.

The management of research processes and systems has evolved significantly over the past few decades. There has been, for instance, an erosion of the distinction between ‘pure’ and ‘applied’ work, conceptually and in practice. And there has been a rise in collaborative relationships, both between universities and between universities and other agencies such as businesses, public-sector institutions and charities. This process is becoming increasingly international.

In *The New ABCs of Research*, Ben Shneiderman examines the causes of these changes. Some will be familiar. Interdisciplinary work encourages diverse partnerships, and electronic communications enable rapid interaction and dissemination. Research teams are replacing what Shneiderman calls the myth of the lone researcher. The pursuit of both commercial advantage and public benefit are stimulating collaboration; data and resources are being pooled; and governments are supporting international research cooperation for diplomacy and trade. Shneiderman,

a specialist in information technology and information systems, delivers a shrewd and timely account of these developments.

He champions collaboration, teamwork and practice-based research. The book intends to serve as a guidebook for “students and junior researchers” and as a “manifesto for change, particularly for senior researchers and policymakers”. There is some tension between these aims. But his argument is coherent: senior scientists and policymakers do need to adapt the present to assist the future, and the generation now being trained, or starting their careers, will carry the torch. Shneiderman has stimulating thoughts on



The New ABCs of Research: Achieving Breakthrough Collaborations
BEN SHNEIDERMAN
Oxford University Press: 2016.

project-based teaching at the undergraduate level and advice for early-career researchers on winning grants, publication and effective writing. All this is hands-on and helpful, and one wishes it had been said more loudly in the past. But his proposals for policymakers do not extend much beyond exhortation.

The core principles of *The New ABCs of Research* are delivered in two recurrent acronyms. The ABC of the title stands for “applied and basic combined”, whereas SED is “science, engineering, and design”. The latter, Shneiderman argues, can deliver the former (which also stands for, in the book’s subtitle, “Achieving Breakthrough Collaborations”, Shneiderman’s stated ambition).

Of the three SED elements, Shneiderman is unadventurous on science and engineering; on design he is more stimulating. Drawing on contemporary theories of “design thinking”, he notes that design is not a matter of efficiency or refinement, but rather a “human-centered process” essential for the discovery of meaning and function. He sees it as imbued