

In 2010 alone, the debates and assertions arising over genetic analysis were almost as numerous as the genetic practices themselves. In April, the Havasupai Indians, who reside within the Grand Canyon, won their fight with academic geneticists over the analyses of their members' genes and history, which the tribe had never sanctioned. In May of this same year, Walgreens announced that it was reconsidering its plan to sell Pathway Genomics's do-it-yourself at-home DNA kit that infers genetic predisposition for several diseases after the FDA ordered testing companies to "prove the validity of such products."³ In July, DNA analysis was credited with leading to the arrest of a suspect in the twenty-five-year-old so-called "Grim Sleeper" serial murders in Los Angeles. In September, as news outlets announced that the genome of an Irish man had been fully sequenced for the first time under the headline "The Irish Are Different—Genetically." That same month, a court in Iceland debated the validity of DNA findings regarding the claims of a young Filipino woman that her daughter was the child of deceased chess champion Bobby Fischer.⁴ This diverse array of cases highlights how DNA has become central to the claims and counterclaims of many stakeholders—from university researchers to ethnic communities, from consumers to entrepreneurial companies to district attorneys, and from mothers to citizens of a nation.

Coding Race

As the "Irish genome" case suggests, one central element in the new genetics has been the remaking of individual and collective identity and the rethinking of the meaning of race and ethnicity.⁵ The implications are not merely rhetorical. As Henry Greely has noted, "with enough data, population geneticists can estimate how closely related different populations of humans are to each other. . . . [But] genetically based historical information could have modern political implications."⁶ As Greely anticipated, DNA analysis—much-sought in order to resolve questions of ancestry, community, and justice, among other matters—has become a potent political touchstone as well as a social, legal, and historical one.

Genetics today has become a standard for shaping how we think about our collective past; at the same time, this politics of genetics has real effects in the present, for example, by impinging concretely upon the rights of groups within a nation-state or redefining the very boundaries of kinship and nationality. In addition, these genetic claims can shape how future rights and responsibilities tied to these relationships are articulated. The mere hint that genetic markers are distributed in different frequencies across populations has led some people to quickly treat such variation as a proxy for racial and ethnic differences, lending renewed authority to biological conceptions of human difference and providing fodder for national debates over belonging, self-definition, and political power.⁷ Although many scholars have long agreed that race is a social phenomenon rather than a biological fact, these recent developments in DNA analysis have blurred this distinction.⁸ In these and many other ways, the rise of this singularly

potent science has transformed scholarly and popular opinion about the “nature” of race.

Since the early-twentieth century, genetics scientists have had a rocky relationship with the politics of race and nationality. The flowering of modern genetics—after the rediscovery of Mendel’s work on inheritance of traits—brought with it bold and specious claims about how biology and heredity defined race and racial possibilities. By the mid-twentieth century, in response to these overblown claims most scientists insisted that races in the classic sense do not exist.⁹ They regarded the supposedly fundamental human divisions conceived by their nineteenth century predecessors—such as Caucasian, Mongoloid or Asian, and Negroid—as problematic, because these categories were based on superficial differences only. But in recent decades, genetic science has changed its tune. To be sure, many geneticists would insist that in revisiting race they are not endorsing old racial thinking, but only creating more fine-grained statistical groupings of gene frequencies and populations which, by chance and science, overlap considerably with older racial categories.¹⁰ Yet their analyses of genes across human populations have provoked a resurgence in race thinking—and fostered efforts, not only to locate race in biology, but also to connect people today to their own scientific ancestors. In these ways, genetics has returned to its own controversial past, using gene-level differences across groups, enormous similarities, and a relative handful of variations across genomes as a template for reconfiguring groups and for building new notions of racial difference for a new era.

Given the field’s contentious history, it should not surprise us that each new assertion about genetic or biological group identity becomes a collision point—a nexus of often heated discussion about evidence, science, and political authority. Press headlines that readily draw conclusions about ancestry and behavior, intelligence, or drug metabolism suggest that the social conceptualization of race may be losing ground in the era of genetics or they might be seen as illustrating the point that some “[s]cientists never did give up on [its] biological meaning,” as sociologist Jenny Reardon proposed.¹¹ Furthermore, a number of geneticists and biological anthropologists—as well as sociologists and political scientists—have begun making bold claims based on variations of seemingly distinctive gene markers across populations, ranging from contentions about racial predisposition to cancer to the genetic transmission of political orientation.¹² Analyzing these flashpoints and tensions over the claims and credibility of genetic science are among this book’s central concerns, for they have dramatic implications for the American discourses about race and biological difference, and pose potentially far-reaching implications in media and policy settings.

Genetics today has become a novel yet thorny enterprise—a set of laboratory practices packaged as commodities that are undergirded by far-reaching intellectual, scientific, and technical assumptions about human difference. This book seeks to chart the development of how these assumptions about human difference are often bundled—sometimes unwittingly—into diverse genetic endeavors. In some

instances, genetics and DNA analysis are being deployed as new technological advances to address old, longstanding questions about identity and history. In other instances, we are witnessing the emergence of new questions and claims about the meaning of human difference and relations of shared or broken history based on the premise that genetics can offer answers and remedies. Our aim is not to specify precisely when genetics provides access to the truth and when it does not. Although our essays have much to say about the credibility of genetic evidence in law, medicine, politics, and consumer culture, we seek primarily to describe and analyze those social contexts and political settings. In so doing, we explore how the authority of genetic evidence about race and history are linked to the social, political, and cultural utility of racialization.

As the essays in this volume make clear, genetic science does not exist apart from its context and uses; nor can its claims be fully understood apart from these contexts and uses. What is particularly notable is the way in which the genetic ventures examined in the pages ahead are enacting “racial projects,”¹³ in which race (including whiteness, and also to some extent, ethnicity) is being reconstituted, and in which notions of race and the past offer both liberating possibilities (for example, a feeling of belonging to the nation, release from false imprisonment, the promise of better health, social healing) and also confinement (for example, racial reification and the biological essentialization of the family and groups). Herein lies one paradox of genetics and the unsettled past: in relying upon genetic analysis to resolve historical mysteries or clear the way for restitution and healing, we are at the same time manipulating and transforming already politicized notions of race and the past, and implicitly making claims about the social, political, and personal significance of biological human difference. Throughout this volume we also ask how ancestry testing has transformed our notions of kinship, placing *en famille* those individuals whose association is based on genetic markers and pushing aside notions of family that are based on social norms, interaction, or cultural codes. To what extent is genetically fashioned genealogy overtaking other, long practiced ways of rendering the family and, in turn, the community and the nation?

At the end of the day, we argue, only a multidisciplinary approach can illuminate this collision of DNA, race, and history, and help us to identify and expose the cultural, ethical, social, and philosophical challenges and possibilities posed by genetics. Understanding and dissecting the implications of DNA in multiple realms is a complex undertaking, for its uses span across the realms of politics, the courtroom, the laboratory, the clinic, and the media.¹⁴ The pages ahead therefore bring together scholars from history, sociology, anthropology, molecular biology, law, medicine, cultural studies, ethnic studies, and other fields to examine the emerging, and often contested, connections among race, genetics, and history. In these chapters, readers find discussions of the historical use of DNA (and claims made about DNA) in biomedicine, in genealogy, in the law, in epidemiology, and in the complex processes of memory, reparation and nation building. These

diverse essays also put forward commentaries and critiques of the uses and misuses of genetic race analyses within particular social settings and across cultural and national boundaries.

Genes, Kinship, and Historical Revisionism

Bold claims have become commonplace in the selling of genes as historical tools. In his influential best-selling work, *The Seven Daughters of Eve*, Bryan Sykes, the geneticist and founder of the genetic genealogy company Oxford Ancestors, provocatively proposes that the advent of the genetics era may mark the end of historical inquiry as we know it (see Marianne Sommer's detailed discussion of Sykes's enterprises in chapter 13).

Within the DNA is written not only our histories as individuals, but the whole history of the human race. With the aid of recent advances in genetic technology, this history is now being revealed. We are at last able to begin to decipher the messages from the past. Our DNA does not fade like an ancient parchment; it does not rust in the ground like the sword of a warrior long dead. It is not eroded by wind or rain, nor reduced to ruin by fire and earthquake.¹⁵

In this volume, we explore whether we have indeed entered a new stage of historical understanding dominated by genetics and bereft of culture as Sykes suggests. If this is true, what are the implications of this new rendering of the past for how we understand race in various domains? Genetics may well be transforming the very way we define history, but it is also clear that the evidence and concepts guiding this genetic/historical revisionism must be examined closely before the nature and limits of that transformation can be fully assessed.

All efforts to connect to the past are bound to be fraught with supposition and speculation, and troubled by problems of credibility of evidence. In the annals of history, new evidence and novel methods of analysis come and go, provoking the very type of question of history, revisionism, and memory that are raised by genetic analysis. Of course, what makes the genetic revision of race and history so compelling is its intimate implications for individuals, its widespread marketing and popularity, its close connection to a set of commercial products, and the promise it offers to unlock past mysteries.

The new genetic data have quickly produced theories of human difference and kinship, even as they have provoked debate about the nature of the data collection and DNA analysis, about how and whether the resulting genetic evidence truly relates to social categories of identity, and about whether the evidence indeed offers a portal into the past. Despite such uncertainties, the analysis of sequences of genes—when compared across large data sets gathered in patchwork fashion around the globe—is being used to provide insights about the past and relationships among people in cases where there may be little other connection.

In some cases, this analysis comes into conflict with existing knowledge—most notably when geneticists proclaim to Native Americans, for example, that they are not originally American but (like others) merely earlier immigrants from Europe. In the process, DNA analysis is also re-creating how we know the past and even how we now define the social world.

THE OPENING PART (entitled “History, Race, and the Genome Era”) features three essays by Keith Wailoo, Alondra Nelson, and Catherine Lee that describe the stakes and limits of DNA analysis—for individuals grappling with the personal questions of race, identity, and the past; for groups and stakeholders in different national settings who use this information in adjudicating conflicts and in pursuit of reconciliation and social justice; and for the fraught political enterprises of nation-building around ideas of biological difference. Wailoo’s essay offers a personal look at the stakes for one individual pondering multiple lineages and historical connections to the past. Nelson’s illuminates the stakes for social groups and nations, viewing genetics in the broader politics of group struggles for justice and reconciliation. And Lee’s explores the implicit role of gender in this genetic turn and its implications for familial and nation-building claims. These essays see these realms—the personal, the social, and the political—as among the most important for understanding the stakes of DNA analysis today.

A second part (entitled “Decoding the Genomic Age”) takes us into the science of genetic analysis, revealing precisely how genetic material is collected and analyzed, turned into detailed claims about race and identity, and how such knowledge is reworked in settings from laboratories to courtrooms and in the new entrepreneurial practices of genetic genealogy. Abram Gabriel provides an academic biologist’s perspective (in contrast to that of a commercial biologist) on the advent and limits of genetic evidence about difference, and a critique of the curious rise of personalized genomics companies, with their far-reaching claims about connecting people to their ethnic roots. Scientists’ efforts to construct and categorize populations have an extensive history, and Lundy Braun and Evelyn Hammonds offer historical reflection on the longstanding dilemma of racial classification and its challenging implications for gene theories of race today. Peter Chow-White situates the fascination with genetics in the broader context of the technical possibility and cultural allure of manipulating large databases. What emerges here is a portrait of the complexity and contingency of genetic classification—the ways in which these new developments relate to the long history of racial bio-typologies; limitations in how DNA scientists make claims about history using specific techniques (from Ancestry Informative Mapping (AIMS) to forensic DNA phenotyping); how geneticists strategically bracket off and answer objections to their claims; how the manipulation of large-scale databases shape these new ideas about identity; and how novel forms of genetic identity are made in the process. Also in this part, the authors ask how we should decode this genomic age, by looking closely at how genetic evidence and racial theories are developed,

interpreted, and manipulated in three realms: the courts and policing, the clinic, and the laboratory. In two separate essays, legal scholar Jonathan Kahn and anthropologist/ethicist Pamela Sankar examine American legal practice as it merges forensic DNA with race thinking. Sociologists of science Ramya Rajagopalan and Joan Fujimura examine how particular techniques (such as admixture mapping) depend upon social definitions of race which are then reified in the science. Medical anthropologist Sandra Soo-Jin Lee examines the new field of pharmacogenomics, the notion of medicine tailored to individual and group identity, and the political economy of difference upon which the enterprise is founded.

A third part (entitled “Stories Told in Blood”) turns to an analysis of the poignant, if flawed, social narratives about DNA, blood, and racial identity that are woven by genealogists, political actors, and others in the present and used strategically in order to recount the past and lay claims on the present and future. This section describes how DNA is being used to rewrite notions of race, kinship, and nation, and how such genetic renderings are employed in the pursuit of reparations, justice, nation building, and reconciliation. In a study of genetic genealogy in Quebec, cultural anthropologist Nina Kohli-Laven points to the influence of French Canadian identity politics on biological renderings of the past. Bioscience scholar Amy Hinterberger relates the unfolding debate over genetic ancestry in Canada to the nation’s multicultural policy regarding “visible minorities” and “Aboriginal” people; with this broad context in mind, historian of science Marianne Sommer analyzes the limits of anthropological genetics as applied history. Literary scholar Priscilla Wald unravels how these narratives of technological innovation and identity have long been embedded in commercial, colonial, and political claims and interests. In these essays, then, we see how anthropologists, sociologists, historians, and literary scholars track the expanding impact of genetics for how we understand history. What becomes evident is the way in which the past is contested and how the fraught knowledge of genetics is deployed in service of contemporary political and social goals of cultural inclusion, political exclusion, and mediating social relationships.

The three final essays in this part add further richness to our understanding of the racially tinged claims, counterclaims, and stakes at the heart of these kinship-genetics-history disputes. Jennifer Hamilton, an anthropologist and legal studies scholar, explores genetic ancestry tracing and the legal status of the “genetic ancestor” in the context of recent court cases. Sociologist Michelle M. Jacob examines the use, politics, and limits of genetic analysis in Native American claims regarding land, belonging, and identity. Turning to post-apartheid South Africa, historian Jay Aronson illuminates the forensic DNA profiling of the remains of disappeared black political activists from the apartheid era as part of the politics of reconciliation and repair in that fraught national context. Here, as throughout the volume, we examine the political, scientific, and social implications of calling upon genetic analysis (in Quebec, the United States, South Africa, England, and elsewhere) to perform a kind of racially charged cultural work—to

repair and recast the past; to settle claims; to establish the parameters of kinship, belonging, and national identity; to validate proper and rightful claims; and to reshape identity in the present and possibly the future.

Any study of genetic analyses' multiple implications for race and history demands a wide methodological and geographic sweep, multiple voices, and diverse approaches to science and its meaning. As such, some of the essays in this volume look closely at legalistic reasoning and argumentation in the court; others examine closely the nuances of biological analysis; yet others scrutinize cultural and literary representations of genes and identity; and others explore personal meanings or political speech or sociological dimensions of genetics. The diversity of approaches highlights, in its own fashion, the complex ways in which this enterprise is attempting to rewrite normative views of kinship, identity, memory, ancestral rights, national identity, and social justice. Moving us inside this new enterprise, and also beyond old debates about whether race is biological or social in nature, we emphasize the importance of understanding the expansive "social life of DNA" particularly in relation to societies' already fraught and complex narratives of race and history.¹⁶

DNA analysis in our time is not merely about predicting a future that is supposedly written in our genes, warning us, for example, about our predisposition to disease. The practice also makes fundamental, if problematic, claims about the present and the distant past—and as such, the claims, credibility, and applications of the genetic sciences must be examined closely and in multiple venues. It would be a mistake for those involved with this enterprise—at the clinical, legal, or scientific level—to ignore these ethical, legal, and epistemological questions swirling around the field. Yet in the concluding part (entitled "The Unsettled Past"), sociologist Reanne Frank examines the disturbing tendency of genetics advocates and entrepreneurs to mischaracterize critiques as stemming from ignorance of the enterprise, fear of the truth, or political correctness. The scientific and social challenge, however, is not so simple. As a final essay by Keith Wailoo, Alondra Nelson, and Catherine Lee makes clear, there are questions of evidence and credibility that sit at the heart of genetic claims about history and race, and precisely because of their sweeping implications in politics, law, and society, they must be investigated carefully. With the maturity, commercialization, and rapid expansion of the genetic sciences (particularly into the realm of the so-called racial past), the time is long behind us when geneticists could ignore the cultural world in which their work is applied or ignore the influence of cultural politics on their science. As we see it, the past is one of the principal arenas where this new story of genetic knowledge is being told and where genetic authority is being developed. The essays that follow, then, take us into the center of this conflicted terrain to reveal how historical ideas are refashioned and unsettled through the lens of DNA, to see how genetic claims about race and difference are concocted, and to observe how the distant, otherwise unreachable past has become the site for debate and conflict in the present. From this vantage point, we can observe that the collision of DNA, race, and history is as

much about remapping the unsettled past as it is about shaping the unsettled present and imagining the future stretching out before us.

NOTES

1. Adam Geller, "Consumers Turn to Their DNA for Answers," *Boston Globe* (March 28, 2006) www.boston.com/business/personalfinance/articles/2006/03/28/consumers_turn_to_their_dna_for_answers/ [Accessed March 19, 2010].
2. The literature in the field of race and genetics has grown exponentially in recent decades, growing alongside controversies over the meaning of markers and biological indices of difference. Notable works include, Catherine Lee, "'Race' and 'Ethnicity' in Biomedical Research: How Do Scientists Construct and Explain Difference in Health?" *Social Science and Medicine* 68 (2009): 1183–1190; Alondra Nelson, "Bio Science: Genetic Genealogy Testing and the Pursuit of African Ancestry," *Social Studies of Science* 38 (October 2008): 759–783; Adele E. Clarke, Janet Shim, Sara Shostak, and Alondra Nelson, "Biomedicalizing Genetic Health, Diseases and Identities," in *Handbook of Genetics and Society: Mapping the New Genomic Era*, ed. Paul Atkinson, Peter Glasner, and Margaret Lock (London: Routledge, 2009); Deborah Bolnick, Duana Fullwiley, Troy Duster, Richard Cooper, Joan H. Fujimura, Jonathan Kahn, Jay S. Kaufman, Jonathan Marks, Ann Morning, Alondra Nelson et al., "The Business and Science of Ancestry Testing," *Science* 318 (2007): 399–400; Keith Wailoo and Stephen Pemberton, *The Troubled Dream of Genetic Medicine: Ethnicity and Innovation in Tay-Sachs, Cystic Fibrosis, and Sickle Cell Disease* (Baltimore: Johns Hopkins University Press, 2007); Keith Wailoo, *Dying in the City of the Blues: Sickle Cell Anemia and the Politics of Race and Health* (Chapel Hill: University of North Carolina Press, 2001); Ian Whitmarsh and David S. Jones, *What's the Use of Race?: Modern Governance and the Biology of Difference* (Cambridge, MA: MIT Press, 2010); Jenny Reardon, *Race to the Finish: Identity and Governance in an Age of Genomics* (Princeton, NJ: Princeton University Press, 2005). On the cultural, political, and ideological allure of modern genetics in American society, see Dorothy Nelkin and M. Susan Lindee, *The DNA Mystique: The Genes as a Cultural Icon* (Ann Arbor: University of Michigan Press, 2004); Richard Lewontin, *Biology as Ideology: The Doctrine of DNA* (New York: Harper, 1993); Troy Duster, *Backdoor to Eugenics* (New York: Routledge, 1990); Daniel J. Kevles, *In the Name of Eugenics: Genetics and the Uses of Human Heredity* (Berkeley: University of California Press, 1985).
3. David Brown, "FDA Challenges Companies over DNA Tests Sold to Customers," *Washington Post* (June 11, 2010) www.washingtonpost.com/wp-dyn/content/article/2010/06/11/AR2010061106097.html [Accessed August 2010].
4. "When Two Tribes Go to War," *Nature* 430 (July 2004): 500–502; Amy Harmon, "Indian Tribe Wins Fight to Limit Research of Its DNA," *New York Times* (April 21, 2010); Jennifer Epstein, "DNA Test Replaces Summer Reading Project at UC-Berkeley," *USA Today* (May 18, 2010); Rosemary Black, "Freshmen at UC Berkeley Can Find Out Alcohol Tolerance from DNA Test," *New York Daily News* (May 22, 2010); Rachel Gross, "A Few Wrinkles in UC Berkeley's Plan to Test Freshmen's Genes," *New York Times* (May 24, 2010); Robert Sanders, "UC Berkeley Alters DNA Testing Program," UC Berkeley Press Release (August 12, 2010) berkeley.edu/news/media/releases/2010/08/12_dna_change.shtml [Accessed August 2010]; "At-Home Genetic Test Kit Hits FDA Wall," *ABC News* (May 13, 2010); Daniel B. Wood, "'Grim Sleeper' Case Raises Privacy Concerns over Use of DNA," *Christian Science Monitor* (July 8, 2010); Maura Dolan, Joel Rubin, and Mitchell Landsberg, "DNA Leads to Arrest in Grim Sleeper Killings," *Los Angeles Times* (July 8, 2010); Dylan Loeb McClain, "Fischer's Paternity Test Released," *New York Times* (September 9, 2010); Rachel Panizzo,

- "The Irish Are Different—Genetically," *BioNews* (Published by the Progress Educational Trust), (September 13, 2010).
5. Barbara A. Koenig, Sandra Soo-jin Lee, and Sarah S. Richardson, eds., *Revisiting Race in a Genomic Age* (New Brunswick, NJ: Rutgers University Press, 2008); Evelyn Hammonds and Rebecca Herzog, eds., *The Nature of Difference: Sciences of Race in the United States from Jefferson to Genomics* (Cambridge, MA: MIT Press, 2009).
 6. Henry T. Greely, "Legal, Ethical, and Social Issues in Human Genome Research," *Annual Review of Anthropology* 27 (1998): 478.
 7. For a recent scientific perspective, see Neil Risch, Estaban Burchard, Elad Ziv, and H. Tang, "Categorization of Humans in Biomedical Research: Genes, Race, and Disease," *Genome Biology* 3 (July 2002), genomebiology.com/2002/3/7/comment/2007.
For social science perspectives on these debates, see Nadia Abu El-Haj, "The Genetic Reinscription of Race," *Annual Review of Anthropology* 36 (2007): 283–300; and Troy Duster, "Race and Reification in Science," *Science* 307 (February 18, 2005): 1050–1051.
 8. See, for example, one manifestation of this tension in Ruth Hubbard, "Constructs of Genetic Difference: Race and Sex," and in David L. Hull, "Species, Races, and Genders: Differences Are Not Deviations," both from *Genes and Human Self-Knowledge: Historical and Philosophical Reflections on Modern Genetics*, ed. Robert Weir, Susan C. Lawrence, and Evan Fales (Iowa City: University of Iowa Press, 1994).
 9. See, for example, the influential paper by Richard Lewontin, "The Apportionment of Human Diversity," *Evolutionary Biology* 6 (1972): 381–398. Here the evolutionary biologist and geneticist argued that "human races and populations are remarkably similar to each other, with the largest part by far of human variation being accounted for by the differences between individuals. Human racial classification is of no social value . . . no justification can be offered for its continuance" (397).
 10. Risch et al., "Categorization of Humans in Biomedical Research."
 11. Jenny Reardon, "Decoding Race and Human Difference in a Genomic Age," *differences: A Journal of Feminist Cultural Studies* 15 (2004): 38–65.
 12. See, for example, John R. Alford, Carolyn L. Funk, and John R. Hibbing, "Are Political Orientations Genetically Transmitted?" *American Political Science Review* 99 (2005): 153–167.
 13. Michael Omi and Howard Winant, *Racial Formation in the U.S.: From the 1960s to the 1990s*, 2nd ed. (New York: Routledge, 1994), 56.
 14. In using this approach, we follow in the footsteps of Koenig, Lee, and Richardson, whose recent edited volume *Revisiting Race in a Genomic Age* also considered the themes of race and genetics from an multidisciplinary perspective. In this volume, we also extend the discussions inaugurated in that important anthology by looking closely at the socio-political circulation of genetic analysis, especially its mediation in debates about history and ancestry.
 15. Bryan Sykes, *The Seven Daughters of Eve* (New York: Norton, 2002), 1.
 16. Alondra Nelson, "The Social Life of DNA," *Chronicle of Higher Education* (September 3, 2010), Bro.