

1 Introduction

What we've shown is the concept of race
has no scientific basis.

—J. Craig Venter, *International Herald Tribune*, 2000

Those who wish to draw precise racial boundaries
around certain groups will not be able to use science
as a legitimate justification.

—Francis S. Collins, *Cancer*, 2001

We could test once and for all whether
genetic race is a credible concept.

—Aravinda Chakarvarti, *Nature*, 2009

A GIANT FLATSCREEN with the words “Decoding the Book of Life: A Milestone for Humanity” blinked in the background. The velvety blue of the flag in the corner of the room took on nuanced textures as cameras flashed. On June 26, 2000, President Bill Clinton, flanked by genome mappers Craig Venter and Francis Collins, announced that the human genome had been mapped: “Today, we are learning the language in which God created life. . . . I believe one of the great truths to emerge from this triumphant expedition inside the human genome is that in genetic terms, all human beings, regardless of race, are more than 99.9 percent the same.” Those present hailed genomics as the most transformative science in history—a milestone in human intellectual development, a sign of the arrival of geopolitical unity, and evidence of the essential fraternity of humanity. The most powerful scientists of the day joined Clinton in stating that scientific investigation into race would go no further. Genomics had once and for all closed the door on the idea of biological race.

When millennial headlines of the first map of the human genome declared the death of race in biology, no one suspected that by the end of the decade it would reemerge as the subject of intense genomic investigation. Speaking on prime-time television, across international news columns, in an array of public forums, and on Capitol Hill, the leaders of the Human Genome Project made the statement “there’s no biological reality to race” a veritable national mantra. Pointing to humanity’s minuscule 0.01 percent difference in our 3.2 billion nucleotides, scientists promised an end to centuries of scientific doubt, existential angst, and social struggle over racial difference.

It has come as a surprise, then, that since the mapping of the human genome, racial research has reemerged and proliferated to occupy scientific concerns to an extent unseen since early twentieth-century eugenics. President Clinton’s celebratory remarks in 2000 certainly did not anticipate this outcome, much less that the renewed interest in racial research would come from within the inner halls of genomics itself. Human Genome Project reports of the summer of 2000 suggested that race was a dead issue in the sciences; yet, as early as May of the following year, newspapers were noting a new beginning for race-based medicine.¹ Biologists have since published more articles on race than ever.² In contrast to Clinton’s seeming confidence that the debate about the biological legitimacy of race was over, a discursive explosion, along with a mushrooming of technologies developed in the service of testing, manipulating, or capitalizing on race, has made this decade of science one of the most race-obsessed ever. Scientists have scrambled to rewrite the book on race. Many have communicated a wide range of controversial views on race in major news media sources across the globe, views shared by powerful policymakers and public health organizations.

This book analyzes genomics’ rapid shift from a science uninterested in race to one devoted to its understanding.³ Examining the ways in which these scientific ideas are conceived, produced, and conveyed within the realm of science is crucial to comprehending shifting discourses and experiences of race in wider society. After all, authoritative sciences have bred humanity’s most powerful racial ideas.⁴ Furthermore, respected scientists have devised some of the most exploitative social policies based on their working understandings of race. Science and politics have long intersected to create tenacious systems of racial inequality—consider, for example, the role of zoology, anthropology, and ethnology in the slavery debates of nineteenth-century Europe and the United States; the linkages between evolutionary theory, Social Darwinism, and eugenics in

Progressive Era America; and the range of twentieth-century experiments that include Nazi twins studies and U.S. government-led syphilis and gonorrhea experiments in Guatemala and Tuskegee. The sociopolitical salience of scientific racial thought has been no less menacing in the case of newly emerging sciences than in authoritative ones. In fact, concepts of race have typically coevolved with new avenues in scientific innovation and expansion—looking back, we see each era’s most vocal racial theorists at the helm of new scientific professional societies, editorial boards, state advisory councils, and policy leagues.⁵

Yet what is so fascinating about the case of racial science in the first decades of genomic research is that it arrives on the heels of three quarters of a century of policy designed to *prevent* research into biological differences in race. The United Nations Educational, Scientific, and Cultural Organization’s (UNESCO) Statements on Race of the 1950s ushered in a series of collaborations between biological and social scientists who worked to dispel notions of innate racial behavior or inferiority. UNESCO and a host of other government agencies and professional associations followed these statements with declarations, meetings and seminars, and informational databases. In successive decades, powerful organizations such as the American Association of Physical Anthropologists, the International Union of Anthropological and Ethnological Sciences, the American Sociological Association, and the American Anthropological Association issued or updated their own statements on race, disavowing biological explanations of race and arguments for racial inequality. High-profile evolutionary biologists authored popular science books that abandon the notion of biological racial difference, and social advocacy groups used such statements to fight racism in their communities. The consensus at the end of the twentieth century was that to be properly antiracist one had to demarcate the social from the biological. Scientists who maintained a “colorblindness” or “race neutrality” suggested that by ignoring features and morphology like skin color when interacting and making decisions, scientific and otherwise, racism would abate.⁶ This orthodoxy compelled scientists to look for alternate ways to represent human variation.⁷ Explaining race became the domain of social scientific fields for over fifty years.

Despite this recent history, since the millennium’s start we have seen genomics featured as the single authoritative source of racial expertise across a wide range of media. Headlines have run: “Race reemerges in a PC world,” “Genome mappers navigate the tricky terrain of race,” “Race is seen as real guide to track roots of disease,” and “Race seen as crucial to medical research.”⁸ Months after

the initial publishing of the human genome sequences, in June 2000, genomics aired their views in internationally read periodicals like the *International Herald Tribune*, the *New York Times*, the *Financial Times*, the *Wall Street Journal*, and the *Economist*. Ancestry experts appeared repeatedly on NBC, ABC, CBS, PBS, and the BBC. A number of scientists espoused their personal takes on race in prominent biographies.⁹ At the same time, unless quoted in relation to the genomic debate, purely social explanations of race all but receded from the news.¹⁰

Throughout the mass media genomics has come to be regarded as the new authority on race. A Google search on “science of race” and other similar terms in 2010 brought up thousands of websites where genomics was consistently touted as the corrective to the pseudoscience of past racial science.¹¹ Everyone from Wikipedia to the Health Department credits DNA with providing the ultimate truth about race. Influential science writers have rewritten human history in books dedicated to advancing genomics as the rubric for human variation and race.¹² A cluster of reality shows and documentaries with titles like *Motherland: A Genetic Journey* and *Who Do You Think You Are?* have sprung up to offer genomic solutions to ancestral lineages blurred by the legacy of slavery. This is no surprise in a world where the gene is a leading cultural icon.¹³ Even leading scientists have published popular science books about race. Some have made films and toured the world delivering political messages based on their genomic findings. In science and medicine, but also the public sphere, genomics is seen as the leading expert authority on what it means to be human.

This dizzying change begs a few questions: Why has race once again become biologically important? How can an idea considered non grata in the biological sciences in 2000 become, by 2005, the focus of biology’s pinnacle field? Why have the world’s leading scientists embraced its study? What are genomicists saying about race, and how does it figure into practices in the lab, clinic, and beyond?

Inside Genomics

This book is about a field’s struggle to craft an antiracist investigation into the biology of race. Genomicists responding to political debates over the ever fraught topic of human variation have formed a new scientific ethos and set of strategies to deal with the politically sensitive material with which they work. It was once commonly agreed among scientists that they should leave their personal histories outside their laboratory investigations. Now these same scien-

tists are reflecting on their own understandings and life experiences to design studies that address racial health disparities, minority health, and biological processes associated with race. Many pragmatically and self-consciously use racial labels and even draw on their personal knowledge about group identity to recruit minorities. In doing so, they are building genomics as a comprehensive and ethically conscious new science of race.

This story highlights the convergence and the synergy between American science and politics during a time of rapid social change. In the early 1990s, a political doctrine of colorblindness gave way to the idea that differences should be celebrated, and that social “playing fields” should be opened to more kinds of political actors. Across the federal administration and public health, a paradigm shift occurred in which the leading strategies to battle racial ignorance and encourage diversity became minority inclusion and the acknowledgment of group identities and experiences. People working in institutionally distinct realms of science and politics have now come to unite over tactics like the strategic use of a biologically essentialist definition of race.¹⁴ Many are reflecting on their own experiences to answer fundamental questions about race, formulating an antiracist activism from intimate life events. They are cooperatively interacting to create new research frameworks, expertise, and avenues for being human. The result is a widely accepted system of shared values and practices, and a consensus that race is meaningful socially *and* biologically.

Recent research has forecast the turn to what I call *race-positive*, or determinedly race-focused, genomics by analyzing the broader political framework of activism in which such research has emerged. Steven Epstein’s examination of the inclusionary turn in American public health has shown that throughout the 1970s and 1980s social advocates, scientists, and government officials formed tacit coalitions to petition the government for the inclusion of women and minorities as subjects in biomedical research.¹⁵ Their successes set in motion a cascade of policies to ensure that basic research and clinical trials were performed on a diverse array of bodies. These policies require scientists to perform categorical alignment between state classifications and research taxonomies. Recent research into legal and industrial norms has confirmed that such policies encourage race-based pharmacogenomics and diagnostics—for-profit endeavors that impact the way patient organizations and other advocacy groups manage the political terrain.¹⁶

Race Decoded follows the policy trail into genomic institutions, projects, and labs. I show that it is not just advocates and policymakers who are trans-

forming biomedicine with a politics of identity; scientific elites have adopted this inclusionary paradigm as well. This book asks:

How and why are scientists adopting racial classifications in their studies?

What, aside from policy, motivates scientists to reconfigure their notions of race?

What difference do understandings of race make for the science of genomics itself?

How might genomic reconfigurations of racial difference change our social understandings of race?

Leading genomic scientists shuttle between popular notions of race, official racial standards, and data-driven categories of difference. In the lab, many adopt continent-based systems of ancestry or common lay racial categories to promote minority inclusion and make minority health a focus of research.¹⁷ At the same time, these genome scientists also alter their research taxonomies to meet their immediate practical needs. Scientific research that integrates racial categories is not some mere aftereffect of policies handed down from Congress but is itself generative of new meaning around race.

This means that though scientists import policy-driven categories at the start of research design, they may also reflect critically on these categories and anticipate what social effects they might have. For the better part of a decade, social critics have been calling for genomicists to take greater responsibility for the social implications of their research.¹⁸ Studies have emphasized how scientists uncritically draw on common lay notions of difference in their work.¹⁹ Yet my conversations with an array of contemporary directors and lead investigators at the world's top genomic labs illuminate a *conscious* application of values at play in the changes in research strategies we see today. Elite scientists hold deep political commitments and impassioned views about race. Though their basic understandings of race differ, all support their beliefs with ethical and political justifications showing that they think through matters of race with social concerns in mind. Genomicists are using their knowledge of the political field to mount a fervent engagement with race and perform what they see as a civic duty.²⁰

Like recent ethnographic research on genomicists, my findings show that elites personalize their participation in this new science of race.²¹ Many scientists I spoke with discussed political reasons for going into human variation studies. They pointed to past racial experiences and ongoing antiracist activism

in their home communities that have shaped their outlooks. Many also proclaimed a commitment to racial justice above all else, including scientific veracity and accuracy. Some called racial inquiry their “lifelong interest” or “personal passion.” Scientists were quick to denounce the idea that science could be strictly objective and value-free. Instead, they intimated that science could be used for social activism. Stressing that their values shape the formulation of research interests and questions, a number of scientists attested to performing political acts even in their most basic scientific inquiries. Such an overt politicization of science allows scientists to cope with a politically fraught state of affairs. This shows a clear change from earlier scientists’ ethos of a “culture of no culture.”²²

A politically conscious ethos in the production of scientific expertise has yet to be explored in the context of the new genomic sciences.²³

With a gripping emotional gravity in his voice, asthma researcher Esteban Burchard recounted going from the barrios of San Francisco to a health disparities research division at Harvard University, where an asthma study turned up “a gene twice as common in African Americans [as in whites].” Burchard described this as “love at first sight,” the moment when his lifelong commitment to health disparities, minority justice, and basic research decisively coalesced. Similarly, recalling the adolescent shock of moving from England to the segregated American Deep South, personal genomics specialist Joanna Mountain reflected, “I was interested and I was more concerned about the impact of racism *first*, before I was a scientist. But I enjoy science so much that I have come to value that world as well.” These stories and many others show that scientists interpret their present work and respond to the present political terrain through lenses of ethical responsibility derived from consideration of their own racial backgrounds.²⁴ For them, race is both a negative symbol of legacies of injustice and a positive marker of community struggle and personal growth. Intimate knowledge of race serves as the basis for science activism—a mode of social action that rather than relying on protests or political campaigns, advances science as a solution for social change. This is not so surprising when one considers the force of minority inclusion ethics in the contemporary U.S. political landscape, of which genomics is now an integral part. Still a race-positive science was not anticipated by the planners of the major international genome projects of the 1990s. They had believed that avoiding the topic of race and the use of racial classifications would keep them sheltered from its political dimensions.²⁵

Moving into the worlds of elite academic research centers, burgeoning federal health institutes, high-security technology innovation labs, and frenetic

corporate headquarters, this book weaves analysis of genomic thought and practice across what experts are calling “the decade of the genome.”²⁶ Unlike previous studies that have homed in on a specific technology domain, genome project, or lab, my study capitalizes on the field’s tightly woven infrastructure and innovation stream to make a broad survey of its concepts and conventions since its emergence.²⁷ Following a “core-set” model of field analysis developed in the early Science Studies tradition—a methodology based on in-depth interviews with the cadre of scientists most influential in a particular scientific movement or field—I concentrate on the views and habits of the genomic professional elite.²⁸ Their narratives provide a window into the dominant values motivating the shift toward a genomics of race.

From April 2007 to June 2008 I interviewed thirty-six preeminent genomicists—the project founders, editors in chief, and professional society chair holders of the field. I also observed, shadowed, and interacted with many scientists in their labs, offices, classrooms, and conference rooms, and in an array of informal settings. Scientists were chosen for their leadership of international human genome projects and global epidemiological studies, their role in the invention and development of population genomics technologies used across the field, and their participation in field-defining public engagements on human variation like the publication of the human genome and the launch of direct-to-consumer genomics.²⁹ Almost all have led genomic research into plants, animals, fungi, bacteria, and viruses. Some have spearheaded the development of synthetic organisms. Most sit on the scientific and executive boards of pharmaceutical and biotech firms. Core-set analysis was specifically designed to get at black-boxed and unresolved knowledge,³⁰ the hidden and unsettled operational bases of science in the making, when it spans vast physical and ideological distances. In the case of genomics, there is a shortage of knowledge about the very scientists who make its hallmark decisions or the dynamics of strategy and decision-making that are behind this ostensible move toward researching race.

Because a consensus on race is still not complete, I also interviewed ten prominent critics and policymakers, three lab researchers, and two trainees, and I observed the creation, analysis, and interpretation of an ancestry estimation technology for three population studies. Finally, I examined the contours of debates with genomicists in an analysis of publications exploring the analytical validity of race for genetics and genomics.³¹ This research allowed me to triangulate views and explore the cracks and fissures in the dominant account of how race should be scientifically addressed.

My research enabled me to see how actors from all camps have a vested interest in recuperating the term “race” to represent certain aspects of social standing. In this sense, genomics does not mark the reemergence of a prior science of race; rather, it is devoted to a new understanding of race—as a hybrid of molecular science, social epidemiology, public health, and bioethics. Within the field of genomics, scientists join social science experts in their efforts to recast race in historically conscious, yet politically empowering, terms.

Genomics has come to hold interdisciplinarity as a priority for the field. Openly valuing the subjective experiential rationales usually considered the mark of the humanities and social sciences, elite genomicists attempt to integrate a social science and bioethical posture into their basic methods. Scientists enlist social consultants for their projects and attempt to produce their own expertise on social matters. Social scientists and bioethicists also have instigated lengthy collaborations with scientists, research teams, and organizations. This process of mutual enrollment is an important factor in establishing the new science of race. Without it, entire projects fail and members of all camps lose social legitimacy, or “face,” and the opportunity to give new meaning to the notions of difference and race.

Pragmatism, Values, and Norms of Science in a Biosocial World

Comprehending racial science today requires that we shift our framework for understanding the relationship between institutional mores, practical necessity, and personal values. Social studies of science have tended to elide analysis of the ways pragmatism and values coexist in its normative structures. When Max Weber explored the ethos of science in prewar America and Germany, he set a precedent for interpreting scientific commitment in terms of scientific objectivity. Though Weber discerned a scientific calling that cannot be reduced to the instrumental rationality he believed underpinned scientific work, he argued that the vocation of science attracted individuals motivated by a belief in progress and an enthusiasm for “self-clarification and knowledge of interrelated facts” beyond immediate or personal gratification. He also contextualized the rise of modern science in the West’s transition from traditional society to legal-bureaucratic capitalism. Robert Merton developed Weber’s idea by linking the modern scientific ethos to the same Protestant-based norms that precipitated a transition to a capitalist society. Merton later outlined a theory of

norms considered to drive all science, and detailed a cultural reward system of scientific knowledge production based on *value-free* pragmatism. Investigating specific fields, others have continued to articulate normative structures that emphasize overt or tangible reward systems like citation in the literature and job promotion rather than ideological reward systems.³²

In discussing genomics, Paul Rabinow has, in contrast, depicted a new, ethically endowed vocation of science, a form marked by

a leitmotif among scientists, intellectuals, and sectors of the public turning on redeeming past moral errors and avoiding future ones; an awareness of an urgent need to focus on a vast zone of ambiguity and shading in judging actions and actors' conduct; a heightened sense of tension between this-worldly activities and (somehow) transcendent stakes and values; and a pressing need to define a mode of relationship to these issues.³³

As Steven Shapin has put it, "What these people do, they do on a moral field."³⁴ Like Rabinow and Shapin, I find that optimism, charisma, dynamism, adaptability, and personal earnestness characterize the genomic ethos. However, in dealing with race, I would emphasize the ways collective responsibility to a specific set of racial values drives scientists and inflects their actions. In this sense, it is not some general belief in progress, some skeptical value, humanistic vigor, or vocational virtue that is at play. Rather, a highly contextualized set of norms and practices imbues this science with a commitment to correcting past injustice and establishing a new future.

The scientists I spoke with are open about the contingencies and limitations of their science, so open that they unrestrictedly discussed the *value-laden*, pragmatic nature of their inclusionary efforts in various projects. Many of the rationales they offered about minority inclusion and subject self-identification—rationales that emphasize respect for social communities and personal identities even if those self-understandings conflict with scientific data—are undeniably unscientific and threatening to the image of objectivity that the natural sciences enjoy. These scientists maintain that local support networks and community connections are of utmost importance to their work. They openly discuss details of their politically pragmatic sampling procedures without fear of being accused of playing politics, because they see genomics as inherently social and political and their role as values-based and ethically sound.

Such a variegated understanding of race has broad salience at a time when socializing around biological information is on the rise. Little more than a de-

cade ago, Rabinow argued that genomics was creating a “biosocial” order. His forecast that “groups formed around [genomic classifications] will have medical specialists, laboratories, narratives, traditions and a heavy panoply of pastoral keepers to help them experience, share, intervene in, and ‘understand’ their fate” has clearly become reality.³⁵ Political interest groups and patient advocacy organizations dedicated to medical justice, social movements and community-based organizations petitioning for environmental justice, and government agencies interested in health welfare have turned to genomic knowledge to exact and administer resources.³⁶ The cottage industry of genome interpretation services has grown to be a thriving site of capital production.

Yet this exploration shows that scientists are not simply playing technoscientific handmaiden to a reordering of public ties. Drawing on their own experiences, memories, and racial values, scientists are themselves *biosocializing*. They are thinking through matters of race with their loved ones and themselves in mind and creating research agendas to promulgate specific values about race and science. These are actions social scientists have gone so far as to associate with the “ethopolitical” and “spiritual” nature of the contemporary moment, yet they have been all but ignored in the realm of scientific life.³⁷

Thus far, most scholarly coverage of race in the biosocial era has left *scientific* biosociality out of the picture. Nikolas Rose, for example, has discussed racial biosociality in terms of a new somatic ethic driven by patient groups and the pharmaceutical industry.³⁸ Epstein has detailed the biosociality inherent in policymaking around public health racial enumeration. Jenny Rendon’s study of Human Genome Diversity Project scientists, Michael Montoya’s study of diabetes researchers, and Richard Tutton’s study of British geneticists come closer to connecting scientists’ racial values to their classification work.³⁹ All three have suggested that a colorblind ethic pervades these groups.⁴⁰ Only two studies have squarely placed the scientist in the biosocial context.⁴¹ Duana Fullwiley has shown that pharmacogenomicist Esteban Burchard allows his a priori racial assumptions to guide his research into the population genomics of asthma. Alondra Nelson has described prostate cancer specialist Rick Kittles as evincing similar a priori assumptions as he markets his African Ancestry genealogy services to the public. While all this research suggests that biosocializing scientists are unaware of their assumptions, I find that genomicsists are conscious of limitations in their present definitions and are actually motivated by that awareness to justify enlarging their public role.⁴² The scientists I spoke with suggest that they are getting closer to a solution and thus

require more investment in research that will shed light on the true nature of human variation.

I find genomic biosociality to be *reflexive*. Genomicists consider their role in setting the terms of societal biosociality and ask themselves what kind of biosocial future they want to produce. As one Jewish scientist, reflecting on the potential for genomics to verify Nazi assumptions, admits, “If I thought that it was in the best interests of people to fake my results, I’d be happy to fake it—I’d get myself in a great deal of trouble for saying that, but that’s the reality.” He and others in this study use their knowledge of the human genome to produce a specific set of biosocial relations. They consciously use racial classifications to recruit minorities, allow research subjects to self-identify, and attempt to create respectful descriptors with which to represent them. They manipulate racial classifications, despite knowing that there are strictly genomic ways to cluster data, because they value minority-appropriate strategies. The scientists here proactively publish on the merits and pitfalls of racial classification, spearhead research on hard-to-recruit minority populations, and engage in public dialogue on the limits of the race concept, all giving momentum to the case for *racial* biosociality. Though many of the scientists I met engage in such activity without having a clearly defined political agenda, all but one discussed ways to achieve racially sensitive goals.

Genomic elites head pharmaceutical and biotech companies and work on many privately funded studies; therefore, financial interests, careerism, and the like are also part of the field of their concerns.⁴³ What Dorothy Roberts aptly calls the “new horizon for profit” is ever present in elite deliberations and decision-making.⁴⁴ Yet the practical field in which these scientists work is inherently tied to its normative context. Scientists’ preoccupations with their family and youth experiences show that research in a biosocial world involves open moralizing and personal enthusiasm about the work at hand.⁴⁵ Scientists have grown political and become politicized just as much as their research subject counterparts, and they are using their equipment to challenge the status quo.⁴⁶

So while others have discussed life in a biosocial world in terms of new forms of sociality based on a public sphere immersed in bio-discourses, bio-products, and bio-expertise, I draw our attention to the way researchers themselves socialize around such developments.⁴⁷ My analysis goes beyond the actions of patients and research subjects to the creators of bio-knowledge itself. Scientists, who are themselves stakeholders of their research, form their subjectivity around the very knowledge they produce. It is not merely that new so-

cial relations form around new objects of research, but rather that the subjects of science—scientists themselves—recursively produce new subject positions around the objects of their own research.

Importantly, a new subject position and a new form of expertise has come into being: the figure of the genomic racial expert. The genomic racial expert is abreast of the latest in racial politics, has ties to minority communities, and launches large-scale studies on minority health. The genomic racial expert is the biosocial scientist par excellence, a scientist who reflexively considers the ethical implications of biological research from the first moment of inquiry. Unlike the scientists of yore, genomic racial experts don't just expose past racial science as bunk. They proactively seek funds for research that will benefit minorities and change the way society thinks about race. Albeit ambivalent this is a values-based source of expertise. Embodying such a position enables scientists to engage with the public in ethically salient ways that build social *and* material capitals that permit a redefinition of the field's reputation with regard to race.

Everywhere Inclusion

Perhaps surprisingly, the “unmarked” American—the white lab scientist—with presumably less stake in the redefinition of race, has been a major agitator on racial politics. Genomic racial experts are most often white scientists who, like minorities around the world, have been influenced by the history of race relations. Their growing concern shows us that race relations have had deep and lasting effects on people of all races, and not only those of the oppressed minorities. Race has been and continues to be important to the personal and professional development of scientists of all backgrounds.

Studies of race in America typically argue that race has created a bifurcated social landscape wherein racial minorities develop a heightened awareness of racial issues while whites have the privilege of ignoring racial inequality. W.E.B. Du Bois, for example, spoke of “double-consciousness”—an awareness by blacks that they are categorized as different and subordinate, and the pluralized viewpoint that results from simultaneously looking at oneself through the eyes of a dominant culture and through one's own experience.⁴⁸ Yet recent debates about the value of affirmative action and inclusionary measures have kept the educated public attuned to racial issues, even when they are members of privileged communities. Thus, more is to be understood about perception and consciousness in dominant demographics.

In order to perceive the nuances of race in America, and to understand its production in the world's leading centers of science, we need to extend our analysis of racial subjectivity to privileged and elite members of society. As scholars of race have argued, categories of difference that are formulated and experienced relationally must be studied as such.⁴⁹ The ranking categories of difference and the meanings attached to them apply to all members of a historical moment, and thus must be considered both within and across generations as well.⁵⁰ In this book, I view race as a belief system that produces consistencies in perception and practice at a particular social and historical moment. Scientists who have grown up amid a specific brand of racial activism, whether white supremacy or civil rights, and who work within similar policy climates share certain frameworks for thinking about race.⁵¹

Until the late twentieth century, racial difference was conceived as a fact of biology. Folk and expert notions of race both posited races as mutually exclusive biological populations worthy of different social and political statuses. Racial differences were ascertained by morphology and phenotype—visible structural features like eye color and hair texture. Race was conceived as typological, or capable of being characterized into discrete human types. Racial inequality was produced through a series of exclusions of all nonwhite types, including exclusion from first-class citizenship, labor markets, public resources, and entry to American shores.

Today, after a long battle in mainstream political and academic arenas, the idea that race is not a biological fact but a social structure predominates in intellectual circles. Minority inclusion is considered the salve to racial inequality. Scientists argue for racial inclusion in an idiom of optimism and empowerment that mirrors the broader culture of racial politics and Obama-esque campaigns of hope and social change. As social groups are recruited for comparative experimentation, difference is produced through *inclusion*.⁵²

Though scientists challenge official strategies for creating inclusion, and many go rogue with their own taxonomies, the scientific adherence to the principle of inclusion creates a possessive investment in race. In a society that ordinarily silences racial discourse among the privileged, genomics provides a forum to reflect upon the impact of race and its personal traumatization among those perceived as “raceless.” This is different from George Lipsitz’s notion of whites’ possessive investment in maintaining white racial difference.⁵³ In today’s world of genomic science, there is a renewed focus on the value of race in a *multiracial* cohort of experts. While whiteness continues to hold a “cash”

value that encourages whites to “remain true to an identity that provides them with resources, power, and opportunity,”⁵⁴ the white and nonwhite scientists described here struggle for the chance to redefine human taxonomy. Indeed, they believe genomics should hold the monopoly over ascertaining human categories. The white scientists in elite genomics laboratories are more invested in proliferating a positive sense of blackness than in protecting the biological semblance of whiteness. Furthermore, their redefinition of race involves drawing public attention to the social factors at play in the biology of race.

It is time to rethink the character, aims, and implications of scientific knowledge. Formerly, scientists used biological inquiry into race to naturalize social difference in essential biological difference. For example, lower social status, poverty, and lesser educational achievement, which resulted from racial inequity, were characterized as immutable and intrinsic properties of nonwhite races. Biology was used to obscure social explanations for race. By contrast, contemporary inquiry into race begins with the concept of social disparities and hierarchies and explores biological differences in order to correct those disparities. Instead of arguing that racial difference is impervious to social reform, scientists are expanding the definition of biology to include social factors; using their position to draw attention to inequalities; and applying scientific tools to create social change.

Postures that view racial science as inherently racist are thus untenable. Those who assume that all racial science is biological essentialism are missing the sociological nuances of today’s science of race.⁵⁵ While studies of past science have fruitfully exposed the relationship between scientific taxonomies and social hierarchies—including their contribution to the production of racism in society’s major institutions of law, education, the marketplace, and medicine—automatic dismissal of new developments fails to apprehend that scientists today are guided by the very norms and strategies that minority subjects in other realms have engendered.⁵⁶

A better way of conceiving an enduring investment in race is in terms of “racialism.”⁵⁷ Racialism refers to systems of racial beliefs that may or may not adhere to notions of hierarchy or biological essence. The term signals a move away from interpreting all investments in race as racist. It also helps us recognize the ever shifting ethical context for defining racial identities, a context that now produces genomics as a solution to prior racist racialism.

What I call *antiracist racialism*, or the idea that there is no rank to races but that there are nevertheless discrete populations worth studying, now prevails

across science and society. Genomicists still enjoy the legitimacy of an objective “hard” science; however, they adopt antiracist measures that are widely supported by social scientists and the general public. Scientists and critics thus converge on strategies like allowing research subjects to self-identify their race and oversampling racial minorities to promote racial inclusion. They play out a “politics of recognition” with their science in ways that diverge from but also complement governmental acknowledgment of group diversity.⁵⁸ It is from a collaborative position that the field builds its reputation as the source of truth on human variation and is able to coherently produce a new science of race.

The singularity of today’s racialism becomes clear on examination of prior antiracist politics in genetics.⁵⁹ In the postwar period, reputable evolutionary scientists such as Theodosius Dobzhansky and Ernst Mayr suggested that experts in biology should use race only in the strict biological sense of populations at the subspecies level. Race was a matter of the invisible aspect of our biology: our genes. Objective genetic populations were to replace the typological, phenotypically characterized groups.⁶⁰ In the 1970s, a debate over race and intelligence came to a head between hereditarian scholars hailing from psychology and political science and geneticists studying human variation. At Stanford University, Nobel Laureate William Shockley used Arthur Jensen’s theory about immutable differences in IQ to argue for a eugenic sterilization program for nonwhites having low IQs.⁶¹ Luca Cavalli Sforza, Walter Bodwin, and their former student Marc Feldman, three of the world’s most authoritative population geneticists, countered that there was no genetic basis to the behavioral differences at hand. Yet as with the geneticists before them, within genetics they promoted a strictly biological replacement for race: “Today, all continents of the world are inhabited by representatives of the three major human races: African, Caucasian and Oriental. The proportions of the three groups still differ considerably in the various countries, and the migrations are too recent for social barriers between racial groups to have disappeared.”⁶²

Though their work, and that of the population genetics mainstream, was devoted to elucidating racial divergence from the ancestral source, scientists were growing impatient with the connotative baggage that the term “race” carried.⁶³ Eventually, these scientists directed others to replace mentions of “race” with the term “population.” This became a standard for the field.

By contrast, today’s antiracist racialism is infused with an ethos of *political* justice. As later chapters will show, scientists use racial taxonomy to ensure equality in certain parts of the research and development process. Though

most do not believe in a biological essentiality of race, they do strategically manipulate cultural beliefs in race. This is the principle of strategic essentialism that race and postcolonial scholars articulated as the temporary presentation of unified, essential groupness in order to gain resources for said groups.⁶⁴ Genomic essentialism is strategic in that those presenting the reified image of groupness know that there are vast differences within the group which are not supported by a biological notion of uniformity.

Analysis of the intersection of racialism and biosociality is sure to produce a sobering look at the way science and politics are coproduced.⁶⁵ Examining their relationship will show that race is not an epiphenomenon of science or technology but a special variable with a heightened constitutive force.⁶⁶ Contrary to the assumption that new disease classifications are displacing older systems of classification, racial taxonomies hold fast. Reflexive biosociality and antiracist racialism thus involve a more complex relationship between bio-subjects and bio-objects. Inasmuch as new technologies and expertise inform long-standing ideas about race, the demand for racial classification informs the development of new technologies, markets, and identities.

The questions most frequently asked thus far have been: Can a biology-driven redefinition of race solve society's racial problems? Or will genomics create an even more essence-bound version of race? These important normative questions will be duly addressed in the chapters that follow. I show that as genomicists produce alternative scientific perspectives on race, biotechnologies that can assist in the production of new DNA-based identities, and advice for policymakers, they fashion an activism that often neglects the core causes of racial injustice, such as institutional racism and structural inequality. Also, though scientists are responsive to criticisms of biological determinism, and though they adopt gene-environment models for understanding race, they nevertheless build genomics as a special expert science of race on the basis of its superior knowledge of biological ancestry.

However, this book seeks to understand something more. By treating science and politics symmetrically, I am interested in how the confluence of scientific and political conventions and norms becomes a multidimensional, multisituational *civic platform* for asking questions about human variation, designing research on difference, and creating meaningful change with science. In a time when the life of politics is increasingly trained on the politics of life, racial ideas and conventions are spanning wider distances and finding a home in unexpected places.⁶⁷

My starting questions thus follow the trail of social processes: In order to fully understand how genomicists have adapted and resignified earlier categories of race, I first interrogate the history of these categories and how they have informed the emerging field of genomics (Chapter 1). I then trace the process whereby race became a norm for genomic research (Chapter 2) and show how public engagement also laid the foundation for genomics to become the new science of race (Chapter 3). I next ask, how do scientists conceive of race and what role do personal values play in producing the genomics of race (Chapter 4)? Further, beyond their personal convictions, what do these scientists actually do with race, and what does race do for them in the lab (Chapter 5)? Finally, in following scientists' public roles in genomics, I examine how genomicists position genomics as the ultimate expert field on race (Chapter 6). I conclude by returning to questions of racialism and biosociality in the context of emerging avenues of science and politics (Chapter 7).

Together these chapters reveal many counterintuitive angles into the lives of scientists, all the while showing that ideas about race are produced in the convergence of scientists' subjectivity and policy decisions, intimate values and market developments, ethical framings and technical practices, and disparate sites of antiracist activism. More broadly, these insights shed new light on the social coevolution of science and politics in a molecular age.