

Article

The Second Generation of Racial Profiling*

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Introduction

Eyewitness accounts of a suspect’s race are notoriously unreliable.¹ Suspect profiles that emphasize race tend to include too many suspicionless individuals whose appearance corresponds to underspecified expectations

* The first part of the title comes from Erin Murphy, *The New Forensics: Criminal Justice, False Certainty, and the Second Generation of Scientific Evidence*, 95 CAL. L. REV. 721 (2007). Murphy argues that forensic reliance on information databases has attracted scholarly interest in a new class of “second-generation” technologies such as DNA databases, fMRI imaging, and biometric scanning. Whereas “first-generation” forensic tools like blood tests, handwriting samples, and fingerprinting can confirm or refute the guilt of a known suspect, integration of databases equips “second-generation” tools for proactive searches of unknown suspects. The power of “second-generation” tools has led scholars to discount forensic applications beyond the database. I try to show why this neglect is a mistake.

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1. See *infra* notes 137–162 and accompanying text.

about what members of the identified race look like. At the same time, racially salient descriptions capture too few individuals who do not match those expectations but for whom there is independent reason for suspicion. Yet police reliance on race-based suspect descriptions is almost universally accepted as legitimate by judges and scholars alike.²

For many violent crimes, a victim or witness report is the only information about what a suspect looks like, and eyewitnesses can often describe a fleeing suspect in little other than racial terms.³ Race-based suspect descriptions are useful because racial categories serve as a quick-and-ready proxy for conspicuous and distinguishing physical features. To ignore available information about a suspect's race in a police investigation could jeopardize the apprehension of a potentially dangerous criminal.

This Article argues that emerging powers of forensic technology will make police reliance on racial identifiers more difficult to defend. A new forensic technique called DNA phenotyping or molecular photofitting is being developed with research funding from National Institute of Justice⁴ in order to infer a suspect's complexion and facial features using cell tissue recovered from a crime scene.⁵ Statutes in three states already prohibit the use of this tool by police investigators.⁶ I examine the far-reaching implications of DNA phenotyping for the evolving relationship among scientific evidence, criminal law, and racial understandings.⁷

2. See, e.g., *United States v. Waldron*, 206 F.3d 597, 604 (6th Cir. 2000) (“Common sense dictates that, when determining whom to approach as a suspect of criminal wrongdoing, a police officer may legitimately consider race as a factor if descriptions of the perpetrator known to the officer include race.”); DAVID COLE, *NO EQUAL JUSTICE: RACE AND CLASS IN THE AMERICAN CRIMINAL JUSTICE SYSTEM* 540 (1999) (arguing that “racial identity, like hair color or attire, is an appropriate consideration in identifying suspects where an eyewitness has described a specific perpetrator of a particular crime”); RANDALL KENNEDY, *RACE, CRIME, AND THE LAW* 137–38 n.* (1997) (“[Skin] color is being used no differently than information about the pants or jacket or shoes that the suspect was said to be wearing.”). The lone exception is Richard Banks, who argues that courts should treat police reliance on race-based suspect descriptions as a racial classification, and that such treatment would require reexamination of equal protection doctrine. See R. Richard Banks, *Race-Based Suspect Selection and Colorblind Equal Protection Doctrine and Discourse*, 48 *UCLA L. REV.* 1075, 1080, 1196 (2001). Even Banks, however, assumes that racial descriptions are useful and perhaps intractable. See *id.* at 1109, 1123.

3. Race-based suspect descriptions may come from eyewitness observation of a suspect's speech patterns, hairstyles, or physical characteristics. See, e.g., *United States v. Card*, 86 F.Supp. 2d 1115, 1116–19 (D. Utah 2000) (discussing admissibility of lay testimony inferring race or ethnicity based on accent or word choice).

4. See *Research and Development Funding*, DNA INITIATIVE, http://www.dna.gov/audiences/researchers/r_funding (last visited Nov. 10, 2010) (verifying the 2008 award of a \$500,000 grant to Pennsylvania State University by the Office of Justice Programs' National Institute of Justice for *Identifying and Communicating Genetic Determinants of Facial Features: Practical Considerations in Forensic Molecular Photofitting*).

5. See *infra* Part II.

6. See IND. CODE ANN. § 10-13-6-16 (West 2004) (prohibiting police use of database DNA from a crime scene or convicted felons for the purposes of “obtain[ing] information about human physical traits”); WYO. STAT. ANN. § 7-19-404 (2007) (same); R.I. GEN. LAWS § 12-1.5-10 (2007) (same).

7. The most comprehensive volume on DNA forensics devotes just a single paragraph to DNA phenotyping. See JAY D. ARONSON, *GENETIC WITNESS: SCIENCE, LAW, AND CONTROVERSY IN THE MAKING OF DNA PROFILING 2* (2007). The only two papers to have considered forensic DNA phenotyping make no mention of implications for race-based suspect descriptions. See Bert-Jaap Koops

My argument proceeds in four parts. Part I recounts how police in Baton Rouge used genetic ancestry techniques, a scientific cousin of DNA phenotyping, to capture a serial killer. The Baton Rouge investigation demonstrates that this newest class of forensic genetic technology is neither the pseudoscience nor the smoking gun that commentators portray it as.⁸ This Part argues that while DNA phenotyping and related tools have limited utility at present, if they are developed to the point of reliability, their use in the investigation of crime is unlikely, as commentators fear, to imperil privacy, facilitate racial profiling, perpetuate racial stereotypes, or reify genetic conceptions of race.

Part II analyzes the science of molecular photofitting. This technique uses biometric comparison to estimate certain physical attributes based on statistical composites of three-dimensional photographs from individuals with similar genetic ancestry profiles. It is not yet possible to predict facial features like freckles, eyelid folding, earlobe attachment, widow's peak, and dimples, but pigment-related traits like skin, hair, and eye color appear receptive to genetic inference. This Part explains the present limits and near-term promise of forensic DNA phenotyping.

Part III unpacks the uneasy jurisprudence of police reliance on the racial identification of criminal suspects. Race-based suspect descriptions present a puzzle. Racial classifications are generally subject to the most exacting standard of review, but one would be hard-pressed to find a judge or scholar who believes the use of race-based suspect descriptions gives reason for pause.⁹ Why is this practice, which singles people out in view of their racial appearance, so readily accepted as legitimate? The conventional wisdom that race-based suspect accounts do not constitute a racial classification for equal protection purposes is less obviously true than courts and commentators assume.¹⁰ Investigators ask for and act on race-based eyewitness accounts to establish the legal suspicion required to interrogate and arrest.¹¹ This Part shows why the availability of reliable DNA phenotyping would put pressure on the narrow tailoring requirement

& Maurice Schellekens, *Forensic DNA Phenotyping: Regulatory Issues*, 9 COLUM. SCI. & TECH. L. REV. 158 (2008); Jennifer K. Wagner, Note, *Just the Facts, Ma'am: Removing the Drama from DNA Dragnets*, 11 N.C. J.L. & TECH. 51 (2009).

8. See, e.g., Carolyn Abraham, *Molecular Eyewitnesses: DNA Gets a Human Face; Controversial Crime-Scene Test Smacks of Racial Profiling, Critics Say*, TORONTO GLOBE & MAIL, June 25, 2005, at A6 (observing that, although law enforcement officials have embraced the use of genetic technology, it has received a "chilly reception" from others, who compare it to "racial profiling in the genomics age"); Duana Fullwiley, *Can DNA 'Witness' Race? Forensic Uses of an Imperfect Ancestry Testing Technology*, GENEWATCH, Nov.–Dec. 2008, at 12, 13 (arguing that the DNAWitness technique, which compares genetic samples to a panel of genetic markers "may offer precise mathematical ancestry percentages, but the accuracy of that precision remains debatable"); Gautam Naik, *To Sketch a Thief: Genes Draw Likeness of Suspects—In the Field of DNA Forensics, Scientists Identify Genetic Markers for Traits Revealing Appearance and Ethnicity*, WALL ST. J., Mar. 27, 2009, at A9 (contending that the technology has limited reliability or forensic utility).

9. See *infra* notes 183–193 and accompanying text.

10. See *infra* notes 163–171 and accompanying text.

11. See *infra* notes 178–181 and accompanying text.

that the state use race-neutral alternatives when possible.¹²

Part IV recommends that police supplement eyewitness suspect descriptions with reliable phenotype information under circumstances in which crime scene DNA does not produce a database match.¹³ This totality-of-the-evidence approach instructs police to corroborate eyewitness accounts with photofitting data in proportion to the epistemic value of each. Such corroboration would improve arrest accuracy by correcting for eyewitness error; enhance police legitimacy by justifying attention to minorities on the basis of data rather than observation; expose bias against individuals with more racially stereotypic features; and loosen the hold race has on the way police think about suspects. This final Part develops a suspect identification system that uses physical measures based on genetically-influenced traits and implements cognitive framing mechanisms to mitigate the filtering of phenotypic descriptors into racial terms.

I. The Biopolitics of Race

In the summer of 2002, southern Louisiana was terrorized by a serial killer.¹⁴ DNA evidence pointed to a single assailant in the rape and murder of three women.¹⁵ Gina Wilson Green, a nurse, forty-four, was found strangled near the campus of Louisiana State University in September 2001.¹⁶ In May 2002, Charlotte Murray Pace, a twenty-two-year-old LSU graduate student, was stabbed to death in her home.¹⁷ Pam Kinamore, a decorator, forty-four, was abducted from her home that July.¹⁸ Kinamore's body was discovered with her throat slit, thirty miles outside of Baton Rouge, in a marshy area by the woods near the Whisky Bay Bridge.¹⁹ Identical cell tissue recovered from all three crime scenes did not match any genetic profile in existing DNA databases.²⁰

Eyewitnesses identified the suspect as a white man.²¹ A neighbor told police she saw a white male driver in a white Chevrolet race out of

12. See *Wygant v. Jackson Bd. of Educ.*, 476 U.S. 267, 280 n.6 (1986) (plurality opinion) (holding that narrow tailoring requires "consideration of whether lawful alternative and less restrictive means could have been used").

13. Existing DNA databases contain a sufficiently small fraction of the population that comparing a suspect's DNA frequently produces no match, even though forty-three states require that every person convicted of a felony submit DNA samples to a central DNA database. See *CODIS—NDIS Statistics*, FED. BUREAU OF INVESTIGATION, <http://www.fbi.gov/about-us/lab/codis/ndis-statistics> (last visited Nov. 10, 2010) (providing statistics on the National DNA Index, a database of offender DNA profiles submitted by each state).

14. STEPHANIE A. STANLEY, *AN INVISIBLE MAN: THE HUNT FOR A SERIAL KILLER WHO GOT AWAY WITH A DECADE OF MURDER* 5, 75 (2006).

15. *Id.* at 24, 90.

16. *Id.* at 27, 32–35.

17. *Id.* at 56, 60.

18. *Id.* at 4, 22–24.

19. *Id.* at 22.

20. See *id.* at 5.

21. *Id.* at 286.

Kinamore's neighborhood the night of her disappearance, as a brunette woman stared out the passenger seat window "with a terrified stare."²² Then a truck driver came forward, claiming that at 3:00 AM that same night, he saw a white pickup truck, a 1996–1997 Chevy single cab model with a Louisiana license plate, driving westbound on I-10 and getting off at the Whisky Bay exit where Kinamore's body was found.²³ The truck driver also reported a white male driver, thin to medium build, and a naked woman fitting Kinamore's description slumped in the passenger seat.²⁴ Police believed that the same vehicle and driver were connected to the rape of a twenty-eight-year-old Mississippi woman two days after Kinamore went missing.²⁵ Forced into a white pickup truck before managing to escape, the woman described her assailant as a young- to middle-aged white man of average build.²⁶

Local and federal law enforcement formed a Multi-Agency Homicide Task Force that released in September a psychological profile and eyewitness composite sketch for a courteous and attractive twenty-five to thirty-five-year-old white man.²⁷ Handgun and pepper spray sales mushroomed as information about the suspect was broadcast on large electronic billboards across Lafayette and Baton Rouge.²⁸

The killer struck again in November 2002.²⁹ The body of Trineisha Dené Colomb, a twenty-three-year-old African American aspiring Marine, was found bludgeoned on the roadside in a wooded area of Saint Landry Parish.³⁰ DNA evidence linked Colomb's murder to those of Green, Pace, and Kinamore.³¹ The day Colomb was abducted, a driver reported seeing a white truck parked by the side of the road a quarter mile from the field where Colomb's body was found.³² The witness reported that as she drove past the truck, she saw a white man in the driver's seat and a black woman leaning limply against the passenger door.³³

Task Force spokeswoman Mary Ann Godawa released a second report noting that the killer was white.³⁴ Law enforcement redoubled its focus "acutely and exclusively on white men,"³⁵ collecting cotton swab

22. *Id.*

23. *See id.* at 105–06.

24. *See id.* at 105, 135.

25. Rachael Bell, *Derrick Todd Lee—the Baton Rouge Serial Killer*, TRUTV CRIME LIBRARY, http://www.trutv.com/library/crime/serial_killers/predators/baton_rouge/index.html (last visited Nov. 10, 2010).

26. *Id.*

27. STANLEY, *supra* note 14, at 104, 107.

28. Bell, *supra* note 25.

29. STANLEY, *supra* note 14, at 239.

30. *Id.* at 243–45.

31. *Id.* at 248.

32. *Id.* at 286.

33. *Id.*

34. *Id.* at 108.

35. *Id.* at 285; *see also id.* at 259 ("They had put their faith in witnesses who said they saw a white man in a white truck exiting Interstate 10 at Whiskey Bay [sic] with the body of a nude woman in

samples from more than 1200 potential suspects, all white; no genetic matches were found.³⁶ The search for the Baton Rouge serial killer used “more detectives than any other investigation in state history,” as “the database of tips and suspects grew so large—more than 10,000 leads—the task force had to upgrade to a more powerful computer system.”³⁷ But “[n]o matter how many officers they put on the case, no matter how much time they invested, all the leads led to dead ends.”³⁸

In January 2003, Task Force investigators received information about a Sarasota-based company called DNAPrint genomics, founded and directed by biologist Tony Frudakis.³⁹ Frudakis claimed to have developed a forensic tool that uses small quantities of cell tissue to determine the “genetic ancestry” of an unknown person with high accuracy.⁴⁰ This technique, called DNA Witness, compares locations on the chromosome informative of a person’s ancestry to estimate “the percentage of genetic make up amongst the four possible groups of Sub-Saharan African, Native American, East Asian, and European.”⁴¹ Skeptical of the test’s reliability, the Task Force asked Frudakis to take a blind trial of DNA swabs from twenty individuals whose race was known; he correctly identified the race of every one.⁴²

In early March 2003, the Task Force sent Frudakis genetic samples from the four crime scenes.⁴³ The next week, before the DNAWitness results were ready, the body of Carrie Lynn Yoder, a twenty-six-year-old LSU doctoral student, was found beaten and strangled in the water near the Whisky Bay Bridge, where Pam Kinamore had been discovered eight months earlier.⁴⁴ DNA analysis pointed to the same unknown suspect from the other murders.⁴⁵ On a conference call later that month, Frudakis told police the killer was not white but black—specifically, eighty-five percent African and fifteen percent Native American.⁴⁶

Changing course, the Task Force redrafted its suspect profile to focus on black men,⁴⁷ and obtained subpoenas to take cheek swabs from African-American suspects.⁴⁸ Among those files that were reopened after

the front passenger seat the night of Pam Kinamore’s abduction.”).

36. *See id.* at 136.

37. *Id.* at 137–38.

38. *Id.* at 138.

39. *See id.* at 261, 285.

40. *Id.* at 261, 285–87.

41. *Forensics*, DNAPRINT GENOMICS, <http://www.dnaprint.com/welcome/productsandservices/forensics> (last visited Nov. 10, 2010).

42. Melba Newsome, *The Inconvenient Science of Racial DNA Profiling*, WIRE, Oct. 5, 2007, <http://www.wired.com/science/discoveries/news/2007/10/dnaprint?currentPage=all>.

43. *See id.*

44. *See* STANLEY, *supra* note 14, at 263, 273–74.

45. *Id.* at 277.

46. *Id.* at 285, 287.

47. *See id.* at 284–85.

48. *See id.* at 287 (recounting how DNAPrint evidence led investigators “to go back and review thousands of tips about black men that had been cleared by the task force based solely on the color of

police received the DNA Witness results was a tip for thirty-four-year-old Derrick Todd Lee, a West Feliciana Parish man with previous convictions for domestic violence, stalking, peeping, and murder.⁴⁹ Police had first heard about Lee in connection the serial killer investigation in July or August of 2002, when they were informed by local law enforcement agencies that Lee was suspected in a burglary and assault as well as two other homicides for which DNA evidence was unavailable.⁵⁰ Then, in late September 2002, Baton Rouge police received a tip that Lee drove a white truck.⁵¹ Both times, detectives declined to investigate Lee as a suspect in the serial killings as soon as they learned that he was black.⁵²



Figure 1. Police sketch based on eyewitness accounts (left) and a photograph of the convicted suspect, Derrick Todd Lee (right). Courtesy, Lafayette Parish Sheriff's Office and F.B.I.

In May 2003, police got a court order to retrieve Lee's DNA⁵³ and confirmed a match to the DNA that was recovered from the scenes of all five murders,⁵⁴ two of which had occurred after Lee came to the attention of Task Force investigators.⁵⁵ Lee was captured a day later in Atlanta,⁵⁶ convicted on multiple counts of first-degree murder, rape, and

the men's skin").

49. See *id.* at 288–91; see also Josh Noel, *Florida Lab Pointed to Race: Serial Killer Search Changed Course*, *ADVOCATE* (Baton Rouge), June 4, 2003, at 3 (noting that Lee was “also considered a suspect in the 1998 disappearance of Randi Mebruer and 1992 slaying of Connie Warner, both of Zachary[, LA]”). For a comparison of the police sketch with a photograph of Lee, see Figure 1.

50. See STANLEY, *supra* note 14, at 288.

51. *Id.* at 138.

52. See *id.* at 288 (noting that “the serial killer investigators were not interested” in following leads that implicated Lee because “a black male attacker did not match their description of the killer”); see also *id.* at 285 (“When a tip led to a black male, task force policy allowed detectives to rule him out based on the color of his skin.”).

53. *Id.* at 306–09.

54. *Id.* at 321, 324.

55. While police did not speculate about why eyewitnesses independently misidentified the suspect as white, the power of suggestion is a plausible culprit. Compare STANLEY, *supra* note 14, at 285 (“The media published and republished reports about the white man in a white truck.”), with Elizabeth F. Loftus, *Our Changeable Memories: Legal and Practical Implications*, 4 *NATURE REVIEWS NEUROSCIENCE* 231, 232–33 (2003) (describing the power of suggestion in creating false beliefs and memories).

56. STANLEY, *supra* note 14, 329.

kidnapping,⁵⁷ and sentenced to death.⁵⁸ The Baton Rouge case is the first to use genetic ancestry technology to resolve a criminal investigation.⁵⁹

Like DNA phenotyping, the DNAWitness technique uses genetic probabilities to infer characteristics of forensic interest. But DNAWitness uses ancestry testing and not the DNA phenotyping technique that is the subject of this Article. DNA phenotyping, or molecular photofitting, tries to infer what an unknown suspect looks like by comparing his DNA profile to thousands of similar DNA profiles alongside three-dimensional color photographs of those source individuals.⁶⁰ Ancestry testing, by contrast, simply tries to determine where a person's forebears lived by examining 176 genetic mutations that tend to occur only in certain descendant populations, or to cluster in some populations more than others.⁶¹

Ancestry testing has been enlisted to narrow suspect lists in the search for a number of unknown criminals in the United States and United Kingdom.⁶² At \$1,000 per test,⁶³ however, the technique was not popular among police departments, and DNAPrint Genomics went out of business in 2009.⁶⁴ Although it may seem difficult to bemoan the use of this tool in capturing a serial killer who had eluded police for over a year, there is much to find fault with in the role that DNAWitness played in the Baton Rouge investigation.

First is its dubious epistemic value. Ancestry analysis is a blunt instrument for probabilistic information about a person's biological origins but not his racial identity or physical appearance. DNAWitness estimated broad geographic regions where Lee's biological ancestors lived.⁶⁵ The tool could not, however, discern either the assailant's race—a social construct that tracks generalized notions of ancestry, physical traits, and

57. *See id.* at 348.

58. *Id.* at 353.

59. *See* TONY N. FRUDAKIS, MOLECULAR PHOTOFITTING: PREDICTING ANCESTRY AND PHENOTYPE USING DNA 620 (2008).

60. *See id.* at 452, 456–58.

61. *Id.* at 620. *But see* Deborah A. Bolnick et al., *The Science and Business of Genetic Ancestry Testing*, 318 *SCIENCE* 399, 400 (2007) (arguing that while DNA markers informative of genetic ancestry “show relatively large [30 to 50%] frequency differences between population samples,” some nevertheless over-generalize by “differentiat[ing] between four ‘parental’ populations [Africans, Europeans, East Asians, and Native Americans] . . . not found in all peoples who would be classed together as a given ‘parental’ population”).

62. *See* Richard Willing, *DNA Tests Offer Clues to Suspect's Race*, *USA TODAY*, Aug. 17, 2005, at 1A (“Since [the Baton Rouge investigation], police in Missouri, Virginia, Colorado, California[,] and the United Kingdom also have used [genetic ancestry analysis] to develop leads in more than [eighty] other homicide, rape[,] and missing-persons cases . . .”).

63. Melba Newsome, *A New DNA Test Can ID a Suspect's Race, But Police Won't Touch It*, *WIRED*, Dec. 20, 2007, at 1 (“Part of the problem is cost—basic tests run more than \$1,000. But the real issue? DNAWitness touches on race and racial profiling. . .”).

64. *See* *DNAPrint Genomics Goes Bust*, *GENOMEWEB DAILY NEWS* (Mar. 3, 2009), <http://www.genomeweb.com/node/912684?emc=el&m=32526>.

65. *See* *Forensics*, *supra* note 41 (explaining that DNAWitness provides the percentage of genetic make-up among four possible groups: Sub-Saharan African, Native American, East Asian, and European, with a possible further breakdown of European ancestry into four components: Northwestern European, Southeastern European, Middle Eastern, and South Asian).

cultural identity⁶⁶—or salient aspects of his appearance, like his tall stature, dark brown hair and eyes, or coffee-with-cream complexion.⁶⁷ DNAWitness did not narrow the suspect profile or diminish the appeal of casting an aggressive DNA dragnet based on race.⁶⁸ All that ancestry testing did was flip the racial population subject to investigation.⁶⁹

Second is the limited forensic utility of ancestry testing. Because ancestry analysis requires a genetic sample, it is relevant only for crimes, that tend to have DNA evidence, such as murder, rape, and burglary.⁷⁰ To obtain a useful sample, police must be able to separate a suspect's genetic profile from that of the victim or others with which crime scene DNA can be mixed.⁷¹ If usable crime scene DNA does not match another profile in existing arrestee or convicted-felon databases,⁷² ancestry testing may be

66. See Ian F. Haney López, *The Social Construction of Race: Some Observations on Illusion, Fabrication, and Choice*, 29 HARV. C.R.–C.L. L. REV. 1, 39–53 (1994) [hereinafter Haney López, *Social Construction*].

67. Hispanic populations illustrate the complexity of ethnic appearance. Asked to imagine Hispanic physical features, many non-Latinos would picture what they think of as stereotypically Mexican, but Hispanics who are descendant from Spain, Argentina, Africa, or the Caribbean tend to look very different. Cf. *United States v. Arizona*, 703 F.Supp.2d 980 (D. Ariz. 2010) (issuing a preliminary injunction against law requiring that police check the immigration status of suspects stopped during enforcement of other laws).

68. See STANLEY, *supra* note 14, at 136 (“Police watched [any individual who refused DNA testing] until they could learn more about his whereabouts during the murders. Sometimes, they simply followed the suspect around until he dropped . . . anything that might carry his DNA. . . . [O]n rare occasions, the police obtained a court order.”).

69. DNAWitness could serve this race-flipping function in the Baton Rouge investigation only because race-based eyewitness reports contradicted DNA analysis that found unusually high ancestry proportions (eighty-five percent) from a single continent (Africa). While some groups, such as the Inuit, Old Amish, and Ashkenazi Jews tend to be less genetically diverse, African Americans average twenty-six percent Caucasian ancestry, and most groups in the United States exhibit significant levels of ancestry mixing. Population heterogeneity, combined with the frequency with which biological and social constructions of race come apart generally make it difficult to determine a person's racial or ethnic background from his genetic profile alone. See Duana Fullwiley, *The Molecularization of Race: Institutionalizing Human Difference in Pharmacogenetics Practice*, 16 SCI. AS CULTURE 1, 7 (2007); Jonathan Kahn, *Race, Genes, and Justice: A Call to Reform the Presentation of Forensic DNA Evidence in Criminal Trials*, 74 BROOK. L. REV. 325, 348–49 (2009).

70. See CONNIE FLETCHER, *EVERY CONTACT LEAVES A TRACE* 223–26, 233–34 (2006) (noting that crime-scene DNA evidence has been collected from half-eaten lunch meat, chewed up straws, cigarette butts, saliva from ski masks, weapons, chewing gum, old shoes, used Kleenex, and saliva on blown-out candles). *But see* CAROLE MCCARTNEY, *FORENSIC IDENTIFICATION AND CRIMINAL JUSTICE: FORENSIC SCIENCE, JUSTICE AND RISK* 59 (2006) (“[T]here are a lot of crime scenes where you will never find DNA. It's only useful then if you can get DNA and it actually means something.” (quoting a forensic investigator)).

71. See Mark W. Perlin & Beata Szabady, *Linear Mixture Analysis: A Mathematical Approach to Resolving Mixed DNA Samples*, 46 J. FORENSIC SCI. 1372, 1373 (2001).

72. DNA databases estimate genetic frequencies across five groups: Caucasian, African, Hispanic, Far East Asian, and Native American. See JOHN M. BUTLER, *FORENSIC DNA TYPING: BIOLOGY, TECHNOLOGY, AND GENETICS OF STR MARKERS* 85 (2d ed. 2005); see also Christian B. Sundquist, *Science Fictions and Racial Fables: Navigating the Final Frontier of Genetic Interpretation*, 25 HARV. BLACKLETTER L. J. 57, 66 (2009) [hereinafter Sundquist, *Science Fictions and Racial Fables*] (“State and federal law enforcement . . . rely on forensic analysis of crime-scene DNA samples to identify the likely ‘race’ of a criminal perpetrator, while prosecutors present expert testimony [as to the] probability that another person of the same ‘race’ as the defendant could have contributed the crime-scene DNA sample.”).

able to relieve discrimination problems that attend familial searches for genetic relatives of individuals in the database.⁷³ Since ancestry tests, like DNA phenotyping, require several days to process, however, they will be useful only for investigations that are not time-sensitive.⁷⁴

Aside from concerns about forensic utility and epistemic value, critics express four deeper objections to forensic reliance on ancestry tools. The first is that “using ancestry testing to determine suspects’ heritage could lead to genetic racial profiling.”⁷⁵ The worry is that even if evidence based on ancestry uses case-specific data (rather than probability or prejudice), and even if it is used to search for a particular assailant (rather than any from among many), it will target blacks and Latinos at disproportionate rates.⁷⁶ It is true that ancestry analysis could be misused in ways that harm minorities. But this objection gives no reason to think such abuse is either probable or any more likely than DNA dragnets⁷⁷ or stop-and-question sweeps based on race-based eyewitness accounts.⁷⁸

The second objection is that forensic DNA testing could uncover information that “contradicts what a person knows about herself or reveals to the world.”⁷⁹ Disclosure of a person’s biological origins could have

73. See Jennifer Steinhauer, ‘Grim Sleeper’ Arrest Fans Debate on DNA Use, N.Y. TIMES, July 9, 2010, at A14 (discussing the first use of familial search techniques in the United States to solve a homicide case). Critics worry that racial disparities in DNA database generate disproportionate risks of suspicion among people of color, and even proponents of familial searching concede that “[f]amilial searching potentially amplifies . . . existing [racial] disparities in criminal justice.” Frederick R. Bieber, Charles H. Brenner, & David Lazer, *Finding Criminals Through DNA of Their Relatives*, 312 SCI. 1315, 1316 (2006).

74. And like all forensic DNA tools, ancestry testing is susceptible to error. Risks include contamination of genetic samples during collection, handling, or testing; clerical mistakes during computer data entry; and misinterpretation by laboratory personnel. See Paul C. Giannelli, *Wrongful Convictions and Forensic Science: The Need to Regulate Crime Labs*, 86 N.C. L. REV. 163 (2007); Erin Murphy, *The Art in the Science of DNA: A Layperson’s Guide to the Subjectivity Inherent in Forensic DNA Typing*, 58 EMORY L.J. 489 (2008).

75. Willing, *supra* note 62, at 1A.

76. See Troy Duster, *Selective Arrests, an Ever-Expanding DNA Forensic Database, and the Specter of an Early-Twentieth-First-Century Equivalent of Phrenology*, in DNA AND THE CRIMINAL JUSTICE SYSTEM: THE TECHNOLOGY OF JUSTICE 315, 331 (David Lazer ed., 2004).

77. See Jeffrey S. Grand, Note, *The Bleeding of America: Privacy and the DNA Dragnet*, 23 CARDOZO. L. REV. 2277, 2278–83 (2002) (citing examples of cases in which police collected DNA samples based on vague racial descriptions); Fred W. Drobner, *DNA Dragnets: Constitutional Aspects of Mass DNA Identification Testing*, 28 CAP. U. L. REV. 479, 479–80 (2000) (criticizing DNA dragnets as “warrantless searches administered en masse to large numbers of persons whose only known connection with a given crime is that authorities suspect that a particular class of individuals may have had the opportunity to commit it”).

78. See, e.g., *United States v. Jones*, 242 F.3d 215, 216, 218–19 (4th Cir. 2001) (holding that an anonymous tip that several black males were drinking and causing a disturbance at specific intersection “was so barren of detail about the alleged culprits’ physical descriptions” that it could not establish reasonable suspicion for police to make a stop); *Commonwealth v. Cheek*, 597 N.E.2d 1029, 1031 (Mass. 1992) (finding the physical description of “black male with a black [three-quarter] length goose” jacket insufficient cause to arrest black suspect in predominantly black neighborhood on a cold fall night); *Brown v. State*, 481 S.W.2d 106, 110–12 (Tex. Crim. App. 1972) (holding that a suspect description including race and approximate height and weight, coupled with absence of inculpatory conduct, failed to yield probable cause for arrest).

79. Pilar N. Ossorio, *About Face: Forensic Genetic Testing for Race and Visible Traits*, 34 J.L.

unwanted psychological effects in some cases.⁸⁰ Disquiet about informational privacy must be balanced, however, against the benefit that DNA evidence credibly serves in the resolution of crimes.⁸¹ Furthermore, this concern applies little to genetic inference of visible features. “What a person knowingly exposes to the public,” a Supreme Court Justice noted, does not merit reasonable expectations of constitutional privacy.⁸² Exceptions could arise with respect to disclosure of concealed aspects of appearance that arise from sex reassignment or cosmetic surgery, but permanent body modification would implicate a narrow subset of cases. A wider ranging unease relates to the intermingling of genetic typing samples with information about medical or behavioral predispositions.⁸³ That statutory line-drawing mechanisms permit investigators to run useful DNA tests while prohibiting tests for sensitive traits such as late-onset disease⁸⁴ gives less reason to worry about what the state might learn or share about a suspect’s genetic susceptibilities by testing crime scene DNA for traits of physical appearance.

The third objection is that forensic ancestry testing could “promote the idea that certain races are more inclined than others to commit crimes.”⁸⁵ The concern is that “by connecting race, genetics[,] and crime,” reliance on ancestry evidence “will reinforce or recreate stereotypes of minorities as dangerous, criminal[,] and morally inferior.”⁸⁶ A final related objection is that ancestry testing will reify the idea of race as a scientific fact with criminogenic content.⁸⁷ Some legal scholars worry that ancestry testing “may be used to revive long discredited nineteenth century theories

MED. & ETHICS 277, 286 (expressing concern that “nothing prevents law enforcement officials from conducting any and all possible genetic and other chemical tests” on DNA left at a crime scene).

80. See Amy Harmon, *Indian Tribe Wins Fight to Limit Research of Its DNA*, N.Y. TIMES, Apr. 21, 2010, at A1 (describing researchers’ agreement to pay \$700,000 to forty-one members of the Havasupai tribe when DNA samples, collected to search for gene variants associated with diabetes among the tribe’s members, were used under a broadly-worded consent form to study other attributes, including the tribe’s geographic origins, findings of which contradicted the tribe’s belief that they descended from the Grand Canyon).

81. See Ossorio, *supra* note 79, at 287.

82. *Katz v. United States*, 389 U.S. 347, 351 (1967) (Harlan, J., concurring).

83. See Eric T. Juengst, *I-DNA-fication, Personal Privacy, and Social Justice*, 75 CHI.-KENT. L. REV. 61, 75 (1999). Standard DNA identification addresses this concern by limiting genetic analysis to those regions that do not code for known traits. See *Nicholas v. Goord*, 430 F.3d 652, 670 (2d Cir. 2005) (“[J]unk DNA . . . has, at present, no known function, except to accurately and uniquely establish identity.”).

84. See, e.g., FLA. STAT. ANN. § 943.325(13-15) (West 2008 & Supp. 2010) (barring discovery or disclosure of any and all genetic information not directly related to law enforcement purposes, whether in the investigation of an offense, the exclusion or identification of suspects, and the prosecution of the case).

85. Willing, *supra* note 62, at 1A; see also Amy Harmon, *In DNA Era, New Worries About Prejudice*, N.Y. TIMES, Nov. 11, 2007, at A1 (“[G]enetic information is slipping out of the laboratory and into everyday life, carrying with it the inescapable message that people of different races have different DNA.”).

86. Ossorio, *supra* note 79, at 285.

87. See, e.g., Abraham, *supra* note 8, at A6; Harmon, *supra* note 85, at A1.

of race” as a fact reducible to biology.⁸⁸ Others fear that “increasing acceptance of DNA science that ascribes a genetic dimension to race has the potential to . . . usher in a new era of scientific racism.”⁸⁹ Even the special prosecutor who tried one of the Baton Rouge murders, while conceding that “had it not been for Frudakis, we would still be looking for the white guy in the white pickup,” maintains, “If I could push a button and make this technology disappear, I would.”⁹⁰

It is not difficult to appreciate the worry that forensic ancestry testing could revive the discredited belief in morally relevant genetic differences among racial groups.⁹¹ The notion of race as a biological fact has been used to justify racist and xenophobic practices including slavery, segregation, sterilization, and immigration controls.⁹² Designations of ancestry might carry a disturbing meaning when they map onto pre-existing biases.⁹³ But DNA testing for ancestry or appearance is not like phrenology.⁹⁴ Fears that novel DNA forensics will shore up race bias or resurrect scientific racism are overstated.

Objections about racial stereotyping and racial reification make three mistakes, explored in Part III. First, these concerns fail to appreciate the difference between gross racial or ancestry classifications and traits of

88. OSAGIE K. OBASOGIE, PLAYING THE GENE CARD? A REPORT ON RACE AND HUMAN BIOTECHNOLOGY, at viii (2009); see also Christian B. Sundquist, *The Meaning of Race in the DNA Era: Science, History and the Law*, 27 TEMP. J. SCI., TECH. & ENVTL. L. 231, 257 (2008) [hereinafter Sundquist, *The Meaning of Race*] (“The historical view of race as a social and political construct devoid of biological meaning is being displaced by the growing belief that DNA technology and genetic science are able to isolate one’s true biological racial essence.”).

89. Sundquist, *The Meaning of Race*, *supra* note 88, at 265; Sundquist, *Science Fictions and Racial Fables*, *supra* note 72, at 92 (“The introduction of ‘scientific’ evidence against a criminal defendant that purports to assess genetic probabilities based on race . . . threatens to resurrect an enduring racial prejudice.”).

90. Newsome, *supra* note 63.

91. See TROY DUSTER, BACKDOOR TO EUGENICS 2 (2d ed. 2003) (“[J]ust when the social sciences thought they had won the battle with hereditarians over the fundamentally *arbitrary* importance of race in society, a new development came along to shake this assumption at its core: the growth of a body of research showing that *genetic disorders were distributed differently through different racial and ethnic groups*.” (citations omitted)); Alan H. Goodman, *Why Genes Don’t Count (for Racial Differences in Health)*, 90 AM. J. PUB. HEALTH 1699, 1699 (2000) (observing that “racialized notions of biology have made a comeback”); Ossorio, *supra* note 81, at 278 (“How are we to make sense of claims, on the one hand, that race is a social construct and not an intrinsic attribute of persons, and on the other hand, that forensic scientists have produced the first ‘race-determining genetic test?’” (citations omitted)).

92. Scientific evidence of racial hierarchy has historically relied on physical markers such as skin color, hair type, skeletal structure, tactile sensitivity, genital size, and on asserted group-based variations in talent and temperament. ELAZAR BARKAN, THE RETREAT OF SCIENTIFIC RACISM: CHANGING CONCEPTS OF RACE IN BRITAIN AND THE UNITED STATES BETWEEN THE WORLD WARS 3 (1992); Ian F. Haney López, “A Nation of Minorities”: Race, Ethnicity, and Reactionary Colorblindness, 59 STAN. L. REV. 985, 997 (2007).

93. Studying genetic influences for alcoholism is more likely to express stigma in the Irish or the Native American community, for example, than studying alcoholism’s genetic roots in the Jewish community.

94. Cf. David L. Faigman, *Anecdotal Forensics, Phrenology, and Other Abject Lessons from the History of Science*, 59 HASTINGS L.J. 979, 981–85 (2008) (comparing phrenology to modern forms of forensic identification including latent fingerprints, firearms, toolmarks, and bitmarks).

appearance that are commonly associated with race.⁹⁵ Second, they overlook the prospect of adoption of modest remedial measures short of prohibition—for example, requiring racial impact assessments or higher burdens of proof for investigatory use⁹⁶—to soften potential damage to racial solidarity. Finally, these objections miss the promise of physical suspect identifiers to expose phenotypic forms of racial prejudice and to temper or even dislodge race consciousness in the investigation of crimes.⁹⁷

II. The Genetics of Appearance

This Part briefly describes the science of DNA phenotyping, which relies on biometric comparison rather than attempting to infer physical traits directly from a person's genes. Few genetic variations manifest themselves in observable characteristics, for several reasons. Many variations occur in non-coding regions of the genetic blueprint, while others are made up of base substitutions that do not affect protein structures.⁹⁸ Most important is that genes are activated in large part through interaction with environmental stimuli.⁹⁹ Those genetic variations that do make a direct and observable phenotypic difference tend to affect physical traits that respond to the climatic variations among groups over time.¹⁰⁰

People who share a common geographic ancestry are more likely to share certain genes that contribute to phenotypic variation than those who do not share that ancestry.¹⁰¹ Statistical clustering methods can apply population differences in genetic frequencies to determine probabilities for the mixed ancestry of individuals.¹⁰² To the extent that certain physical characteristics tend to be distributed among individuals as a function of descent, knowledge about genomic ancestry can therefore impart identifying information about the appearance of unknown suspects that law

95. See Banks, *supra* note 2, at 1112 (observing that “race[,] rather than physical features . . . predominates in the development and use of suspect descriptions.”).

96. See generally Marc Mauer, *Racial Impact Statements As a Means of Reducing Unwarranted Sentencing Disparities*, 5 OHIO ST. J. CRIM. L. 19 (2007).

97. See PAUL GILROY, *AGAINST RACE: IMAGINING POLITICAL CULTURE BEYOND THE COLOR LINE* 37 (2000) (“Genomics may send out the signal to reify ‘race’ as code and information, but there is a sense in which it also points unintentionally toward ‘race’s’ overcoming.”).

98. See *Extensions to Mendel: Complexities in Relating Genotype to Phenotype*, in *GENETICS: FROM GENES TO GENOMES* 124–29 (Leland Hartwell et al. eds., 4th ed., 2010).

99. *Id.* at 133.

100. L.L. CAVALLI-SFORZA, PAOLO MENOZZI & ALBERTO PIAZZA, *THE HISTORY AND GEOGRAPHY OF HUMAN GENES* 19 (1994) (“[T]he major stereotypes, all based on skin color, hair color and form, and facial traits, reflect superficial differences that are not confirmed by deeper analysis with more reliable genetic traits and whose origin dates from recent evolution mostly under the effect of climate and perhaps sexual selection.”).

101. See Pamela Sankar, *Moving Beyond the Two-Race Mantra*, in *REVISITING RACE IN A GENOMIC AGE* 271, 275–78 (Barbara A. Koenig et al., eds., 2008) (distinguishing among constructionist, typological, and statistical conceptions of race).

102. Hua Tang et al., *Genetic Structure, Self-Identified Race/Ethnicity, and Confounding in Case-Control Association Studies*, 76 AM. J. HUM. GENETICS 268, 274 (2005).

enforcement would not otherwise have.¹⁰³

Hereditary notions of race faded in the decades after World War II, when evolutionary biologist Richard Lewontin¹⁰⁴ and population geneticist Luigi Luca Cavalli-Sforza¹⁰⁵ mounted a compelling body of evidence that race is not a fact of blood or biology, but a construct of society and culture.¹⁰⁶ The Human Genome Project's 2001 draft sequencing confirmed that humans are, genetically speaking, more than ninety-nine percent alike.¹⁰⁷ This resemblance, however, still leaves over three million genetic variations, much of which can be traced to the composite of populations from which individuals descend.¹⁰⁸

While modern humans appeared in eastern Africa about 200,000 years ago, it was only 50,000 years ago that the earliest among our species migrated to Australia, Europe, Asia, and the Americas.¹⁰⁹ Many of the genetic mutations in humans today took place in the 7200 generations before our original African ancestors departed for other continents some 1800 generations ago.¹¹⁰ The geographic separation and reproductive isolation that ensued, together with gene flow, genetic drift, natural selection, and varied environmental exposures have since generated complex patterns of genetic diversity among groups.¹¹¹ Our understanding

103. See DAVID H. KAYE, *THE DOUBLE HELIX AND THE LAW OF EVIDENCE* 195 (2010).

104. See, e.g., R.C. LEWONTIN, *BIOLOGY AS IDEOLOGY: THE DOCTRINE OF DNA* (1992); RICHARD LEWONTIN, *THE TRIPLE HELIX: GENE, ORGANISM, AND ENVIRONMENT* (2000).

105. See, e.g., L.L. CAVALLI-SFORZA & M.W. FELDMAN, *CULTURAL TRANSMISSION AND EVOLUTION: A QUANTITATIVE APPROACH* (1981); L.L. Cavalli-Sforza & Marcus W. Feldman, *The Application of Molecular Genetic Approaches to the Study of Human Evolution*, 33 *NATURE GENETICS* 266 (2003); L.L. Cavalli-Sforza, *The Human Genome Diversity Project: Past, Present and Future*, 6 *NATURE REV. GENETICS* 333 (2005).

106. See López, *Social Construction*, *supra* note 66, at 6 (arguing that constructionism “rejects the most widely accepted understanding of race” that “there exist natural, physical divisions among humans that are hereditary, reflected in morphology, and roughly but correctly captured by terms like Black, White, and Asian”).

107. See International Human Genome Sequencing Consortium, *Initial Sequencing and Analysis of the Human Genome*, 409 *NATURE* 860, 875 (2001); Francis S. Collins, *What We Do and Don't Know About Race, Ethnicity, Genetics and Health at the Dawn of the Genome Era*, 36 *NATURE GENETICS SUPP.* S13 (2004). Subsequent research has lowered early estimates of genetic difference to about 0.5 percent. See Samuel Levy et al., *The Diploid Genome Sequence of an Individual Human*, 5 *PUB. LIBR. SCI. BIOLOGY* 2113, 2114 (2007) (“Inclusion of insertion and deletion genetic variation into our estimates of interchromosomal difference reveals that only 99.5% similarity exists between the two chromosomal copies of an individual . . .”). We also know there is more genetic variation among members within a racial group than among people across groups. See R.C. Lewontin, *The Apportionment of Human Diversity*, 6 *EVOLUTIONARY BIOLOGY* 391, 398 (1972).

108. See Francis S. Collins, *Shattuck Lecture – Medical and Societal Consequences of the Human Genome Project*, 341 *NEW ENG. J. MED.* 28, 34 (1999); Troy Duster & Pilar Ossorio, *Race and Genetics: Controversies in Biomedical, Behavioral, and Forensic Sciences*, 60 *AM. PSYCHOLOGY* 115, 117 (2005).

109. See Hua Liu et al. *A Geographically Explicit Genetic Model of Worldwide Human Settlement History*, 79 *AM. J. HUM. GENETICS* 230, 232 (2006).

110. See L. LUCA CAVALLI-SFORZA, PAOLO MENOZZI, & ALBERTO PIAZZA, *THE HISTORY AND GEOGRAPHY OF HUMAN GENES* 16 (1994); RICHARD LEWONTIN, *HUMAN DIVERSITY* 162 (1982).

111. See STEPHEN JAY GOULD, *THE STRUCTURE OF EVOLUTIONARY THEORY* 510–46 (2002); D.J. Witherspoon et al., *Genetic Similarities Within and Between Human Populations*, 176 *GENETICS* 351, 356 (2007).

of this genetic variation was limited until recently by the low density of available genetic markers, statistical tools that could not measure those markers well, and population samples that captured an insufficiently broad range of phenotypic variation.¹¹² Global collaboration, however, has generated transnational, genome-wide data sets that make it possible to analyze variation across geographically diverse populations.¹¹³

There are two ways to infer the heritable basis of phenotypic variation.¹¹⁴ I call these contributive and statistical. The contributive method seeks to find and apply gene variants that influence particular phenotypes, while the statistical method uses biological correlations to estimate phenotypic patterns in a person's evolutionary history.¹¹⁵ The contributive method is acutely constrained by the fact that, as Frudakis recognizes, scientists “do not understand the genetic architecture of most human traits to the point that we could infer trait value from knowledge of DNA sequence and/or environment.”¹¹⁶ Even phenotypes for physical appearance—which tend to be less genetically complex than psychological, behavioral, or cognitive traits—are influenced by interaction among many genes, each of which has multiple forms and functions.¹¹⁷ Since different locations on the chromosome influence trait expression, and different gene variants exist for each of these locations, it is difficult to identify the variants that underlie even the most genetically simple traits.¹¹⁸

112. See Hannah Pulker et al., *Finding Genes that Underlie Physical Traits of Forensic Interest Using Genetic Tools*, 1 FORENSIC SCI. INT'L: GENETICS 100, 101 (2007).

113. Consider two studies by Noah Rosenberg and colleagues at the University of Michigan: Using data from the Human Genome Diversity Cell Line Panel, these studies looked at, respectively, 377 and 783 stretches of DNA in 1056 and 1048 individuals from 52 and 53 regions, representing source populations from all seven continents. Rosenberg showed that similarities among certain markers can determine genetic affinity; finding, for example, that the sample of Altaic-speaking Uyghurs from northwestern China reveal genomic ancestry from East Asia and Eurasia, while the Mozabites from Algeria exhibit clusters corresponding to Eurasia and Africa. See Noah A. Rosenberg et al., *Genetic Structure of Human Populations*, 298 SCIENCE 2101, 2104 (2002); Noah A. Rosenberg et al., *Clines, Clusters, and the Effect of Study Design on the Inference of Human Population Structure*, 1 PUB. LIBR. SCI. BIOLOGY 660, 661 (2005).

114. FRUDAKIS, *supra* note 59, at 437 (contrasting the “two main approaches to understanding the genetic basis of phenotypic variation,” but noting that both target heritable traits).

115. See generally, e.g., Patrick Sulem et al., *Genetic Determinants of Hair, Eye and Skin Pigmentation in Europeans*, 39 NAT. GENETICS 1443 (2007) (using genome-wide association scan among 2986 Icelanders to identify gene variants associated with hair and eye pigmentation, skin sensitivity to the sun, and freckling).

116. FRUDAKIS, *supra* note 59, at 497.

117. For example, ASIP and OCA2 genes seem to play key roles in pigmentation patterns of Asians and Europeans, see Heather L. Norton et al., *Genetic Evidence for the Convergent Evolution of Light Skin in Europeans and East Asians*, 24 MOLECULAR BIOLOGY & EVOLUTION 710, 718 (2007), while SLC45A2 and TYR genes appear to influence pigmentation in Europeans, see Patrick Sulem et al., *Two Newly Identified Genetic Determinants of Pigmentation in Europeans*, 40 NAT. GENETICS 835, 836–37 (2008), and three polymorphisms of the MC1R receptor account for ninety percent of phenotypes for red hair and fair skin, see Wojciech Branicki et al., *Determination of Phenotype Associated SNPs in the MC1R Gene*, 52 J. FORENSIC SCI. 349, 353–54 (2007).

118. See FRUDAKIS, *supra* note 59, at 491. Additional factors that confound the contributory method of phenotype inference include underspecified levels of ancestry stratification, the varying degrees to which different components of genetic variance contribute to trait expression, and the

The statistical method of phenotyping is more promising because it sidesteps the deepest complexities of gene-gene and gene-environment interactions. Rather than trying to isolate gene variants that contribute to the expression of particular traits, the statistical approach seeks to generalize a person's features based on his geographic origins.¹¹⁹ This method compares DNA from an unknown suspect to genetic profiles from thousands of known people alongside three-dimensional photographs and physical measurements.¹²⁰ Statistical phenotyping uses face recognition software to reconstruct what a person looks like as a function of his ancestry.¹²¹ Applying Bayesian probability¹²² to ancestry analysis for traits like facial features and complexion could enable estimates of individual appearance like a composite sketch resembling the low-resolution passport photograph.¹²³ To control for the influence of complicating non-genetic factors, questionnaire responses weed out people with dyed hair or colored contact lenses,¹²⁴ and accommodate variability in ultraviolet exposure and tanning capacity through inferences about living conditions, coupled with spectrophotometric measurements from unexposed areas of the body.¹²⁵

Skeptics of molecular photofitting think it far-fetched to infer phenotype from genomic ancestry.¹²⁶ They point out that some people of Asian or East Indian descent have skin as dark as many African Americans, while others have skin as light as many Caucasians.¹²⁷ For example, a 2003 study found that among individuals identified as “definitely white” by trained visual observers, one in four had more than fifty percent African and/or American Indian ancestry, according to genomic testing, while others identified as “definitely black” had a preponderance of European ancestry.¹²⁸ A 2005 study found, similarly, that some people with more than

evenness with which the locations of particular genes on a chromosome are spread across the whole genome. *Id.*

119. *Id.* at 446.

120. *Id.* at 452.

121. *See id.* at 443–45, 451–52.

122. Bayesian probability uses what we know from existing information to infer the method of reasoning that rational fact finders should use to maximize accurate decision making. For accessible treatments of Bayesian probability to identify the source of trace evidence from a crime scene, see Michael O. Finkelstein & William B. Fairley, *A Bayesian Approach to Identification Evidence*, 83 HARV. L. REV. 489, 501 (1970); *see also* D. H. Kaye, *What is Bayesianism?*, in *PROBABILITY AND INFERENCE IN THE LAW OF EVIDENCE: THE USES AND LIMITS OF BAYESIANISM I* (Peter Tillers & Eric D. Green eds., 1988) (discussing the probativity of adjusted and unadjusted random-match probability distributions to establish guilt).

123. *See* FRUDAKIS, *supra* note 59, at 440; *see also* P.M. McKeigue et al., *Estimation of Admixture and Detection of Linkage in Admixed Populations by a Bayesian Approach*, 64 ANN. HUM. GENETICS 171, 177 (2000) (describing a dependency assay that averages the posterior distribution of proportional ancestry at each marker locus).

124. *Id.* at 475.

125. *See* Jennifer K. Wagner et al., *Comparing Quantitative Measures of Erythema, Pigmentation and Skin Response Using Reflectometry*, 15 PIGMENT CELL RES. 379, 383–84 (2002).

126. *See* Duster & Ossorio, *supra* note 108, at 121, 128.

127. *See* Ossorio, *supra* note 79, at 283.

128. Flavia C. Parra et al., *Color and Genomic Ancestry in Brazilians*, 11 PROC. NAT'L ACAD. SCI. 177, 180, 181 (2003). However, race studies from Brazil come with qualification because, like other

fifty percent recent African ancestry have very light pigmentation, as measured by skin reflectometry.¹²⁹ What these studies show, skeptics claim, is that individuals can inherit the genetic markers used to trace ancestry from different ancestors than those that encode for traits like skin color.¹³⁰

The skeptics are right to the extent that ancestry tracing is necessarily incomplete. Not all genetic information is transmitted when chromosomes are inherited from one generation to the next; that a person inherits fifty percent of his genome from his mother and the other fifty percent from his father means that half of the genetic information from each parent is absent in any individual.¹³¹ Because it is random which half of each parent's genome a child receives, even children from the same parents can look very different.¹³² What skeptics sometimes miss is that phenotyping analyzes ancestry proportions at the individual, not population, level.¹³³ Correlations between ancestry and appearance allow photofitting to infer certain physical traits from where a person's ancestors lived.

Skin, hair, and eye color are receptive to genetic inference because phenotyping can control for environmental variability.¹³⁴ One study found that for a sample of 6,000, six DNA markers could predict brown eye color with ninety-three percent accuracy and blue eye color with ninety-one percent accuracy.¹³⁵ Other genetic studies have identified statistical correlations that explain with a high measure of accuracy individual

Latin American countries such as Cuba, Mexico, and Puerto Rico, Brazil features a color hierarchy that tends to operate independently of racial distinctions. See SHADES OF DIFFERENCE: WHY SKIN COLOR MATTERS 7 (Evelyn Nakano Glenn ed., 2009).

129. Rebecca L. Lamason et al., *SLC24A5, A Putative Cation Exchanger, Affects Pigmentation in Zebrafish and Humans*, 310 SCIENCE 1782, 1786 (2005) (finding that SLC24A5 alleles associated with lighter skin were prevalent among a European sample, but absent in Asian and Native American samples).

130. See Willing, *supra* note 62, at 1A.

131. A man's paternal lineage can be studied by analyzing markers on his Y chromosome, while anybody's maternal lineage can be studied using markers on mitochondrial DNA. See BUTLER, *supra* note 72, at 248.

132. FRUDAKIS, *supra* note 59, at 617.

133. See, e.g., Gerhard Mertens, *Forensic DNA Typing: Quo Vadis?*, 2 OPEN FORENSIC SCI. J. 21, 22 (2009).

134. See Pulker et al., *supra* note 112, at 101 (reviewing studies that evaluate the genetic basis of stature and facial features such as chin and facial dimples, hairy ears, earlobe attachment, widow's peak, and freckles); see also FRUDAKIS, *supra* note 59, at 436 (discussing craniofacial anthropometric morphology for traits including face shape, iris color, hair color and texture, eyelid folding, ear shape, nose and lip shape).

135. See Fan Liu et al., *Eye Color and the Prediction of Complex Phenotypes from Genotypes*, 19 CURRENT BIOLOGY R192 (2009). The background color in the iris makes eye color a more complex trait than skin or hair color. Individual genes have nevertheless been found to have a significant influence on eye color. See David L. Duffy, *A Three-Single-Nucleotide Polymorphism Haplotype in Intron 1 of OCA2 Explains Most Human Eye-Color Variation*, 80 AM. J. HUM. GENETICS 241, 247-48 (2007). A study funded by the U.S. Department of Justice is trying to develop a test that can infer pigmentation for hair, eye, and skin color. See Murray H. Brilliant et al., *Gene Polymorphism and Human Pigmentation*, Dep't Justice Doc. No. 223980 (2008), www.ncjrs.gov/pdffiles1/nij/grants/223980.pdf (finding five candidate genes for pigment that account for seventy-six percent of the variation in hair color, seventy-five percent in eye color, and forty-six percent in skin color).

differences between dark- and light-skinned people of European, African, and Asian descent.¹³⁶ The prospect that DNA phenotyping may one day become sufficiently reliable and precise for forensic purposes presses hard on underappreciated vulnerabilities in equal protection jurisprudence concerning the use of racial descriptors to identify criminal suspects.

III. Suspect Identification Doctrine

Race-based suspect descriptions present two kind of reliability problems: over-inclusivity and under-inclusivity. Over-inclusivity is when police pursue those who exhibit little resemblance to the suspect other than racial appearance. Under-inclusivity is when investigators pass over potential suspects for whom there are non-racial grounds for suspicion.

The case of *Brown v. City of Oneonta*¹³⁷ is instructive. A seventy-seven-year-old woman was visiting her friend's home when an intruder broke in at night.¹³⁸ The woman could describe the assailant only as a young black man with a cut on his hand.¹³⁹ After receiving this racially salient suspect description, police "conducted a 'sweep' of Oneonta, stopping and questioning non-white persons on the streets and inspecting their hands for cuts."¹⁴⁰ The burglar was never apprehended.¹⁴¹

Reliance on racial descriptors at the expense of other identifying traits tends to burden innocents who share with the suspect little more than apparent race. That police in *Brown* questioned many black men who did not have cuts on their hands,¹⁴² and even detained one black woman, suggests that investigators "considered race more strongly than other parts

136. See Lyle W. Konigsberg et al., *Estimation and Evidence in Forensic Anthropology: Sex and Race*, 139 AM. J. PHYSICAL ANTHROPOLOGY 77 (2009) (study of thirty-four phenotypic measurements in seventeen global populations assigned ninety-eight percent of subjects to genetically accurate racial ancestry); see also Sean Myles et al., *Identifying Genes Underlying Skin Pigmentation Differences Among Human Populations*, 120 HUM. GENETICS 613 (2007) (measuring genetic frequencies for skin color among Europeans, Chinese, and Africans, and finding the 374Leu allele more common in non-Caucasians); Stephen Ousley et al., *Understanding Race and Human Variation: Why Forensic Anthropologists are Good at Identifying Race*, 139 AM. J. PHYSICAL ANTHROPOLOGY 68 (2009) (reporting ninety-seven percent reliability in distinguishing between American whites and American blacks with the use of nineteen genetic markers).

137. 235 F.3d 769 (2d Cir. 2000). The case attracted national attention. See, e.g., Lynne Duke, *When Race is Equated with Crime; Manhunt for Black Suspects Raises Questions About Skin Color as a Clue*, WASH. POST, Oct. 21, 1992, at A3; Diana Jean Schemo, *Singling Out Blacks Where Few Are to Be Found; Amid Hills of Rural New York, Students From Inner-City Find Not-So-Hearty Welcome*, N.Y. TIMES, Oct. 20, 1992, at B1; *60 Minutes: The Black List: Is Racial Profiling an Effective Way to Fight Terror?* (CBS television broadcast Feb. 13, 2002), available at <http://www.cbsnews.com/stories/2002/02/13/60II/main329278.shtml>.

138. *Brown*, 235 F.3d at 779.

139. *Id.*

140. *Id.*

141. *Id.*

142. *Brown v. City of Oneonta*, 911 F. Supp. 580, 590 n.4 (N.D.N.Y. 1996), *vacated in part*, 221 F.3d 329 (2d Cir. 2000).

of the victim's description."¹⁴³ The burdens imposed by overreliance on race can be grave when interrogations are intrusive and affect large numbers at a distance in time and space from the crime.¹⁴⁴ Plaintiffs in *Brown* were among the two hundred non-whites questioned in a town with fewer than three hundred black residents.¹⁴⁵

Brown also illustrates the problem of under-inclusivity. The elderly victim told police that though she had not been able to see the assailant's face, she could infer that he was young because she heard him run quickly across the room, and could infer that he was black because his lower arm looked brown.¹⁴⁶ Given that the burglary took place under the cover of darkness, however, it is plausible that the perpetrator was not black.¹⁴⁷

Nor did equal protection guarantees apply to plaintiffs arrested for armed robbery in Santa Monica based on "exceedingly vague and general"¹⁴⁸ eyewitness accounts describing black men with a broad, estimated range of heights and weights.¹⁴⁹ The Ninth Circuit explained:

If the general descriptions relied on here can be stretched to cover [the plaintiffs], then a significant percentage of African-American males walking, eating, going to work or to a movie, ball game or concert, with a friend or relative, might well find themselves subjected to similar treatment, at least if they are in a predominantly white neighborhood.¹⁵⁰

The court's concern materialized in the infamous case of Charles Stuart, the white Boston man who claimed that a black man in a jogging suit had shot him and his pregnant wife, who soon died.¹⁵¹ After Stuart committed suicide, his brother told police that Stuart had confessed to having shot himself and his wife, and blamed the crime on a fictitious black man.¹⁵² But police had already swept the city, "stopping and searching black men more or less at random,"¹⁵³ including at least fifty "stop and

143. *Brown v. City of Oneonta*, 221 F.3d 329, 339 (2d Cir. 2000).

144. See Jim Mulvaney, *College Dragnet for Blacks Blasted*, NEWSDAY, Sept. 12, 1992, at 5 (quoting Investigator H. Karl Chandler as having said, "We've tried to examine the hands of all black people in the community.").

145. See *Brown*, 221 F.3d at 334, 337.

146. See Brief in Support of Petition for Writ of Certiorari to the United States Court of Appeals for the Second Circuit at 4, *Brown v. City of Oneonta*, 235 F.3d 769 (2d Cir. 2000) (No. 98-9375).

147. See Banks, *supra* note 2, at 1103 n.112.

148. *Washington v. Lambert*, 98 F.3d 1181, 1190 (9th Cir 1996).

149. *Id.* at 1183-84 (describing one man as 6' to 6'2" and weighing 150 to 170 pounds, and the other as 5'5" to 5'7" and weighing 170 to 190 pounds).

150. *Id.* at 1190-91.

151. Peter J. Howe, *From Nightmare to Reality, a City is Reeling*, BOSTON GLOBE, Jan. 7, 1990, at 1.

152. See Jim Naughton, *The Murder That Ravaged Boston: Revelations About the Stuart Deaths Leave the City Awash in Recriminations*, WASH. POST, Jan. 8, 1990, at B1.

153. William Raspberry, *Righteous Rage Against a Racist Lie*, NEWSDAY, Jan. 9, 1990, at 48.

frisk” searches daily in nearby neighborhoods.¹⁵⁴ News sources described an atmosphere of “universal suspicion” in which “every black man in Boston” became a suspect.¹⁵⁵ The Stuart case was a hoax but not an aberration.¹⁵⁶

Problems of under- and over-inclusivity persist even when suspect descriptions feature more precise information about physical appearance than eyewitnesses provided in *Brown* or Baton Rouge.¹⁵⁷ In the Ninth Circuit case of *Choi v. Gaston*,¹⁵⁸ police held in custody for two days a Korean man, Yong Ho Choi, on suspicion of murdering an officer.¹⁵⁹ At thirty-two years-old and five feet seven inches,¹⁶⁰ Choi was three inches shorter and fourteen years older than the perpetrator, whom eyewitnesses described as an eighteen-year-old, five-foot-ten Vietnamese man.¹⁶¹ The Court observed that Choi’s “Asian” appearance was the only apparent feature that Choi shared with the suspect.¹⁶²

The chief doctrinal challenge to race-based suspect descriptions has until recently been the prohibition on unreasonable searches and seizures.¹⁶³

154. MASS. ATTORNEY GEN. OFFICE, REPORT OF THE ATTORNEY GENERAL’S CIVIL RIGHTS DIVISION ON BOSTON POLICE DEPARTMENT PRACTICES 6 (1990).

155. Raspberry, *supra* note 153, at 50; *see also* Kathryn K. Russell, *The Racial Hoax as Crime: The Law as Affirmation*, 71 IND. L.J. 593, 597–99 (1996); Andrew Kopkind, *The Stuart Case: Race, Class, and Murder in Boston*, NATION, Feb. 5, 1990, at 149, 153 (1990); Sean Murphy, *Charges Dismissed Against Man Once Thought Tied to Stuart Case*, BOSTON GLOBE, Nov. 21, 1989, at 23.

156. Philadelphia police relied on victims’ description of a “slender black male” suspected of raping eight women to stop and question black men ranging markedly in age, weight, and height. Jeanette Covington, *Round Up the Usual Suspects: Racial Profiling and the War on Drugs*, in PETIT APARTHEID IN THE U.S. CRIMINAL JUSTICE SYSTEM: THE DARK FIGURE OF RACISM 27, 27–28 (Dragan Milovanovic & Kathryn K. Russell eds., 2001). In 1995, while trying to catch another serial rapist in Ann Arbor, police identified 730 African Americans as suspects based on a description of a “six-foot black man.” Sam Walker, *In Michigan, A Community Clashes Over DNA Testing*, CHRISTIAN SCI. MONITOR, Jan. 26, 1995, at 1. In 2002, when a woman raped at a Baltimore bus stop said her assailant was a black man in his early thirties, five foot ten, and 180 pounds, the district commander instructed officers: “Every black male around this Bus Stop is to be stopped until the subject is apprehended.” M. Dion Thompson, *Memo, Outrage Swiftly Ousted City Police Major; Healy retired hours after accusations of race profiling began; ‘He had a real problem,’* BALT. SUN, Mar. 7, 2002, at 1B.

157. In *Brown v. United States*, for example, the District of Columbia Circuit Court found unduly vague to justify arrest an anonymous tip that a narcotics seller was a “black male, approximately 5’6” in height, wearing a white shirt with dark writing on the front and blue jeans.” 590 A.2d 1008, 1010 (D.C. 1991). The court determined that “[d]escriptions applicable to large numbers of people will not support a finding of probable cause.” *Id.* at 1017 (citing *Commonwealth v. Jackson*, 331 A.2d 189, 191 (Pa. 1975)).

158. 220 F.3d 1010 (9th Cir. 2000) (per curiam).

159. *Id.* at 1014 (Noonan, J., concurring).

160. *Id.*

161. *Id.* at 1013.

162. *Id.* at 1016 (“To treat persons in this grouping as fungible when one of the group is a crime suspect would be to say that the police could arrest at will. A custom of treating ‘all Asians’ alike would be intolerable.”); *cf.* *Faulk v. State*, 574 S.W.2d 764, 766–67 (Tex. Crim. App. 1978) (holding that description of armed robber as “young black male wearing a multicolored shirt” was too vague to yield probable cause, and noting that police officer who stopped appellant “had only one fact to connect the appellant to the armed robbery[:] that he was a young black male.”).

163. *See Whren v. United States*, 517 U.S. 806, 813 (1996) (noting the doctrinal shift from the Fourth to the Fourteenth Amendment’s equal protection clause as the primary ground for challenging racially discriminatory police conduct).

In *Brown*, however, the Second Circuit held that when officers rely on racial descriptions in determining whom to question, this does not constitute a seizure under the Fourth Amendment.¹⁶⁴ By contrast, equal protection guarantees can be triggered by any encounter with police,¹⁶⁵ even if they do not rise to the level of a stop or arrest.¹⁶⁶ The *Brown* court also declined, however, to find discriminatory law enforcement under the Fourteenth Amendment.¹⁶⁷ The expansive investigation of blacks “was race-neutral on its face”¹⁶⁸ because the race-based description on which the interrogation policy relied “originated not with the state but with the victim.”¹⁶⁹ This was not “a suspect racial classification”¹⁷⁰ because the policy was anchored not in stereotyping by state officials, but in “the altogether legitimate basis of a physical description given by the victim of a crime.”¹⁷¹ So strict scrutiny did not apply.

Courts misunderstand the justification for reliance on eyewitness descriptions of a suspect’s race in criminal investigations. The argument that race-based suspect descriptions are not a racial classification makes much of the fact that eyewitness accounts of race rely not on group stereotypes but on observation of individuals in a specific case.¹⁷² This point misses the significance of police reliance on eyewitness accounts to

164. See *Brown v. City of Oneonta*, 221 F.3d 329, 334, 340–41 (2d Cir. 2000). The Supreme Court has defined a “seizure” within the meaning of the Fourth Amendment as a police encounter in which an officer, “by means of physical force or show of authority, has in some way restrained the liberty of a citizen[.]” *Terry v. Ohio*, 392 U.S. 1, 19 n.16 (1968), as distinguished from the situation in which an officer merely “approaches an individual and asks a few questions.” *Florida v. Bostick*, 501 U.S. 429, 434 (1991).

165. See *United States v. Avery*, 137 F.3d 343, 353–54 (6th Cir. 1997) (finding that “[a] person cannot become the target of a police investigation solely on the basis of skin color” because “the Fourteenth Amendment protects citizens from police action . . . based solely on impermissible racial considerations”).

166. See *id.* at 355 (“If law enforcement adopts a policy, employs a practice, or in a given situation takes steps to initiate an investigation of a citizen based solely upon that citizen’s race, without more, then a violation of the Equal Protection Clause has occurred.”).

167. See *Brown*, 221 F.3d at 334–35. The Second Circuit avoided the Sixth Circuit’s reasoning in *Avery* by distinguishing the facts in *Brown* and by concluding that the logic in *Avery* constituted “non-binding dicta from a non-binding circuit court.” *Id.* at 338 n.8. Two litigants in *Brown* had more success in a state court suit that raised claims under the equal protection and search and seizure provisions of the New York constitution. See *Brown v. State*, 814 N.Y.S.2d 492, 507 (N.Y. Ct. Cl. 2006).

168. *Brown*, 221 F.3d at 337.

169. *Id.* at 338.

170. *Id.*

171. *Id.* at 337.

172. See, e.g., *Cartnail v. State*, 753 A.2d 519, 530 (Md. 2000) (“In looking at the description of the suspects, undoubtedly physical characteristics, such as race, gender, ethnicity, hair color, facial features, age, body build, or apparel of a suspect permits winnowing of innocent travelers.”); Sheri Lynn Johnson, *Race and the Decision to Detain a Suspect*, 93 YALE L.J. 214, 243 (1983) (“Although the suspect’s race is noted and weighed in the decision to detain, no generalizations about the characteristics, behavior, or appropriate treatment of the racial group are employed” when police use racial descriptors to search for a particular perpetrator.); Lawrence Rosenthal, *Policing and Equal Protection*, 21 YALE L. & POL’Y REV. 53, 97–98 (2003) (“Virtually all courts and commentators seem to agree that [when police, acting on a description of a black suspect, stop a black man but not a white man leaving a crime scene,] the authorities are basing enforcement decisions on the similarity between a suspect and a witness’s description, rather than on race.”).

build and apply suspect profiles. A second reason given for why racial classification exempts eyewitness descriptions is that these accounts tend to include non-racial factors too.¹⁷³ The doctrinal force of this reason is blunted by the fact that race is not just one suspect descriptor among others; it is the most commonly used and conspicuously featured.¹⁷⁴ Police guidelines in almost all jurisdictions instruct investigators and dispatchers, when questioning an eyewitness or relaying information about a suspect, to emphasize suspect race as the only indispensable descriptor other than gender.¹⁷⁵ And many state practices have been found to qualify as a racial classification when race occupies a prominent place as more than just one among multiple factors, even if race is not the sole criterion or decisive of government policy.¹⁷⁶

The argument that suspect descriptions do not qualify as state action maintains that because it is victims or witnesses who identify suspects in racial terms, investigating officers do not do the classifying.¹⁷⁷ But police are the ones who solicit and implement racial information, first by prompting witnesses to check a box for a suspect's race, then by relying on these designations in determining who to interrogate or arrest.¹⁷⁸ Police use of racial identifiers supplied by eyewitnesses resembles the hybrid of public and private conduct found to satisfy the state action requirement in contexts including ballot rules,¹⁷⁹ child custody,¹⁸⁰ and housing

173. See *Brown*, 221 F.3d at 337–38 (upholding race-conscious interrogation policy in part because it relied on a suspect description that “included race as one of several elements”).

174. See *Banks*, *supra* note 2, at 1109. The prominent place of race in suspect descriptions corresponds to what I have elsewhere referred to as a race-attentive means of differentiation. See Dov Fox, Note, *Racial Classification in Assisted Reproduction*, 118 *YALE L.J.* 1844, 1887–88, 1899–91 (2009) (distinguishing race-attentiveness from salience-varying approaches in which racial considerations are withheld altogether (race-indifference), provided as one among other similarly-situated traits (race-sensitivity), or in which race is the sole feature about a person that is made known (race-exclusivity)).

175. See *Banks*, *supra* note 2, at 1110 (“Law enforcement officers almost always limit their search on the basis of race, even as they do not limit it on the basis of every other aspect of the description.” (citations omitted)).

176. The Court has applied strict scrutiny to state reliance on race in affirmative action, school desegregation, and majority-minority redistricting. See *City of Richmond v. J.A. Croson Co.*, 488 U.S. 469, 493 (1989) (affirming that racial classifications in employment preferences, “[u]nless . . . strictly reserved for remedial settings . . . may in fact promote notions of racial inferiority and lead to a politics of racial hostility”); *Shaw v. Reno*, 509 U.S. 630, 644, 647 (1993) (striking down electoral reapportionment that gives the appearance of having been influenced by racial considerations); *Parents Involved in Cmty. Schs. v. Seattle Sch. Dist. No. 1*, 551 U.S. 701, 798 (2007) (Kennedy, J., concurring) (arguing that race-conscious school assignments “threaten to reduce children to racial chits valued and traded according to one school’s supply and another’s demand”).

177. See, e.g., *Brown*, 221 F.3d at 338 (suspect description “originated not with the state but with the victim”).

178. See, e.g., U.S. DEP’T OF JUSTICE, GUIDANCE REGARDING THE USE OF RACE BY FEDERAL LAW ENFORCEMENT AGENCIES 6 (2003), available at http://www.justice.gov/crt/about/spl/documents/guidance_on_race.pdf (“[W]here authorities are investigating a crime and have received *specific information* that the suspect is of a certain race (e.g., direct observations by the victim or other witnesses), authorities may reasonably use that information, even if it is the only descriptive information available.”).

179. See *Anderson v. Martin*, 375 U.S. 399, 403 (1964) (finding an equal protection violation in

allocations.¹⁸¹ The established doctrinal grounds for withholding strict scrutiny for suspect descriptions are less sturdy than they appear.¹⁸²

Yet few readers will be surprised to learn that no court has treated police reliance on race-based suspect descriptions as the kind of racially classifying state action that is subject to strict scrutiny under the Fourteenth Amendment.¹⁸³ Investigating an individual suspect in terms of his identified race seems as inevitable as it is innocuous. “[I]t is a fact of life in our diverse culture,” the Second Circuit has recognized, “that race is used on a daily basis as a shorthand for physical appearance.”¹⁸⁴ Nor are race-based accounts used for the intent of disadvantaging—or with the effect of stigmatizing—any particular group.¹⁸⁵ Exacting judicial review seems therefore unwarranted. This is not to say that race-based suspect descriptions would have trouble surviving strict scrutiny.¹⁸⁶

Strict scrutiny analysis would ask first whether police use race-based suspect descriptions to advance a sufficiently worthy purpose such as remedying discrimination,¹⁸⁷ promoting diversity,¹⁸⁸ or averting imminent violence by segregating inmates during a race riot.¹⁸⁹

“the interplay of governmental and private action” that facilitates the exercise of racial prejudice in the ballot box (quoting *NAACP v. Alabama*, 357 U.S. 449, 463 (1958)).

180. *See* *Palmore v. Sidoti*, 466 U.S. 429, 433 (1984) (striking down race-based custody determinations on the ground that “the law cannot, directly or indirectly,” give effect to “[p]rivate [racial] biases”).

181. *See* *Reitman v. Mulkey*, 387 U.S. 369, 371 (1967) (invalidating a housing amendment to the California Constitution that allowed real estate agents and landlords to reject homebuyers on the basis of race).

182. My positivist analysis of equal protection doctrine should not be taken as normative endorsement. The colorblindness jurisprudence of the Rehnquist and Roberts Courts is in my view flawed on two accounts. It fails to distinguish instances of race-based state action that promote racial equality from those that erode it, and it ignores the background conditions through which facially neutral practices can shape racial justice.

183. *See* *Brown v. City of Oneonta*, 235 F.3d 769, 771 (2d Cir. 2000) (Walker, C.J., concurring in denial of rehearing en banc) (“[N]o legal opinion, concurrence, dissent (or other judicial pronouncement) has ever intimated, much less proposed” that race-based suspect descriptions constitute a racial classification). Judge Calabresi has argued, however, that reliance on race should count as a racial classification if it crowds out the influence of other identifiers. *Id.* at 781 (Calabresi, J., dissenting from denial of rehearing en banc) (arguing that strict scrutiny is appropriate when police “ignore essentially everything but the racial part of a victim’s description, and, acting solely on that racial element, stop and question all members of that race they can get hold of, even those who grossly fail to fit the victim’s description”).

184. *Id.* at 771 (Walker, C.J., concurring in denial of rehearing en banc).

185. *See* *Brown v. City of Oneonta*, 221 F.3d 329, 337 (2d Cir. 2000).

186. *See, e.g.,* *United States v. Lawes*, 292 F.3d 123, 127 (2d Cir. 2002) (affirming finding of reasonable suspicion when police stopped thirty-four year-old black male, 200 pounds and 6’1” tall, based on description of “twenty year-old black male, weighing 160 pounds and 5’9” in height”).

187. Remedial objectives seek to undo or impede the effects of past or persisting discrimination in education, *see* *McDaniel v. Barresi*, 402 U.S. 39, 41–42 (1971), employment, *see* *United States v. Paradise*, 480 U.S. 149, 185–86 (1987), or voting, *see* *Bush v. Vera*, 517 U.S. 952, 993 (1996) (O’Connor, J., concurring).

188. *See* *Grutter v. Bollinger*, 539 U.S. 306, 326–27 (2003) (holding that the goal of racial diversity in a public university student body can be sufficiently worthy to survive strict scrutiny).

189. *See* *Lee v. Washington*, 390 U.S. 333 (1968) (affirming racial desegregation order in Alabama prisons).

Though courts have been reluctant to attach this level of importance to the goals of day-to-day law enforcement, the objectives of criminal resolution seem at least as weighty as greater diversity in the classroom. In holding in *United States v. Martinez-Fuerte*¹⁹⁰ that border patrol agents could consider Mexican appearance in deciding which cars to stop, the Supreme Court characterized as substantial, rather than compelling, the interest served by curbing the influx of undocumented immigrants.¹⁹¹ Efforts to intercept prospective offenders seem less imperative, however, or at least more speculative than investigations that aim to solve crimes already committed.¹⁹² Judicial review of police reliance on race could badly impede law enforcement by requiring police, “before acting on a physical description that contains a racial element, to balance myriad competing considerations, one of which would be the risk of being subject to strict scrutiny in an equal protection lawsuit.”¹⁹³

Suspect race is useful to police insofar as racially stereotypic phenotypes relate to skin color and facial features. Yet criminal investigations focus not on physical traits but on race.¹⁹⁴ Richard Banks argues that “[t]he exigencies of law enforcement make it difficult to imagine how officers would narrowly tailor their use of race.”¹⁹⁵ Scholars have recommended that police limit suspect searches to a specified location or time period; or that they use race only if the crime is an extraordinary one.¹⁹⁶ Proposals like these might mitigate the burdens that reliance on race-based descriptions impose on innocents. But they would not demote the utility of race in identifying criminal suspects.

IV. Suspect Identification Theory

Molecular photofitting is for now too primitive to infer complexion or facial features reliably enough to satisfy investigatory standards for scientific forensics.¹⁹⁷ But this is not like the elusive cure for cancer that scientists every few years claim lies just around the corner.¹⁹⁸ DNA

190. 428 U.S. 543 (1976).

191. *Id.* at 556–57.

192. *Cf.* Stephen J. Ellmann, *Racial Profiling and Terrorism*, 19 N.Y.L. SCH. J. HUM. RTS. 305 313 n.27 (2003) (arguing that “the massive deprivations of liberty that we impose as [criminal] punishments” shows that society regards “enforcement of laws against serious crimes” as a “compelling government interest”).

193. *Brown*, 235 F.3d at 771.

194. *See* Banks, *supra* note 2, at 1111.

195. *Id.* at 1119 (“Would officers only use race along with a specified number of other characteristics? Would they only investigate a predetermined number of individuals?”).

196. *See* Deborah A. Ramirez, Jennifer Hoopes, & Tara Lai Quinlan, *Defining Racial Profiling in a Post-September 11 World*, 40 AM. CRIM. L. REV. 1195, 1215–17 (2003).

197. Phenotyping need not satisfy evidentiary standards. At the accusatory stage there would be a known individual (the criminal defendant) against whose actual genetic profile to compare the crime scene DNA.

198. *See, e.g.*, James F. Holland, *Breaking the Cure Barrier 25 Years Later*, 26 J. CLIN. ONCOLOGY 1575 (2008).

phenotyping is different because the research is still in its early stages and funding is in short supply. Scientists who work on molecular photofitting have credible ground for projecting that larger data sets and more advanced computer programs will enhance the technology's rigor and precision.¹⁹⁹

This Part argues that the government should sponsor molecular photofitting research for two reasons. First, if DNA phenotyping becomes scientifically reliable and forensically useful, its enlistment in police investigations would serve the resolution of crime by increasing the speed and accuracy with which criminals are apprehended. Second, the use of reliable forensic photofitting by law enforcement would enhance the causes of police legitimacy and criminal justice, by excluding innocents from suspect investigation. I develop a phenotypic suspect identification system that police could employ upon recovery of a suspect's DNA, even when there is a victim or eyewitness description, and especially when there is not. The system that I propose applies race-obscuring physical identifiers based on genetically-influenced traits in order to supplement race-based eyewitness descriptions according to the epistemic value of each.

DNA phenotyping promises epistemic advantages over eyewitness identification. The reason that so many wrongful convictions turn on witnesses picking out a person other than the perpetrator from a lineup is that eyewitness misidentification is common and goes easily undetected.²⁰⁰ Checks on misleading suspect descriptions (informant testimony, confessions, or non-DNA forensic evidence) are frequently sparse and themselves unreliable.²⁰¹ Brandon Garrett's 2008 study of the Innocence Project data set found that while the majority of exonerees (158 of the 200) were wrongfully convicted based on erroneous eyewitness testimony, and nearly one-third of those (forty-seven) brought claims alleging eyewitness misidentification, not a single reversal was based on these challenges.²⁰²

199. Within a few years, Tony Frudakis expects, researchers will "have figured out so many traits that a criminal might as well leave his driver's license at the scene of the crime." Jessica Snyder Sachs, *DNA and a New Kind of Racial Profiling*, POPULAR SCI., Dec. 2003, at 16, 20 (quoting Tony Frudakis); see also Yann C. Klimentidis & Mark D. Shriver, *Estimating Genetic Ancestry Proportions from Faces*, 4 PUB. LIBR. SCI. ONE 1, 6 (2009); Mark Jobling & Peter Gill, *Encoded Evidence: DNA in Forensic Analysis*, NATURE REV. 739, 748 (2004) (noting the "strong genetic component" of "stature, facial features and pigmentation").

200. See Brandon L. Garrett, *Judging Innocence*, 108 COLUM. L. REV. 55, 125 (2008) ("[M]isidentification may be very difficult for any expert, juror, or judge to detect if suggestion misled an eyewitness.").

201. The Supreme Court has recognized "[t]he vagaries of eyewitness identification" and that "the annals of criminal law are rife with instances of mistaken identification." *Manson v. Brathwaite*, 432 U.S. 98, 119 (1977) (Marshall, J., dissenting) (quoting the majority opinion in *United States v. Wade*, 388 U.S. 218, 228 (1967)) (internal quotations marks omitted). *Manson* held that the Due Process Clause protects a right to be free from suggestive eyewitness identification, whereby police encourage an eyewitness to pick out the suspect from a lineup, see *id.* at 113, but that even if the police engage in such procedures, the identification may still be admitted at trial if the eyewitness seemed "certain" and had a sound opportunity to view the attacker. *Id.* at 114. For discussion of eyewitness identification reform legislation recently proposed in ten states, see Vesna Jaksic, *States Look at Reforming Lineup Methods*, NAT'L L.J., Apr. 20, 2007, at 6.

202. See Garrett, *supra* note 200, at 60, 80.

Unlike eyewitness accounts, photofitting evidence can be falsified through standard genetic matching. Genetic identification tools provide feedback mechanisms to monitor the accuracy of photofitting evidence. DNA phenotyping prompts us to rethink the role that race plays in the investigation of crime.²⁰³ Today, a police dispatcher might release an all-points bulletin for officers to be on the lookout for a “thirty to forty-year-old black male” identified by someone who saw the crime. The availability of photofitting evidence would provide the kind of detailed suspect information necessary to create a system of DNA identification that uses genetic markers for more precise and quantifiable characteristics such as melanin concentration and facial morphology. This phenotypic identification system could not convey many descriptive traits, like scars and tattoos, or temporary features like clothing and facial hair. But it could determine physical appearance with greater granularity and falsifiability than an eyewitness sketch, and identify a suspect in less explicitly racial terms, like skin color #14, hair color #9, eye color #3, nose shape #7.²⁰⁴

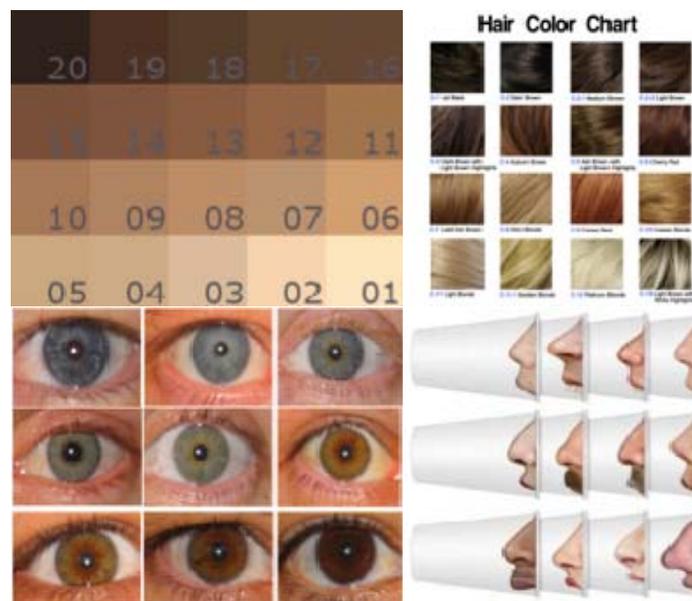


Figure 2. Charts of Facial Characteristics
Skin tones (upper left); hair colors (upper right); eye colors
(bottom left); nose shapes (bottom right).

This should sound familiar to anyone who has been to a makeup counter. Phenotypic descriptors resemble the practice by which cosmetic consultants refer to skin shades that capture gradations along the color

203. Cf. GILROY, *supra* note 97, at 20 (predicting that in a genetically advanced society, DNA research will discredit the notion that “specifically racial differences” are useful as a means of classifying people).

204. Cf. Bela August Walker, Note, *The Color of Crime: The Case Against Race-Based Suspect Descriptions* 103 COLUM. L. REV. 662, 683 (2003).

palette.²⁰⁵ I propose that investigators use molecular photofitting data to supplement eyewitness descriptions of a suspect's appearance, to the extent that phenotyping evidence is reliable in designing search tactics and refining suspect lists. This totality-of-the-evidence approach to criminal suspect identification directs police to integrate photofitting with eyewitness evidence in proportion to the epistemic value of each.²⁰⁶ When eyewitness and phenotyping sources disagree on suspect appearance, the source that should trump depends on which has greater epistemic value in light of the conditions under which each was generated in relation to others.

At least for investigations that do not appear urgent or pressurized, police should, in determining whom to stop or question, accord weight to the relative epistemic value of eyewitness and phenotyping evidence in a particular case. The value of each source will depend on a number of contextual factors. The epistemic value of an eyewitness description, for example, turns on such factors as how long an eyewitness observed the suspect, whether the view was lit or dark and direct or obstructed, and how many eyewitnesses can corroborate a description under what conditions and with what levels of confidence. Similarly, the value of a molecular photofitting description turns on factors like the quality of a DNA sample retrieved from a crime scene; the informational content of genetic trait markers for contributive phenotyping; and the size, breadth, and representativeness of photofitting databases for statistical phenotyping.

A recent example helps to illustrate how this proposal would apply in practice. On the evening of May 1, 2010, a Pathfinder filled with propane, gasoline, and fireworks began emitting smoke in New York's Times Square.²⁰⁷ Vendors alerted police to the vehicle, which would have caused massive destruction had it not failed to explode.²⁰⁸ There were no eyewitnesses, but surveillance cameras captured an individual changing his shirt and looking back over his shoulder around the block from West 45th Street where the vehicle was parked.²⁰⁹ Based on the videos, police

205. Cosmetic companies like Clinique, Lancôme, Estée Lauder, and L'Oréal Paris have long embraced a seasonal color system that matches "warm" and "cool" undertones to a person's complexion. *See, e.g.*, CAROLE JACKSON, *COLOR ME BEAUTIFUL* 47–53 (1980) (using a seasonal color system to help an individual find her own "thirty special colors"); BERNICE KENTNER, *COLOR ME A SEASON* 24–32 (1978) (theorizing that color analysis should proceed as a function of skin color rather than hair or eye color).

206. *Cf. Manson*, 432 U.S. at 114 (adopting totality of circumstances test for admitting eyewitness identifications into evidence); *see also* *Yancey v. State of Alabama*, Cr. 04-1171, 2009 WL 725198, at *16 (Ala. Crim. App. Mar. 20, 2009) (holding that a single eyewitness statement is insufficient to establish guilt beyond a reasonable doubt in the absence of other inculpatory information).

207. Al Baker & William K. Rashbaum, *Police Find Car Bomb in Times Square*, N.Y. TIMES, May 2, 2010, at A1.

208. *See* Michael M. Grynbaum, William K. Rashbaum, & Al Baker, *Police Seek Man Taped Near Times Sq. Bomb Scene*, N.Y. TIMES, May 3, 2010, at A1.

209. *See* Peter Fowler, *NYPD Looking For White Male Over Attempted Times Square Bombing*, NEWSROOM AM., May 2, 2010, <http://www.newsroomamerica.com/story/12169.html>.

described the person of interest as a white man in his forties.²¹⁰

Video footage of the “Times Square Bomber” was blurred and shadowy, however, so it had low epistemic value and should have counted for little as the FBI developed strategies for tracking down potential suspects. The perpetrator was in fact a thirty-year-old Pakistani-American man with a dark complexion, narrow eyes, and a broad nose.²¹¹ Had forensic investigators found the suspect’s cell tissue on the door handles, turn signals, or radio knobs of the car, and were statistical DNA phenotyping developed to the point of reliability, this technique could have been able to produce a more accurate picture of what the suspect looks like.

Reliance on phenotypic identification would not be easy to implement. Race is entrenched in the way that most people perceive one another.²¹² This deep-seated race-consciousness limits the potential of phenotyping to loosen the hold that race has on the way police and eyewitnesses describe suspects.²¹³ The cross-cutting patterns of perception that lead people to ascribe racial designations do not always track physical features. This is because the ways that we process information about human appearance are shaped by social framings and exposure to people with features of different shapes and colors.²¹⁴

Police training and public education would be needed to implement a transition from racial identifiers to phenotypic ones.²¹⁵ Again consider the cosmetics industry. Every cosmetologist and esthetician is required to understand color theory, which foregoes racial classifications in favor of skin tones (e.g., peach, olive, copper).²¹⁶ Through training and habituation, police officers could learn to discern and tend to hues, sizes, and shapes, independent of the racial referents we associate them with today.²¹⁷

210. Surveillance video footage of the man can be viewed at N.Y. Post, *Manhunt for Suspected Times Square “Bomber,”* YOUTUBE (May 2, 2010), <http://www.youtube.com/watch?v=Ujrg7zkvLQ>.

211. See William K. Rashbaum, Mark Mazzetti, & Peter Baker, *Arrest Made in Times Square Bomb Case*, N.Y. TIMES, May 4, 2010, at A1. Faisal Shahzad was arrested after he boarded a plane to Dubai. *Id.*

212. See Nilanjana Dasgupta et al., *Group Entitativity and Group Perception: Associations Between Physical Features and Psychological Judgment*, 77 J. PERSONALITY & SOC. PSYCHOL. 991 (1999).

213. See R. Richard Banks, *The Story of Brown v. City of Oneonta: The Uncertain Meaning of Racially Discriminatory Policing Under the Equal Protection Clause*, in CONSTITUTIONAL LAW STORIES 223, 247 (Michael C. Dorf ed., 2004) (“[The] centrality of race in suspect descriptions represents a form of racial discrimination so ingrained . . . as to be immune to legal remediation and beyond moral recognition.”).

214. See Jennifer L. Eberhardt et al., *Believing Is Seeing: The Effects of Racial Labels and Implicit Beliefs on Face Perception*, 29 J. PERSONALITY & SOC. PSYCHOL. BULL. 360, 370 (2003) (explaining why social variables influence how physical features are seen and remembered); David J. Kelly et al., *The Other-Race Effect Develops During Infancy: Evidence of Perceptual Narrowing*, 18 PSYCHOL. SCI. 1084, 1089 (2007) (finding that three month-old infants demonstrate equally accurate recognition for other-race faces, but by nine months superior recognition was limited to same-race faces).

215. See Walker, *supra* note 204, at 683.

216. See J.M. Lutes, *Making Up Race: Jessie Fauset, Nella Larsen, and the African American Cosmetics Industry*, ARIZ. Q., Spring 2002, at 77, 98–99.

217. *But cf.* Hernandez v. New York, 500 U.S. 352, 371–72 (1991) (noting in dicta that “a policy

Race would retain its prominent place in criminal investigations if physical markers were filtered and translated into racial terms.²¹⁸ While diminished reliance on race-based suspect descriptions could risk making race more conspicuous,²¹⁹ a gradual dwindling of race-consciousness seems more plausible.²²⁰ The cultural impact of police norms resonates beyond the law enforcement context.²²¹ If it became general knowledge that officers describe suspects in phenotypic terms and that police regard race as poor grounds for identification, this public understanding might discourage racial thinking, if in only indeterminate, even imperceptible ways.²²²

The integration of molecular photofitting evidence into criminal investigations could also expose hidden forms of racial prejudice in law enforcement.²²³ Police tend to overestimate the commission of crime by

of striking all [jurors] who speak a given language, without regard to the particular circumstances of the trial or the individual responses of the jurors, may be found . . . to be a pretext for racial discrimination”).

218. See Banks, *supra* note 2, at 1118. As Richard Banks has argued:

Even if officers and citizens attempted in good faith to abide by [a] rule [that prohibited the inclusion of information about race in suspect descriptions], could one expect other than that ostensibly non-race-based descriptions would be immediately and invariably re-encoded by everyone in terms of race? Blond hair and blue eyes; narrow eyes and straight black hair; dark brown skin and tightly curled black hair—could the racial referent of such identifiers be ignored?

219. See William J. Stuntz, *Local Policing After the Terror*, 111 YALE L.J. 2137, 2178–79 (2002) (“If the law asks [police] to feign ignorance [about a suspect’s race], the likely effect is not to reduce the role ethnicity plays in policing, but rather to reduce the respect the law enjoys among the police.”); cf. Linda Hamilton Krieger, *The Content of Our Categories: A Cognitive Bias Approach to Discrimination and Equal Employment Opportunity*, 47 STAN. L. REV. 1161, 1240 (1995) (“A legal duty which admonishes people simply not to consider race . . . harkens to Dostoevsky’s problem of the polar bear: ‘Try . . . not to think of a polar bear, and you will see that the cursed thing will come to mind every minute.’” (citation omitted)).

220. Cf. *Grutter v. Bollinger*, 539 U.S. 306, 343 (2003) (articulating the expectation that affirmative action programs like the one employed by the University of Michigan law school, though lawfully permissible when the case was decided, should not be needed in twenty-five years). For discussion, see Ralph Richard Banks, *Beyond Colorblindness: Neo-Racialism and the Future of Race and Law Scholarship*, 25 HARV. BLACKLETTER L.J. 41, 41–42 (2009); Sumi Cho, *Post-Racialism*, 94 IOWA L. REV. 1589, 1594 (2009); John A. Powell, *Post-Racialism or Targeted Universalism*, 86 DENV. U. L. REV. 785, 789 (2009).

221. Cf. Lawrence Lessig, *The Regulation of Social Meaning*, 62 U. CHI. L. REV. 943, 947 (1995) (discussing ways in which “governments . . . construct . . . the social meanings that surround us”).

222. See GILROY, *supra* note 97, at 14–15 (“[T]he rise of gene-oriented or genomic constructions of ‘race[.]’” as contrasted with “older versions of race-thinking . . . underlines that the meaning of racial difference is itself being changed as the relationship between human beings and nature is reconstructed by the impact of the DNA revolution and of the technological developments that have energized it.” (citation omitted)).

223. Federal civil rights statutes recognize phenotypicality bias based on color. See Civil Rights Act of 1866, 42 U.S.C. § 1981(a) (2006) (guaranteeing to “[a]ll persons . . . the same right . . . to make and enforce contracts . . . as is enjoyed by white citizens”); Civil Rights Act of 1964 (Title VII), 42 U.S.C. §§ 2000e–2000e–17 (2006) (prohibiting discrimination by employers on the basis of color as well as on the basis of race). But courts are reluctant, in discrimination cases arising under Title VII or § 1981, to consider a plaintiff’s skin color as relevantly distinguishable from racial or ethnic designation. See *Arrocha v. City Univ. of New York*, No. CV021868, 2004 WL 594981 (E.D.N.Y. Feb. 9, 2004). But see *Walker v. Sec’y of Treasury*, I.R.S., 713 F. Supp. 403, 405 (N.D. Ga. 1989) (holding that, contrary to defendant’s contention that “there simply is no cause of action pursuant to Title VII available to a light-skinned black person against a dark-skinned black person[.]” plaintiff’s allegation of

people of color.²²⁴ This is no surprise. But DNA phenotyping offers new insight into this problem by providing data that make it possible for the first time to see whether racial prejudice specially burdens individuals with more racially phenotypic features.²²⁵ Psychological research suggests that bias in criminal investigations and punishment tracks physical variations not just across but also within racial categories.²²⁶

Phenotypicality bias is the idea that the more pronounced those physical features considered characteristic of African Americans—e.g., darker skin, fuller lips, or a broader nose—the more likely a person is to be perceived a criminal.²²⁷ Studies locate phenotypicality bias in sentencing decisions, for example, finding that inmates with more Afrocentric features received harsher sentences than those with less Afrocentric features, even when controlling for differences in criminal histories.²²⁸ A suspect identification system based on phenotypic gradations could gauge difficult-to-discern phenotypicality bias in decisions about whether to search a driver, handcuff a suspect, make a traffic stop or arrest, detain a suspect, shoot at a civilian, prosecute a case, try a minor as an adult, increase charges, plea bargain, or convict. One possible upshot is that race could lose its value in criminal investigations if phenotyping data showed that racial descriptions fail to cue folk assumptions about what people look like.

discrimination based on skin color—not race—stated a claim under Title VII).

224. See Geoffrey P. Alpert et al., *Police Suspicion and Discretionary Decision Making During Citizen Stops*, 43 CRIMINOLOGY 407, 410 (2005) (studying police conduct in Savannah, Georgia and finding that officers tend to view minority suspects with criminal suspicion for non-behavioral reasons, but that minority status does not influence decisions to stop and question a suspect).

225. See Lindsay A. Elkins, Note, *Five Foot Two With Eyes of Blue: Physical Profiling and the Prospect of a Genetics-Based Criminal Justice System*, 17 NOTRE DAME J.L. ETHICS & PUB. POL'Y 269, 291 (2003); Edward J. Imwinkelried & D.H. Kaye, *DNA Typing: Emerging or Neglected Issues*, 76 WASH. L. REV. 413, 445–46, 451 (2001); see also Angela P. Harris, *From Color Line to Color Chart?: Racism and Colorism in the New Century*, 10 BERKELEY J. AFR.-AM. L. & POL'Y 52, 61 (2008) (distinguishing “traditional racism[.]” which “assigns people to discrete racial categories” from colorism, which assigns people, independent of racial identity, “to places along a spectrum from dark to light, indigenous or African to European”).

226. See, e.g., Irene V. Blair et al., *The Role of Afrocentric Features in Person Perception: Judging by Features and Categories*, 83 J. PERSONALITY & SOC. PSYCHOL. 5, 7 (2002); Travis L. Dixon & Keith B. Maddox, *Skin Tone, Crime News, and Social Reality Judgments: Priming the Schema of the Dark and Dangerous Black Criminal*, 35 J. APPLIED SOC. PSYCHOL. 1555, 1570 (2005); Jennifer L. Eberhardt et al., *See Black: Race, Crime, and Visual Processing*, 87 J. PERSONALITY & SOC. PSYCHOL. 876, 893 (2004); Kim A. MacLin & Keith B. Maddox, *The Effects of Skin Tone on Judgments of Criminality*, J. SOC. PSYCHOL. (forthcoming).

227. See Leonard M. Baynes, *If It's Not Just Black and White Anymore, Why Does Darkness Cast a Longer Discriminatory Shadow Than Lightness? An Investigation and Analysis of the Color Hierarchy*, 75 DENV. U. L. REV. 131, 148–153 (1997) (reviewing evidence of phenotypicality bias against darker-skinned Latinos); Verna M. Keith & Cedric Herring, *Skin Tone and Stratification in the Black Community*, 97 AM. J. SOC. 760, 777 (1991) (similar for darker-skinned African Americans); Keith B. Maddox, *Perspectives on Racial Phenotypicality Bias*, 8 PERSONALITY & SOC. PSYCHOLOGY REV. 383, 386 (2004).

228. See Irene V. Blair et al., *The Influence of Afrocentric Facial Features in Criminal Sentencing*, 15 PSYCHOL. SCI. 674, 679 (2004); Jennifer L. Eberhardt et al., *Looking Deathworthy: Perceived Stereotypicality of Black Defendants Predicts Capital-Sentencing Outcomes*, 17 PSYCHOL. SCI. 383, 105 (2006); William T. Pizzi et al., *Discrimination in Sentencing on the Basis of Afrocentric Features*, 10 MICH. J. RACE & L. 327, 352 (2005).

Conclusion

Judges and scholars accept that equal protection guarantees do not apply to police reliance on race-based suspect descriptions in the design of search tactics. The prospect of reliable DNA phenotyping gives occasion to rethink the prominent role that race plays in the investigation of crime. This Article has argued that a totality-of-the-evidence approach to the use of DNA phenotyping evidence would put pressure on the narrow tailoring requirement that the state use race-neutral alternatives when possible.

I proposed that government fund molecular photofitting research, and that if DNA phenotyping is developed to the point of reliability, then for non-time-sensitive investigations, police should supplement race-based descriptions with phenotype evidence according to the epistemic value of each. I replied to normative objections about racial stereotyping, racial profiling, and the reification of race, and to doctrinal objections about racial classification, state action, and compelling government purposes.