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Five Foot Two with Eyes of Blue: Physical Profiling and the Prospect of a Genetics-Based Criminal Justice System

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FIVE FOOT TWO WITH EYES OF BLUE: PHYSICAL PROFILING AND THE PROSPECT OF A GENETICS-BASED CRIMINAL JUSTICE SYSTEM

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"Someone is out there stalking women and killing them."[1] On July 29, 2002, Police announced that a serial killer was on the loose in Baton Rouge, Louisiana. DNA evidence found at the crime scene of the killings of three local women conclusively pointed to one suspect. The news shocked the community despite known similarities in the murders.[2] The suspect attacked each of the three victims in their homes; there were no signs of forced entry. Furthermore, each of the women shared other attributes: they were attractive, middle-class professionals with chestnut hair.[3] Despite these similarities and the known DNA connection, investigators kept quiet as to other details of the cases until the FBI could create a behavioral profile of the killer.[4] The profile would help detectives understand how the killer thinks, acts, and interacts with others in his personal and professional life.[5] It would not tell detectives "the name or address of the killer or what he looks like."[6]

The involvement of the FBI, who recently teamed up with local authorities to form a taskforce, also changed the scope of the investigation.[7] Along with examining the three recent murders, the taskforce opened up thirty other unsolved murders of women over the last ten years to compare DNA evidence.[8] Because Louisiana is one of the few states in the country without

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1. Bob Stewart et al., *Stalking the Stalker: Police, with the Aid of Victims' Kin, Hunt for a Serial Killer Terrorizing Baton Rouge*, PEOPLE, Sept. 2, 2002, at 74.

2. *Morning Edition: Investigation into Serial Murders in Baton Rouge* (NPR radio broadcast, Aug. 27, 2002) [hereinafter NPR broadcast].

3. *Id.*; Stewart et al., *supra* note 1, at 74.

4. *Serial Killer Profile to Be Released Tuesday*, SUN HERALD, Aug. 31, 2002, at 8.

5. Melissa Moore, *FBI Profilers Derive "Wealth" of Information on Serial Killer*, BATON ROUGE ADVOC., Aug. 29, 2002, at 1B.

6. *Id.*

7. Stewart et al., *supra* note 1, at 74.

8. NPR broadcast, *supra* note 2.

a statewide DNA database of convicted felons, the results have been limited.[9] The State Police Crime Lab is now working feverishly to create a database.[10] "Police say that although DNA evidence may convict a serial killer, it's unlikely to lead to his capture."[11]

I. INTRODUCTION

DNA evidence is "like 'the finger of God.'"[12] Some call this powerful tool in the scientific investigation of crime and human behavior "the greatest forensic advancement since the advent of fingerprinting."[13] Scientists now have the ability to identify an indefinite number of physical traits including height, eye color, sex, and race from a trace of DNA material. Recent breakthroughs in the Human Genome Project (HGP) mandate an expansion of DNA evidence as an investigative tool.

The HGP began in 1986 in the Department of Energy as an effort to systematically sequence and decode all the information in the entire human genome.[14] It is the "most extensively funded national science program since the Apollo space mission."[15] The primary goal is to pinpoint all 140,000 genes on twenty-three pairs of chromosomes and to sequence all of the 3.5 billion DNA units that make up the pairs.[16] The project will serve as a reference for the entire scientific community.[17] Scientists have already completed a working draft in the year 2000 that allows for identification of most of the genes in our genome.[18]

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9. *Id.*

10. *Id.*

11. *Id.*

12. Aaron P. Stevens, Note, *Arresting Crime: Expanding the Scope of DNA Databases in America*, 79 TEX. L. REV. 921, 922 (2001) (quoting *DNA Links Convict to 21-Year-Old Slaying; Evidence Likened to 'The Finger of God'*, RECORD (N.J.), Mar. 14, 2000, at A5 (quoting Jeanine Pirro, Westchester District Attorney)).

13. *Id.* (quoting David Hench, *Developing of DNA Database Falls Behind*, PORTLAND PRESS HERALD, Oct. 31, 1999, at A1, *available at* 1999 WL 26287400 (quoting Lt. Michael Harriman, head of the Maine police crime lab)).

14. *See* Martha A. Krebs & Daniel Drell, *The Age of Biology and the Responsible Ancestor*, *in* THE HUMAN GENOME PROJECT AND MINORITY COMMUNITIES: ETHICAL, SOCIAL, AND POLITICAL DILEMMAS, 1–2 (Raymond A. Zinlinskas & Peter J. Balint eds., 2001).

15. Fatimah Jackson, *The Human Genome Project and the African American Community: Race, Diversity, and American Science*, *in* Krebs & Drell, *supra* note 14, at 35.

16. Krebs & Drell, *supra* note 14, at 3.

17. *See id.* at 2.

18. *Id.*

The draft will soon "be freely available to scientists everywhere via the World Wide Web."[19]

This foundational work allows researchers to accelerate studies to characterize these genes and determine their functions.[20] The technology will revolutionize the way our criminal justice system handles cases both with and without suspects as well as unidentified victims in which a sample of their DNA is available. Such technology, however, may come with a social cost. Should law enforcement agents use existing genetic markers and developing technology to profile an unidentified sample donor? Opponents argue that use of these advances will set society back socially by reinforcing the notion of criminal behavior as a biological problem, affecting some races more than others. Opponents back up this argument by pointing out current problems with current investigative practices like racial profiling.

This Note argues that although the prospect of DNA physical profiling might raise an equal protection problem, it can pass constitutional muster because no group is singled out for special treatment and no one is penalized because of hostility toward a particular trait or race. DNA analysis could serve as an antidote to racial profiling in that reliance on genetic information in crime scene samples could correct tendencies to pursue one group disproportionately. Part two of this Note begins with an exploration of the current nationwide crisis in the criminal justice system. Hundreds of thousands of cases with DNA samples go unsolved each year due to lack of suspects and inadequate use of existing technology. Part three provides an examination of existing DNA technology. An exploration of the creative uses of the existing technology is contained in part four. Part five argues that the criminal justice field should utilize the new technological advances in DNA profiling that allow for the identification of physical traits from an unidentified sample source. Part six begins to examine the policy implications of such use by examining the current debate about "low tech" racial profiling. Part seven analyzes the subsequent inclusion of DNA profiling information into crime databases. Finally, part eight explores the broader implications of using genetic research beyond physical traits in the field of criminal law.

II. UNSUSPECTED: THE NATIONWIDE DNA CRISIS

DNA, the great new detective, is the "most significant advance in forensic science since the advent of fingerprinting in

19. *Id.* at 3.
20. *Id.*

the early 1900s."[21] "It's the fingerprint of the 21st century."[22] Prosecutors have also called DNA the "ultimate truth-finder" because of its ability to pinpoint or eliminate a suspect with more certainty than any other technique.[23] The result of such a determination is shaking the faith in the justice system.[24] DNA testing has revealed many problems with our system: "[E]yewitnesses make mistakes. Snitches tell lies. Confessions are coerced or fabricated. Racism trumps the truth. Lab tests are rigged. Defense lawyers sleep." And sometimes "cops lie."[25] Despite DNA's unprecedented dependability, it often makes closure elusive for victims, families, and the larger community, especially when cases remain in limbo and inmates are exonerated.[26] So many wrongfully convicted prisoners have been exonerated through DNA tests on old evidence that over half the states have enacted, or are considering, legislation providing for either post-conviction DNA testing for those claiming innocence or the preservation of samples for the duration of the prisoner's custody.[27]

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21. Mark Hansen, *The Great Detective*, A.B.A. J., Apr. 2001, at 37–38.

22. Daniel LeDuc, *Md. Bill Would Expand DNA Database; Supporters Want Sample from Anyone Convicted of Felony*, WASH. POST, Mar. 2, 2002, at B01 (quoting Del. Ann Marie Doory (D-Baltimore), sponsor of a Maryland proposal that would expand inclusion in the state DNA database to those arrested for violent felonies).

23. Hansen, *supra* note 21, at 38. One of the surprises of DNA testing is how often the police arrest the wrong suspect. While post-trial testing is uncommon, pre-trial testing is now standard. Police are routinely sending DNA samples to FBI labs.

> The results have been astounding. Of the first 18,000 results analyzed by the FBI, the DNA test excluded the principal suspects in 26 percent of the cases. If that level of innocence applies to those arrested, how about for those convicted? "The strong presumption that verdicts are correct has been weakened," a Justice Department task force wrote last year.

A Life or Death Gamble: When the Stakes Are Capital Punishment, How Much Evidence Is Enough?, NEWSWEEK, May 29, 2000, at 22.

24. *See generally* Richard Willing, *Increasing DNA Exonerations Contradict Predictions; 100th Convict Cleared by Testing Since 1989 to Be Announced Today*, NEWSWEEK, Jan. 18, 2002, at A02 (noting that DNA exonerations are raising very serious questions about our system's fact-finding methods). Innocence Project founder Barry Scheck has found that "the prosecution and conviction of the innocent is clearly not a small or isolated problem." *Id.*

25. *When Justice Lets Us Down: It's Happening More and More: A Convicted Criminal, Heading for Execution, Is Sprung by DNA Tests. And If the Innocent Are in Jail, the Guilty Are Still out There*, NEWSWEEK, Feb. 14, 2000, at 59.

26. Hansen, *supra* note 21, at 38.

27. *Id.* at 39; *see* Brooke A. Masters, *2 Conservative Jurists Back DNA Testing*, WASH. POST, Mar. 29, 2002, at A07. Opponents argue that "blanket access to DNA testing would clog" the courts and laboratories "with frivolous requests and slow work on pending criminal cases." *Id.* This issue appears to be headed

Beyond the issue of closure and the new challenges that came with DNA technology in cases where police may have identified a suspect, another criminal justice crisis looms. Hundreds of thousands of cases are going unsolved in situations where investigators have collected DNA evidence but have no suspect.[28] Police department protocol, outdated technology, and backlogs in DNA labs exacerbate the problem.[29] For example, the New York Police Department (NYPD) had a policy until 1998 that barred DNA testing in cases without suspects.[30] In many other jurisdictions, agencies have never analyzed crucial DNA evidence that could identify suspects in many unsolved rapes "because the cases are considered low priority in the backlogged" labs records.[31] Crime labs do their best to prioritize, but as one Los Angeles Police Department (LAPD) detective stated, the situation is like "a leaking dike (and) we all have nine fingers in the crack."[32] "It can take up to six months to get DNA evidence processed, even if [it is] a priority case."[33] Cases without suspects "often sit on the shelf until detectives find one."[34] Investigators will never solve most of these cases because agencies systematically destroy records and evidence after the statute of limitations expires to "make space in overcrowded police evidence rooms."[35]

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to the U.S. Supreme Court. The 4th Circuit Court of Appeals recently declined to rehear a case in which it held that inmates have no constitutional right to DNA testing that could prove their innocence. It was the first time an appeals court considered the issue. *See id.*; *see also* Richard Willing, *Lawyers Get Ready to Fight DNA Ruling*, USA TODAY, Jan. 28, 2002, at A08.

28. *See generally* Heather Lourie, *DNA Evidence in Gridlock*, ORANGE COUNTY REG., Nov. 14, 1999, at A1.

29. *See* Orith Goldberg, *Crisis at Crime Labs Cases Go Unsolved, DNA Evidence Goes Uncontested for Lack of Funds*, L.A. DAILY NEWS, July 1, 2001, at N1; *see also Hearing on DNA Technology Before the Gov't Efficiency, Fin. Mgmt. and Intergovernmental Relations Subcomm. of the Comm. on Gov't Reform*, 107th Cong. (2001) (statement of David G. Boyd, Deputy Dir., Nat'l Inst. of Justice) (testifying that The National Commission on the Future of DNA Evidence identified the backlog at approximately 750,000 collected but unanalyzed convicted offender samples in our nation's crime laboratories. The Commission called it one of the most serious impediments inhibiting the effectiveness of DNA for solving and preventing crime.) [hereinafter *Boyd Testimony*].

30. *Cops Reopen 12,000 Rape Cases: NYPD Hopes DNA Evidence Is Available to Solve Most Crimes*, NEWSDAY, Jan. 5, 2000, at A26.

31. Lourie, *supra* note 28, at A1; *see also Cops Reopen 12,000 Rape Cases: NYPD Hopes DNA Evidence Is Available to Solve Most Crimes*, *supra* note 30, at A26.

32. Goldberg, *supra* note 29, at N1.

33. *Id.*

34. *Id.*

35. Lourie, *supra* note 28, at A1. One particularly egregious example occurred in 1997 in Harris County, Texas. After then-Governor Bush freed an inmate named Kevin Byrd when DNA evidence showed he was wrongly convicted of rape, the county clerk's office was busy destroying rape kits from fifty

This is a nationwide problem for crime labs because the technology is rapidly changing and there has been a rise in the submission of DNA samples.[36] Cases without suspects languish in the system. Many law enforcement officials have called this a critical oversight because DNA has the power to free innocent people and to ensure that the guilty go to jail.[37] By failing to analyze DNA from rape cases without suspects, law enforcement agencies leave an untold number of cases unsolved.[38] Crime victims suffer in unsolved cases. The need for closure often weighs heavily on victims of violent crimes.[39] Both victims' advocates and DNA experts agree that the law enforcement community owes it to the victims "to do everything possible to solve these crimes."[40] Women who go through the horrible process of a rape examination assume that police will do something about the crime.[41]

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other old cases, citing an overcrowded storage space. This is a nationwide problem because few laws exist to preserve evidence once appeals end. Furthermore, rape kits and other evidence are lost through routine sloppiness despite new technology that makes it easier to lift samples from old clothing. *A Life or Death Gamble: When the Stakes Are Capital Punishment, How Much Evidence Is Enough?*, *supra* note 23, at 22.

36. *A Life or Death Gamble: When the Stakes Are Capital Punishment, How Much Evidence Is Enough?*, *supra* note 23, at 22.

37. *Id.* The Innocence Project, an advocacy group that pioneered the use of DNA tests to clear convicts, announced the 100th DNA Exoneration early this year. Nearly half of the 100 exonerations since 1989 occurred in the past three years. The number of convicts exonerated by DNA evidence is rising. The rising numbers contradict predictions of many criminal justice observers that exonerations would decline as a small pool of questionable convictions was subjected to DNA analysis. *See generally* Willing, *supra* note 24, at A02.

> The power of DNA to exonerate has captured the attention of Congress, as well. An Innocence Protection Act has been introduced in both houses, and would require states, in order to receive federal money, to certify that DNA tests are available to individuals convicted of certain crimes and that evidence has been preserved.

Donna Lyons & Molly Burton, *Proof Positive*, ST. LEGISLATURES, June 1, 2001, at 10.

38. Lourie, *supra* note 28, at A1.

39. Goldberg, *supra* note 29, at N1.

40. Lourie, *supra* note 28, at A1. President Bush also recently recognized the rights of victims when he endorsed a proposed amendment to the Constitution to guarantee rights for victims of violent crime. Bush stated that existing victims' rights laws, which vary by state, "are insufficient" and the judicial system sometimes treats victims as an afterthought. Attorney General John Ashcroft agreed, stating that victims' rights are too often ignored, and "it is past time to balance the scales of Justice." The amendment, sponsored by Sens. Dianne Feinstein, D-Calif., and Jon Kyl, R-Ariz., requires that victims be kept informed about criminal cases and given the chance to be heard in court at sentencing or on issues of a defendant's release. *See* Toni Locy, *Bush Backs Provisions for Rights of Victims*, USA TODAY, Apr. 17, 2002, at A06.

41. Lourie, *supra* note 28, at A1.

In 1999, more than 180,000 rape kits and DNA samples were sitting on shelves across the country.[42] "This is a problem that should worry every state legislator in the country."[43] It is important to follow up on unanalyzed cases because victims get the false hope that police are seeking their perpetrators.[44] Many victims wait years worrying while they remain unaware that evidence that might solve their case goes unanalyzed.[45] "Participation in cases going to trial" is sometimes a "form of empowerment" and part of a victim's healing process.[46] All of the shelved cases are potential cases where the suspect will walk the street to rape or murder again.[47]

III. CURRENT TECHNOLOGY

The problem is not that our labs lack the requisite technology to profile and potentially match the collected DNA. "No other scientific technique has been as complex or has evolved so rapidly . . . (or) gained such widespread acceptance so quickly."[48] Because "forensic DNA profiling has become one of the most valuable tools in modern criminal investigation,"[49] the courts have exercised more scrutiny and demanded more precise

42. *Id.*; *see also* LeDuc, *supra* note 22 (describing the problem in Maryland).

43. Lourie, *supra* note 28, at A1 (quoting Christopher Asplen, Executive Director of the National Commission on the Future of DNA Evidence). In 2000, in Los Angeles County alone there were approximately 2,600 unsolved cases containing DNA information at the crime lab. The LAPD crime lab averages five requests for DNA analysis per day. "Several hundred of those have the potential to be tested against the state's database." Goldberg, *supra* note 29, at N1. "At the Sheriff's Department crime lab, there were about 1,200 sexual assault kits untested for jurisdictions covered by the Sheriff's Department and about 700 homicide cases that had not yet been tested." *Id.*

44. Lourie, *supra* note 28, at A1.

45. *Id.*

46. *Id.*

47. *See id.*; Goldberg, *supra* note 29, at N1; Anna Quindlen, *From Coffee Cup to Court; The Greatest Advance in Evidentiary History Is at Our Fingertips. Or Buried in Storage Somewhere*, NEWSWEEK, Apr. 29, 2002, at 80. This problem was recognized by Paul Ferrara, director of the Virginia Division of Forensic Science, the first databank to offer DNA testing and the most advanced state facility in the nation. Despite the backlog of many thousands of rape kits and other DNA samples waiting to be analyzed in some states, Virginia's backlog is 1,400 cases, most less than six months old. "I hate backlogs," says Ferrara, "Our goal is to reach a 30-day turnaround, but I even worry about that. What's this guy going to do in 30 days? That's the kind of thing that makes you sick." *Id.*

48. Hansen, *supra* note 21, at 40.

49. Geoffrey K. Chambers et al., *Forensic DNA Profiling: The Importance of Giving Accurate Answers to the Right Questions*, 8 CRIM. L.F. 445 (1997) (reviewing NAT'L RES. COUNCIL, THE EVALUATION OF FORENSIC DNA EVIDENCE 254 (1996)).

results from DNA tests than any other forensic technique.[50] DNA identification techniques have been widely accepted by the courts as a valid tool in criminal investigations since their initial introduction in the late 1980s.[51] Currently, American prosecutors use DNA in approximately 10,000 cases each year.[52] DNA testing of biological evidence at a crime scene has become so regular that a "Wisconsin man sued his former lawyer for failure to seek a DNA test that would have proved his innocence in a rape case."[53] The wrongly convicted man served four and a half years in prison. He won a $2.6 million judgment against the lawyer.[54]

DNA also receives this wide acceptance in part because a match can prove with virtual certainty that a person was present at or absent from the crime scene.[55] At its most basic level, DNA is the chemical deoxyribonucleic acid found in the nucleus of cells that carry the genetic blueprint and code for each human body.[56] Lab technicians construct the DNA "fingerprint" based on the variations each individual carries within his chromosomes.[57] Scientists can determine whether two samples come from the same person by isolating and comparing the areas of individual variations.[58] "Because DNA is polymorphic," differing only slightly in its characteristics from person to person, "individual differences make identification virtually certain."[59] The potential for absolute identification has not come so close to reality since the widespread use of fingerprint comparisons in the

50. *Id.* at 446 (citing NAT'L RES. COUNCIL, *supra* note 49, at 166).

51. Angus Dodson, Comment, *DNA "Line-Ups" Based on a Reasonable Suspicion Standard*, 71 U. COLO. L. REV. 221, 223 (2000).

52. *Id.* at 225 (citing HOWARD COLEMAN & ERIC SWENSON, DNA IN THE COURTROOM: A TRIAL WATCHER'S GUIDE 3 (Dwight Holloway & Teresa Aulinskas eds., 1994)).

53. Hansen, *supra* note 21, at 38.

54. *Id.* at 38–39.

55. *See id.*; *see also* Jerry Adler & John McCormick, *The DNA Detectives*, NEWSWEEK, Nov. 16, 1998, at 66, 68 (quoting E. Michael McCann, Milwaukee Dist. Att'y and suggesting that if juries come to expect DNA evidence, it will only make the job of prosecutors harder. Sooner or later juries will be asking, "Where is the DNA?").

56. Paul E. Tracey & Vincent Morgan, *Big Brother and His Science Kit: DNA Databases for 21st Century Crime Control?*, 90 J. CRIM. L. & CRIMINOLOGY 635, 639 (2000).

57. Dodson, *supra* note 52, at 227. The human genome consists of approximately 30,000–40,000 genes. Individual humans are about 99.9% identical in terms of the genome. *See generally* Dr. Paul Billings & Sophia Koliopoulos, *What Is the Human Genome?*, *in* ETHICAL EYE: THE HUMAN GENOME 19, 20–21 (Council of Europe ed., 2001).

58. Dodson, *supra* note 51, at 227–28.

59. Hansen, *supra* note 21, at 40, 42.

1920s.[60] In fact, "DNA evidence has proven to be so persuasive that some cunning criminals are going to elaborate lengths" to avoid leaving behind DNA. They wear condoms and gloves, force rape victims to shower or bathe, and even plant DNA evidence from another person at the scene of their own crimes.[61]

This effort may be in vain. DNA is found in cells from all bodily fluids, tissue, and hair; it is an "omnipresent residue that trails us wherever we go."[62] The phrase "DNA fingerprinting" is no longer a metaphor thanks to new developments in our technology.[63] "Scientists have shown they can analyze the [tiny] amount of DNA in a human fingerprint and reveal the unique genetic pattern of the person who left it."[64] "Forensic scientists [can now make] identifications from fingerprints on telephones, briefcases, drinking glasses, pens and other objects."[65] By using new highly sensitive methods of analysis, tiny amounts of DNA from actual fingerprints and other sources can reveal distinct genetic patterns, thus making this a powerful new tool in law enforcement.[66]

Instead of the large amounts of traditional sources like blood, semen, bone, urine, vaginal swabs, and hair, investigators can generate a genetic profile from swabs taken from objects touched by hands.[67] The new PCR- (polymerase chain reaction) based testing method, that makes "millions of copies of the small amount of DNA in the sample," makes this possible.[68] However, the method can run into potential problems because previous handlers of the object may have left the minute trace samples.[69] Studies have shown that the "strongest profile obtained was not

60. *Id.* at 40.

61. *Id.*; *see also* Richard Willing, *Some Inmates Say 'No' to DNA Sample; Nation's Database Could Be Threatened*, USA TODAY, Apr. 15, 2002, at A03 (describing how some inmates are even refusing to submit samples required by law for DNA databanks that could link them to other crimes).

62. Tracy & Morgan, *supra* note 56, at 639.

63. Richard Saltus, *DNA in Fingerprints Used as Identifier*, B. GLOBE, June 19, 1997, at A5.

64. *Id.*

65. *Id.*; *see also* Quindlen, *supra* note 47, at 80 (stating that "while once a blot of blood the size of a half dollar was needed for testing, now it can be done with material invisible to the naked eye, from the steering wheel of a stolen car to the bite mark in a doughnut.").

66. Saltus, *supra* note 63, at A5.

67. *Id.* This testing "is possible in part because scientists have found even smaller distinctive units of DNA, called short tandem repeats, made up of only a few letters of genetic code." *Id.*

68. *Id.*

69. *Id.*

always that of the person who last held the object."[70] It may then be difficult to interpret results based on genetic profiles from objects handled by several people or from minute bloodstains on touched objects.[71] However, technology is improving and DNA is as durable as it is discriminating. It can be extracted from skeletal remains, even if they are charred. It has even been recovered from Egyptian mummies.[72]

Arguments against DNA have thus shifted from reliability and certainty issues to broader concerns for privacy. Opponents have condemned the use of DNA as a threat to "the constitutional guarantee of a fair trial."[73] The major moral concern about DNA use for identification purposes is not whether the DNA is a piece or property of the person identified or whether it was extracted by force from the person.[74] "Civil libertarians . . . fear that the information contained in DNA databanks could be used for purposes other than criminal identification, such as trying to determine whether an individual is genetically predisposed to certain kinds of behaviors."[75] It is the individual's informational privacy, what DNA can disclose about the identified person, that is the basis of concern.[76] The debate is thus framed around informational privacy as a policy challenge: What should society be allowed to learn about its citizens in the course of attempting to identify them?[77] In order to answer this question, the informational nature of DNA must be examined.

IV. CREATIVE USES OF EXISTING TECHNOLOGY

Many jurisdictions are incorporating these breakthroughs into powerful new law enforcement tools. The power of science

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70. *Id.*

71. *Id.*

72. Hansen, *supra* note 21, at 42.

73. *See id.*

74. Eric T. Juengst, *I-DNA-Fication, Personal Privacy, and Social Justice*, 75 CHI.-KENT L. REV. 61, 62–63 (1999).

75. Hansen, *supra* note 21, at 42; *cf.* Quindlen, *supra* note 47, at 80. Quindlen suggests,

> [T]hose who are worried that their genetic secrets will be used to deny them insurance coverage ought to be more concerned with that urine sample provided at work. Those worried about the rights of the accused should know that DNA testing does more than any other technique to protect the innocent. It's the anonymity of the guilty to which it poses a threat.

Id.

76. Juengst, *supra* note 74, at 63.

77. Richard Willing, *Police Expand DNA Use[,] Charge Man With Rape Using Only Genetic Profile*, USA TODAY, Oct. 25, 2001, at A01.

is affecting cases nationwide. Prosecutors are now using DNA to circumvent legal barriers. Attorneys are basing indictments solely on the DNA profiles of yet unidentified suspects.[78] The indictments, called John Doe or DNA warrants, provide "no name, as would normally accompany the charges, instead listing a series of letters and numbers designating certain measurements of DNA segments that, taken together, represent the rapist's unique DNA profile."[79] This method prevents the statute of limitations from running out on rape cases. The warrants also allow police a means to continue the pursuit of suspects who leave behind DNA evidence.[80] Finally, the warrants also help to combat the nationwide problem of backlogs of untested DNA samples that remain in evidence lockers because crime labs are too overwhelmed to examine them.[81]

This expansion of the use of warrants has created a momentum to "carve out a DNA exception to the statute of limitations" when "DNA evidence permits the identification of the perpetrator after the expiration of the normal period of limitations."[82] "The argument is that the legislative purpose of the statute is to prevent the maintenance of prosecutions based on stale, unreliable evidence but that DNA evidence is so reliable that its availability should lift the bar of the statute."[83] Despite the durability of DNA, a case that circumvents the statutory barrier may have

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78. *See generally id.*; Michael Luo, *Unnamed Man Indicted by DNA*, NEWSDAY, Aug. 9, 2000, at A03.

> The first DNA indictment in the country is believed to have been initiated in Kansas in 1991. But it was not until 1999, when prosecutors in Milwaukee, Wisconsin, filed rape and kidnapping charges against a defendant based only on his DNA profile, that other jurisdictions began to follow suit. Though law enforcement officials say none of the DNA indictments have been tested in court yet, the creative legal strategy became an effective way of keeping old cases alive. Prosecutors believe there have now been as many as 20 such indictments across the country.

Id.

79. Michael Luo, *Unnamed Man Indicted by DNA*, NEWSDAY, Aug. 9, 2000, at A3; *see also* Hansen, *supra* note 21, at 40. *See generally* Lyons & Burton, *supra* note 37.

80. Luo, *supra* note 79, at A3.

81. *Id.*

82. Edward J. Imwinkelried & D.H. Kaye, *D.N.A. Typing: Emerging or Neglected Issues*, 76 WASH. L. REV. 413, 413 (2001); *see also* Goldberg, *supra* note 29, at N1 (describing a new California law that went into effect in January 2001 placing more importance on unsolved sexual assault cases by increasing the statute of limitations on rape cases from six to ten years. "The law also waives the statute of limitations if police test DNA evidence and place the genetic profile in a database of unsolved cases waiting for a future match.").

83. Imwinkelried & Kaye, *supra* note 82, at 413.

other evidentiary flaws. With time, memories fade, evidence is misplaced or deteriorates, witnesses die or become harder to locate, the chances of perjury rise, and the accused's ability to defend himself is reduced.[84]

One of the most obvious purposes of a statute of limitations is to prevent the state from bringing overly stale criminal charges. It protects "individuals against the risk that they will be unable to assemble adequate evidence for a defense because it has been too long since the alleged crime was committed."[85] A statute of limitations also gives "innocent (as well as guilty individuals) a certain peace of mind and encourage[s] the police to move on to newer cases that are more likely to be solved and for which punishment would be more effective."[86] The DNA exception only attends to one of these justifications.[87] If a match made between the DNA found long ago at the crime scene and the defendant's DNA conclusively establishes guilt, then "any degradation in the defendant's ability to mount a defense would be harmless because it could not affect" the trial's outcome.[88]

The idea that DNA evidence is dispositive, however, is not always true.[89] First, in instances where samples were mishandled, switched, or otherwise contaminated before they reached the laboratory or during testing, "a defendant might succeed in raising a reasonable doubt about the reported results of the DNA tests."[90] After many years, it would be difficult to locate personnel or written records that might resolve such a claim. Second, "DNA evidence can be conclusive only as to one factual issue[:]" whether or not the evidence originated with the defendant. Proof of that factual issue is often inadequate to demonstrate guilt.[91] For example, semen might be present on an alleged victim's clothing or a bedsheet without occurrence of penetration, or it could be found in a vaginal swab despite consensual sex.[92] "While DNA evidence can be conclusive proof of innocence, it is not logically sufficient to prove guilt."[93] One solution might be to confine "the DNA exception to cases in which identity is the only issue that needs to be resolved."[94] In any instance, devising

84. Hansen, *supra* note 21, at 77.
85. *Id.*
86. Imwinkelried & Kaye, *supra* note 82, at 472.
87. *Id.*
88. *Id.*
89. *Id.*
90. *Id.*
91. *Id.*
92. *Id.* at 473.
93. *Id.* at 474.
94. *Id.*

a workable exception "that would respect the interests of defendants and society in defining a point after which" the state can no longer initiate litigation "is a formidable challenge."[95]

Despite the difficulties of creating a statutory exception, the reality is that many cases expire daily because of the statute of limitations, and there are no suspects because the evidence from the incidents was never analyzed.[96] Without an exception, it is nearly impossible to charge someone with an offense even if officials capture and identify him later.[97] For now, *ad hoc* use of the DNA warrant is facilitating resolution of cases that previously stalled the authorities.[98] This presents new questions for the justice system as defendants challenge the new technique.

Defendants may be able to make a strong case against the constitutionality of a warrant if they can show that they were prejudiced by it. Two familiar grounds for challenge include claims that the warrant failed to include the required degree of particularity and that it failed to notify the defendant that a prosecution against him was pending.[99] Finally, defendants can argue that the issuance of such a warrant should not be used to circumvent or toll the statute of limitations.[100] The first argument is weak due to the fact that state law currently allows warrants to identify an unknown suspect by aliases or physical descriptions; the courts should allow for the more specific DNA profile identification.[101] It seems that DNA profiles will meet the legal requirement that a warrant describe the arrestee either by name or with "reasonable certainty."[102] Questions remain, however, because the requirement of a suspect's name in a warrant protects the "right to a fair trial by putting him on notice that he is being sought."[103] "People know their own name, even their own nickname or alias, but do they know their own (DNA) profile? Courts will have to decide."[104] The cases have gone both

95. *Id.* at 471–72. That is not to say that it cannot be done. *See* Goldberg, *supra* note 30, at N1 (discussing a more limited approach by California).

96. Imwinkelried & Kaye, *supra* note 82, at 471–73.

97. *Id.*

98. *See generally* Andrew C. Bernasconi, Comment, *Beyond Fingerprinting: Indicting DNA Threatens Criminal Defendants' Constitutional Rights*, 50 AM. U. L. REV. 979 (2001); Frank B. Ulmer, Note, *Using DNA Profiles to Obtain "John Doe" Arrest Warrants and Indictments*, 58 WASH. & LEE L. REV. 1585 (2001).

99. *See* Lyons & Burton, *supra* note 37.

100. Hansen, *supra* note 21, at 43.

101. Willing, *supra* note 77, at A01.

102. Hansen, *supra* note 21, at 43.

103. Willing, *supra* note 77, at A01.

104. *Id.*

ways in the past. As with everything else surrounding DNA, this is an unsettled issue.[105]

V. MAXIMIZING THE LEGAL USE OF NEW DNA DEVELOPMENTS: PHYSICAL PROFILING

Including the genetic profile in the indictment is helpful to circumvent legal barriers like statutes of limitation. However, it does not aid in the actual identification match with a suspect. Traditionally, law enforcement officers sought eyewitness testimony to obtain physical descriptions as a method to facilitate crime solving.[106] However, eyewitness descriptions are often unreliable or there may be no eyewitnesses to a crime in the first place.[107] Virtually all jurisdictions around the country have open case file samples from crime scenes, battlefields, or plane crash sites that are yet unidentified.[108] Two decades ago, the best known current humanitarian use of DNA, identification of remains at the World Trade Center, would have been unimaginable.[109]

In reference to these collections of unidentified samples, investigators will want to glean as much information as possible about the person through DNA analysis so that they can profile their missing sample source.[110] Scientists can now discern from DNA "a virtually indefinite number of physical traits possessed by an individual, from height, eye color, sex, and race, down to the shapes of a person's toes."[111] "In addition, genetic typing permits inferences as to inherited disorders and may offer clues to facial or other bodily features."[112] Thus, a DNA profile in the databank that matches that from a crime scene is more useful than traditional composite sketching and "may act as the ultimate eyewitness or ultimate profiler."[113] "Genetically-derived trait information may be superior to human-derived trait information" because "[u]nlike humans, machines often cannot be

105. Hansen, *supra* note 21, at 43.

106. Michelle Hibbert, *DNA Databanks: Law Enforcement's Greatest Surveillance Tool?*, 34 WAKE FOREST L. REV. 767, 790 (1999).

107. *Id.* (citing Matt Crenson, *Questions Remain About DNA Evidence After a Decade of Use*, L.A. TIMES, Mar. 2, 1997, at B3).

108. *See generally* Juengst, *supra* note 74; Joshua Hammer, *The Mystery of the Tomb: Questions About the Vietnam 'Unknown Soldier' Raise a New Issue, With DNA Testing, Can We Ever Fill the Crypt?*, NEWSWEEK, May 11, 1998, at 36.

109. Quindlen, *supra* note 47, at 80.

110. Juengst, *supra* note 74, at 74.

111. Hugh Miller, *DNA Blueprints, Personhood, and Genetic Privacy*, 8 HEALTH MATRIX 179, 204 (1998).

112. Imwinkelried & Kaye, *supra* note 82, at 445–46.

113. Hibbert, *supra* note 106, at 790.

fooled by changes in physical appearance."[114] Furthermore, it is not yet possible to alter one's genetic makeup; thus, physical changes are unlikely to conceal a suspect.[115]

Including such physical trait markers or "population specific alleles" (PSAs) in databanks and criminal investigations would support open case file systems that would take advantage of additional information to narrow the search for the suspect or sample source.[116] This would also "take the guesswork out of deciding against which racial reference group to assess a particular sample."[117] Profiling DNA samples for racial or ethnic characteristics, however, is a hotly contested proposition. "One of the central issues in the DNA Wars is the degree of genetic substructure present in human populations."[118] Scientists disagree over dividing the U.S. population into sub-populations for statistical purposes. Some argue detailed genetic variation studies of the population along ethnic and geographic lines are required.[119] Others argue that logistical difficulties outweigh the minimal statistical benefits of extensively subdividing the population for forensic purposes.[120]

Despite the disagreement, "it is [currently] possible to identify a collection of genetic markers that are distinctive enough to allow confident genetic [ethnic affiliation estimation]."[121] It is also feasible to identify and estimate individual interethnic characteristics within first or second generation hybrids of one or more populations.[122] Investigators do this by markers called "population specific alleles" (PSAs), marking the ethnic populations that are our traditional races like European Americans, African Americans, Native Americans, and Asian Americans.[123] In the United States, the mixture of populations and hybridization has obscured genetic differences among the resident populations.[124] However, when scientists "focus on the small amount of difference between populations, a distinct pattern of genetic variation among populations emerges, with Sub-Saharan African populations having the most genetic variations, European and South West Asian populations less, East Asian populations still

114. *Id.* at 791.
115. *Id.*
116. Juengst, *supra* note 74, at 75.
117. *Id.*
118. Chambers, *supra* note 49, at 447.
119. Juengst, *supra* note 74, at 70–71.
120. *Id.*
121. *Id.* at 74.
122. *Id.*
123. *Id.*
124. *Id.*

less, and Amerindian populations the least."[125] Thus, technicians can now include ethnic affiliation in the profile of the sample.

The stakes are very high in this debate because of the practical repercussions.[126] No one disputes that individual humans show a high degree of genetic differentiation; that is one reason why DNA profiling is so effective.[127] No one debates that "measurable genetic differences exist between races."[128] Forensic practitioners recognize and accommodate this by using separate databases for racial groups.[129] The FBI currently uses a "simplified scheme of 'readily apparent' population reference groups, consisting of 'major population groups' like 'African Americans' and 'Caucasians' and 'geopolitical groups' like 'Hispanics.'"[130]

The debate has now focused on whether there are greater genetic differences between races or ethnic groups.[131] Genetic research helps scientists understand how similar humans are despite marvelous variation through a systematic study of human genetic diversity.[132] Scientists say that although "[t]he genetic variation among human populations shows a continuous gradation with geographic distance" that may be "interesting and medically relevant[,]" it is not "socially relevant."[133] "It is not possible

125. Kenneth K. Kidd, *Race, Genes and Human Origins: How Genetically Diverse Are We?*, *in* NEW DIMENSIONS IN BIOETHICS: SCIENCE, ETHICS AND THE FORMATION OF PUBLIC POLICY 11, 18 (Arthur W. Galston & Emily G. Shurr eds., 2001).

126. Juengst, *supra* note 74, at 74–77 (criticizing such techniques and arguing against the use of racial markers in any DNA identification program).

127. Chambers et al., *supra* note 49, at 448.

128. *Id.*; *see also* Kidd, *supra* note 125, at 14.

129. Chambers et al., *supra* note 49, at 448.

130. Juengst, *supra* note 74, at 71.

131. Chambers et al., *supra* note 49, at 448. To help trace the flow of human populations, geneticists, and anthropologists located genetic markers that help distinguish among ancestral populations, and various genes or other DNA sequences that are known to have alleles that occur predominantly in certain racial or ethnic groups. Scientists found that because human populations share a recent common ancestry, genetic variation is due to differences in the populations and not between them. Most DNA variants exist in most populations, though they occur at different frequencies. Very few common forms are absolutely unique to any one area; the variants more limited in distribution tend to be rare even where they do occur. It seems that what variation exists between populations accumulates gradually across large geographic distances. Some conclude that there are no sharp boundaries dividing human groups. Thus human races, defined as distinct populations with significant biological differences from all others, may not exist. *See generally* Juengst, *supra* note 74. *E.g.*, Kidd, *supra* note 125.

132. Kidd, *supra* note 125, at 20.

133. *Id.* at 19.

to claim the genetic superiority or inferiority of a population based on its geographical-genetic origins."[134] "Furthermore, no definitive boundaries exist among the myriad variations in DNA," so no "dramatically distinct 'races' exist among human beings."[135] We thus define PSAs or the markers in terms of our societal racial categories and purport to have the ability to classify individuals into their true ancestral categories.[136]

Despite current genetic findings dispelling the myth of any biological races, opponents find the inclusion of ethnic geographic markers problematic. The use of DNA "to explain human differences recasts old and pervasive beliefs about the importance of 'blood' in powerful and contemporary scientific terms."[137] Policy implications could include the exacerbation of racism by "reinventing in statistical and molecular terms the arbitrary social apparatus of . . . the 'One Drop Rule.'"[138] Opponents contend that estimation of ethnic affiliation through genetic markers serves to rectify "(fundamentally unjust) social categories as biological realities."[139] It threatens a move from using social categories to classify the markers to using the markers to classify our social categories.[140] This follows from the idea that "if the racial populations have defining genes, races must be real and separable biological entities, not social constructions."[141] If these markers are not "genes for race" then they are "differentially associated with the people we classify in particular races."[142] Some see this as a danger that could erode our solidarity as a community by driving "technological wedges into the social cracks that already divide us . . . ."[143]

Finally, opponents argue that inclusion of these markers would increase privacy concerns beyond that of traditional fingerprinting by reporting the socially sensitive racial classification

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134. *Id.*

135. *Id.*

136. *Id.* at 16.

137. Dorothy Nelkin, *Genetic Predisposition and the Politics of Prediction, in* NEW DIMENSIONS IN BIOETHICS: SCIENCE, ETHICS AND THE FORMATION OF PUBLIC POLICY, *supra* note 125, at 51, 59 (explaining that science has long served as a way to support the status quo inequalities as "natural" and biological, dictated by natural and inexorable forces. The concept of predisposition today is also used to uphold existing social categories, whether based on gender, race, or economic circumstances, as inevitable).

138. Juengst, *supra* note 74, at 75.

139. *Id.* at 77 (parenthetical in original).

140. *Id.*

141. *Id.*

142. *Id.*

143. *Id.*

of an arrestee.[144] This argument fails to recognize that law enforcement officers have long used racial classifications. Mug shot photographs, for example, reveal race or ethnicity by showing superficial distinctions that we use to socially categorize.[145] Opponents also argue that this process could reveal family ancestral secrets, thus causing a suspect psychological or social harm by upsetting her social identity.[146] Furthermore, the information revealed is not unique only to the donor, but also reveals the private concerns of the donor's parents, children, and siblings.[147] This information increases the potential power to stigmatize and discriminate against many subjects.[148] Our country is already sour on the notion of "low tech" racial profiling in law enforcement.[149] Some contend that using genetic markers to limit investigations to suspects of a single social "race" would be vulnerable to an equal protection claim.[150]

VI. LESSONS FROM LOW TECH RACIAL PROFILING

This danger that physical profiling is constitutionally vulnerable stems from the recent controversy surrounding racial profiling in law enforcement. The current "consensus view of legal scholars casts racial profiles as objectionable and presumably unconstitutional . . . ."[151] Historically, the profile referred to the "specific reasonable inferences that a police officer is entitled to draw from the facts in light of his experience . . . ."[152] It could include a "set of circumstances, events, or behavior that, when combined with the experience of the officer, may cause heightened suspicion that affects the officer's exercise of discretion in stop and/or arrest decisions."[153]

Today, "[a] racial profile associates members of particular racial groups with particular crimes, based on a reasonable and genuine belief in actual statistical differences in crime rates or

144. *Id.* at 75.
145. *Id.* at 79.
146. *Id.* at 79–80.
147. *Id.* at 80.
148. *Id.*
149. *Id.* at 76.
150. *Id.*
151. R. Richard Banks, *Race-Based Suspect Selection and Colorblind Equal Protection Doctrine and Disclosure*, 48 UCLA L. REV. 1075, 1083 (2001). *See generally* RANDALL KENNEDY, RACE, CRIME, AND THE LAW (1997); DAVID COLE, NO EQUAL JUSTICE (1999).
152. Elizabeth A. Knight & William Kurnik, *Racial Profiling in Law Enforcement: The Defense Perspective on Civil Rights Litigation*, 30 SUM BRIEF 16, 17 (2001). This profile is set out in Terry v. Ohio, 392 U.S. 1 (1968).
153. Knight & Kurnik, *supra* note 152, at 17.

patterns of criminal involvement among groups."[154] The current notion of racial profiling broadly describes and seeks to encompass all prohibited discriminatory law enforcement practices and conduct.[155] Although the legal definition of racial profiling remains unsettled in the courts, racial profiling differs in many important ways from the use of race-based suspect descriptions.[156] Whereas police use a racial profile prospectively to catch many perpetrators, they use a retrospective suspect description to apprehend a particular assailant.[157] Whereas police frequently employ profiles in the investigation of victimless or consensual crimes that are ongoing (particularly drug rings), police apply race-based suspect descriptions to many crimes, most commonly violent crimes and completed crimes.[158] Racial profiling includes an implied requirement of self-initiation on the part of the officer.[159] It therefore encompasses the elective decision-making process rather than an officer's response to a citizen's call containing a suspect description based on national origin, ethnicity, or race.[160]

Genetic trait profiling can pass constitutional muster under the Fourth Amendment, which addresses the constitutionality of police stops, detentions, and arrests, because it is not officer-initiated.[161] Under Fourth Amendment analysis, an officer's motive "does not make otherwise lawful conduct illegal or unconstitutional."[162] Racial profiling implies a requisite degree of mental intent or discriminatory purpose.[163] When race is used merely as an element in the description of a particular perpetrator no probabilistic problems occur. The proposition that more congruent details increase the likelihood of identity between suspect and perpetrator seems indisputable. "Such self-evident propositions do not require statistical proof since probable cause is a

154. Banks, *supra* note 151, at 1081.
155. Knight & Kurnik, *supra* note 152, at 17.
156. *Id.*
157. Banks, *supra* note 151, at 1082.
158. *Id.*
159. Knight & Kurnik, *supra* note 152, at 18.
160. *Id.*
161. *Id.* The Fourth Amendment states,

> The right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures, shall not be violated, and no Warrants shall issue, but upon probable cause, supported by Oath or affirmation, and particularly describing the place to be searched, and the persons or things to be seized.

U.S. CONST. amend. IV.
162. Whren v. United States, 517 U.S. 806, 813 (1996) (quoting Scott v. United States, 436 U.S. 128, 138 (1978)).
163. *Whren*, 517 U.S. at 814–15.

'common sense' concept."[164] An officer's reasonableness in forming suspicion or probable cause is measured by objective criteria that do not include discriminatory animus.[165]

While subjective intentions play no role in the ordinary probable cause Fourth Amendment analysis, the Constitution prohibits selective enforcement of the law based on considerations such as race. "[T]he [best] constitutional basis for objecting to intentionally, discriminatory application of laws is the Equal Protection Clause, not the Fourth Amendment."[166] The law in the equal protection arena has yet to clarify the burden of proof, but "[p]urposeful intent to discriminate must be present before there is a violation of equal protection in a racial setting."[167] The plaintiff must carry the burden of proof in an equal protection claim by proving that the discriminatory purpose was a motivating factor in the defendant's decisions and actions.[168]

In the context of the Equal Protection Clause,[169] the courts will most likely define racial profiling to "include the traditional equal protection concepts, in addition to reconciling claims of racial profiling with traditional principles regarding selective enforcement of the law."[170] It will include the "unlawful administration by state officers of a state statute fair on its face resulting in an unequal application to those who are entitled to be treated alike . . . ."[171] However, this alone "is not denial of equal protection unless there is an element of intentional or purposeful discrimination."[172]

The Second Circuit implicitly adopted this reasoning in *Brown v. City of Oneonta, New York.*[173] In *Brown,* the plaintiffs

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164. Banks, *supra* note 151, at 1083.

165. Knight & Kurnik, *supra* note 152, at 18.

166. United States v. Avery, 137 F.3d 343, 354 (6th Cir. 1997) (citing *Whren,* 517 U.S. at 813); Knight & Kurnik, *supra* note 152, at 19.

167. Knight & Kurnik, *supra* note 152, at 19.

168. *Avery,* 137 F.3d at 355.

169. U.S. CONST. amend. XIV, § 1.

> All persons born or naturalized in the United States, and subject to the jurisdiction thereof, are citizens of the United States and of the State wherein they reside. No State shall make or enforce an law which shall abridge the privileges or immunities of citizens of the United States; nor shall any State deprive any person of life, liberty, or property, without due process of law; nor deny any citizen within its jurisdiction equal protection of the laws.

Id.

170. Knight & Kurnik, *supra* note 152, at 21.

171. *Id.*

172. *Id.*

173. 221 F.3d 329 (2d Cir. 1999).

charged that they were questioned solely based on their race. The victim of the crime had provided officers a physical description of the suspect. The description contained race and several other factors. "The court concluded that there was no violation of the Equal Protection Clause."[174] The court found the department policy, "which included obtaining a description of the assailant and seeking out persons matching that description," race-neutral on its face.[175] *Brown* thus supports the proposition that the definition of racial profiling should exclude non-self-initiated encounters.

This analysis can be extended to safely cover profiling based on genetically derived physical traits because it limits police initiation and discretion. Police investigations have long used race as an identifying characteristic.[176] "Law enforcement officers [nationwide] routinely treat race as a prominent component of a suspect description, investigating only individuals of the same race as the assailant."[177] These race-based suspect descriptions are "physical description[s], including race, of an alleged criminal assailant, based on a witness's actual observation of the criminal."[178] Genetically-derived physical profiles will function in the same manner, except that DNA will become the eye-witness. Thus, the physical profiles should survive an equal protection challenge because no group is singled out for special treatment and no one is penalized because of hostility toward a particular trait or race.

Under equal protection, the use of race to identify a particular perpetrator does not disadvantage any racial group and thus, does not require strict scrutiny. Although the officer notes and weighs a suspect's race in the decision to detain, the officer employs "no generalizations about the characteristics, behavior, or appropriate treatment of the racial group . . . ."[179] Rather, the officer uses a suspect's race solely to substantiate his identity as the assailant involved in a particular offense.[180] Because law enforcement officers will identify all suspects in all racial groups in part by their race, "reliance upon the witness's description of

174. Knight & Kurnik, *supra* note 152, at 18.

175. *Id.*

176. Erika L. Johnson, *"A Menace to Society:" The Use of Criminal Profiles and Its Effects on Black Males*, 38 How. L.J. 629, 648 (1995).

177. Banks, *supra* note 151, at 1077.

178. *Id.* at 1081–82.

179. *Id.* at 1083.

180. *Id.*

the perpetrator's race [or a genetically based profile] seems to impose equal burdens on all races."[181]

Despite the legal claims, racial profiling is still controversial as a policy matter. The debate is important because opponents of any type of profiling will raise many of the same issues if race or ethnicity is included in the genetic profile. This is because minority citizens have arguably become the main targets of law enforcement through the use of criminal profiles.[182] Some indication that law enforcement is contravening society's commitment to equality is the "startlingly disproportionate representation" of minorities among those arrested by police and imprisoned by courts each year.[183] "Glaringly disparate statistics . . . remain at the heart of the debate over whether blacks have a greater propensity for crime or whether police exercise discriminatory discretion in determining whom to detain and arrest."[184] On one side of the debate are those who argue that minorities are more prone to commit violent crimes because "[those] statistics only reflect the reality that racially disproportionate arrest patterns stem from social disadvantages that burden racial minorities, [and thus] drive them to exhibit more criminal behavior . . . ."[185] Those that take the argument to the extreme assert that certain minorities are "biologically destined for criminality."[186]

Some argue as well that racial prejudice and suspicion in the initial stage of police contact with minorities distort and drive the statistical disparity.[187] "[N]umerous studies [have revealed] that many police officers freely admit that . . . [they] use race as an independently significant factor in deciding whom to [arrest and detain]."[188] Thus, racial discrimination by police officers when choosing whom to arrest exaggerates any differences in crime patterns between races.[189] Racial prejudice thus is a significant factor in society's determinations of criminal suspicion that manifests largely in a person's initial entry into the criminal justice process, thus exacerbating disproportionate detention and arrest.[190]

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181. *Id.*
182. Johnson, *supra* note 176, at 632.
183. *Id.* at 633.
184. *Id.*
185. *Id.*
186. *Id.*
187. *Id.*
188. *Id.* (ellipses and second brackets in original).
189. *Id.*
190. *Id.* at 634.

Nevertheless, if using physical evidence of race were impermissible to focus an investigation, police could not rely on eyewitness reports. They could not rely on an account that a "person fleeing the crime scene was Hispanic, on a victim's report that a rapist was white, or on a linguist's analysis of an accent or word choice in a recorded death threat that suggested that the caller was African-American."[191] The reports could be wrong in any given case, "but if they are generally accurate, paying attention to them is not unconstitutional."[192] Genetically-derived trait information will eliminate that inaccuracy.

Use of genetically derived traits could lead to the apprehension of more criminals from one race than another—but not because of official hostility toward particular races or individuals' prejudices about those races. By using DNA samples from crime scenes, statistically valid inferences as to race cannot lead the authorities to target minorities because there would be no opportunity to draw from subjective racial stereotypes or prejudices.[193] Reliance on the suspect description is not racial in any meaningful sense because the physical descriptions are an "unproblematic cataloging of visually important yet morally irrelevant characteristics such as eye and hair color . . . ."[194] Rather than stigmatize an entire group based on the behavior of some, "suspect descriptions merely create a category of people who most resemble the perpetrator."[195]

"If anything, by focusing the investigation on the pertinent physical characteristics[,] . . . reliance on genetic information in crime-scene samples could correct any tendency to pursue one racial group exclusively or disproportionately."[196] If DNA analysis indicated that the source of a sample was more likely to be Caucasian than African-American, it might help overcome a stereotypical assumption that officers need only consider blacks as prime suspects. The genetic description will constrain police officers' selection of suspects and might thereby serve as a check on improper state motives or bias.[197] The description will also be "more accurate than the racial judgment reflected in a profile."[198] "By providing objective information, DNA analysis could serve as an antidote to the objectionable form of 'racial profiling'

191. Imwinkelried & Kaye, *supra* note 82, at 447.
192. *Id.*
193. *Id.* at 450–51.
194. Banks, *supra* note 151, at 1092–93.
195. *Id.* at 1093.
196. Imwinkelried & Kaye, *supra* note 82, at 451.
197. Banks, *supra* note 151, at 1093.
198. *Id.*

in police work" by correcting tendencies to pursue one group disproportionately.[199] It could also serve to exonerate those wrongly accused or incarcerated. Furthermore, it may eliminate the initial reliance on stereotypes and outdated low-tech profiles in the search for a suspect by defining the characteristics of the suspect.

VII. DNA DATABASES: LESSENING THE NEED FOR GENETIC TRAIT PROFILING

In order to maximize the effectiveness of identification in a case with an unidentified suspect, the subsequent profile generated by the lab should also be included in and matched against existing DNA databases after a physical profile is derived. All fifty states have passed laws setting up crime fighting DNA databases over the last 13 years.[200] Since 1998, the state DNA databases have been linked by a national computer system maintained by the FBI, which allows states to compare DNA samples taken from convicts in other states in order to solve crimes.[201] Both prosecutors and defense lawyers recognize these databases and DNA evidence as powerful tools to free innocent people and help prevent future wrongful convictions.[202] For example, the FBI has cleared twenty-five percent of sexual assault suspects through samples that they have tested since 1989.[203]

The current debate about the expansion of DNA databases is structured as "a conflict between dramatically increasing crime resolution rates and turning the United States into a 'nation of suspects.'"[204] The national trend is to include more individuals and expand databases.[205] All states have authorized the collection of DNA samples from convicted sex offenders. Most may also demand samples from murderers, kidnappers, and robbers.[206] The newest request for expansion of the FBI's national

199. Imwinkelried & Kaye, *supra* note 82, at 451.

200. Richard Willing, *Some Inmates Say 'No' to DNA Sample; Nation's Database Could Be Threatened*, USA TODAY, Apr. 15, 2002, at A03.

201. According to the FBI, as of February 2002, the national system contained DNA profiles of 802,000 convicts and had been used to identify suspects or develop evidence in 3,911 investigations. Imwinkelried & Kaye, *supra* note 82, at 451. As of March 2002, the number was quoted at over 830,000. *See* Dan Eggen, *FBI Wants to Compile DNA of Terrorism Suspects*, WASH. POST, Mar. 5, 2002, at A02.

202. *See* Stevens, *supra* note 12, at 942–43; *see also* Willing, *supra* note 77, at A03.

203. Stevens, *supra* note 12, at 942–43.

204. *Id.* at 943.

205. *Id.*

206. Willing, *supra* note 200, at A03; *see also* LeDuc, *supra* note 22, at B01.

database came from Attorney General John Ashcroft. He recently asked Congress to make the required legal change to add 8,000 terror suspects' DNA blood samples to the databank to bolster the fight against terrorism.[207] The rationale for expanding database categories is that violent criminals often commit lesser crimes first, thus the sooner their DNA is in a database, the more likely they will be caught first.[208] However, there is no real public consensus over what types of offenders to include. Courts tend to like a rational relationship between the offender categories and the stated purpose of the database; nevertheless, courts usually uphold DNA databases over constitutional challenges.[209]

Another issue in the databank debate is the backlog of samples now awaiting entrance into the databases. Opponents argue that this expansion by states and the courts will frustrate a system with a current backlog of over 750,000 samples nationwide waiting to be profiled and entered into databases.[210] The backlog is largely due to a lack of personnel and funds to perform the testing.[211] Several new legislative actions have been taken to alleviate this problem.[212] States could also act individually to combat

207. *See Debate: Collect Detainees' DNA*, USA TODAY, Mar. 14, 2002, at A13; *see also* Eggen, *supra* note 201, at A02.

208. Stevens, *supra* note 12, at 943. This was true for James Earl Patterson, a Virginia killer who became the first inmate in the country to be executed based on evidence sent blindly to a state's criminal DNA database. Patterson pled guilty to capital murder in 2000 after investigators entered evidence from a 1987 rape and murder into Virginia's DNA data bank. They got a "cold hit" with Patterson's genetic material, whose DNA was added to the database in the early 90s, while he served a 25-year sentence for a 1988 rape. Brooke A. Masters, *Killer in Landmark DNA Case Executed in Va.*, WASH. POST, Mar. 15, 2001, at B01.

209. Stevens, *supra* note 12, at 943.

210. *Id.* at 945; *see also Boyd Testimony*, *supra* note 29 (testifying that "[w]ith the stroke of their pens, state legislatures are adding tens of thousands of samples to their state's backlogs where previously the labs may have been caught up").

211. Stevens, *supra* note 12, at 943.

212. *Id.* at 945–46 (stating that the Paul Coverdell National Forensic Sciences Improvement Act of 2000 was designed to alleviate this problem by providing federal grants of $512 million over six years to "'improve the quality, timeliness, and credibility of forensic science services for criminal justice purposes,' including a $30 million grant for the fiscal year 2001 'for the elimination of DNA convicted offender database sample backlogs and for other related purposes'"). Also enacted was the DNA Analysis Backlog Elimination Act of 2000, which provides $45 million over three years to include DNA analyses of samples taken from individuals convicted of a qualifying State offense, and $100 million over four years to include in the CODIS database DNA analyses of samples from crime scenes and to increase state and federal lab capacities. *Id.* In addition, Attorney General Ashcroft also announced plans to upgrade the speed and capacity of the national DNA database. Finally, the Justice Department will

the lack of personnel by contracting with private labs to process specified numbers of samples a month.[213]

Many opposed to expanding DNA databases fear that they will become a catalog of genetic social security numbers, including everyone in the country.[214] Civil libertarians also fear that any expansion would open the door to routine DNA collection from citizens who have not been charged or convicted of a crime.[215] However, shortcomings of the existing systems include the fact that criminals must first commit a crime and be caught before their profile is in the system.[216] Furthermore, inmates already in the prison system nationwide are creating a new problem by refusing to give authorities DNA samples that could link them to other crimes.[217] Because these refusals are harmful to efforts to perfect a national database, "[eleven] states have passed laws permitting authorities to use 'reasonable force' to take samples from recalcitrant inmates."[218] As the courts weaken Fourth Amendment protection by upholding such measures, a national database with DNA profiles of all citizens might be constitutionally acceptable.[219] Such a database could be accom-

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offer more than $100 million in federal grants over the next two years to help states analyze DNA samples. This will reduce the backlog of hundreds of thousands of samples from crime scenes and offenders that have not been analyzed by overburdened state and federal labs. Eggen, *supra* note 201, at A02.

213. Stevens, *supra* note 12, at 945.

214. *Id.* at 954.

215. *See generally Debate: Collect Detainees' DNA*, USA TODAY, Mar. 14, 2002, at A13 (discussing opposing views on the collection of the DNA of terrorist suspects).

216. *See* Stevens, *supra* note 12, at 954. This practice is allowed in other countries. Great Britain, with weaker privacy safeguards, has called for the entire population to be DNA tested. Iceland also passed a 1999 law to have the entire population entered into a database for medical research but not forensic identification. *Id.* at 954–55. In the United States, the Virginia General Assembly is already moving back protections by passing a bill this year to extend the sampling to include people charged with violent felonies, rather than waiting until possible convictions. *See* Masters, *supra* note 208, at B01.

217. *See* Willing, *supra* note 61, at A03 (stating that inmates in as many as a dozen states have refused to give blood or saliva samples containing DNA since states began requiring them from inmates during the 1990s. The refusals are centered in California, where since last summer more than 900 inmates in at least five prisons have declined to give samples citing privacy concerns and a general distaste for authority. For instance, one convicted murderer refused to give DNA samples, telling prison officers, "What are you going to do? Put me in jail?").

218. *Id.* Less dramatic measures include administrative sanctions such as a loss of parole credits, used to try to coax inmates into cooperating.

219. Stevens, *supra* note 12, at 955; *see also* Adler & McCormick, *supra* note 55, at 68.

plished by collecting samples at birth.[220] This would eventually eliminate the need to generate physical traits in a sample's profile. However, the FBI states that the costs of such an endeavor would be too high.[221] This obstacle will soon disappear because the cost of DNA testing will decrease as technology improves.[222]

Most other concerns surrounding expansion are outweighed by the vast systemic benefits the databases would create. DNA databases would streamline the criminal justice system in the investigative stage by identifying a suspect almost immediately. They would also save time and money spent in fruitless investigations.[223] Another important benefit accruing from investigative use is that public crime laboratories can prioritize case work "beyond the pressures of impending trials, enabling the labs to focus on the important, customized issues inherent in each case proactively rather than retroactively, ultimately eliminating the need to remediate cases at the post-conviction level."[224]

Compelling statistics also prove that these databases have the power to exonerate suspects already serving time for a crime they did not commit.[225] Constitutionally, the databases have the support of the precedent of computerized fingerprint databases. Furthermore, the courts have upheld recent efforts to expand included criminal classes.[226] Many issues remain, however, as the Supreme Court has yet to rule on issues of the mandatory testing of convicts, disposal of DNA samples, and the testing of arrestees.[227] Although the technology is still evolving,[228] the bot-

220. Stevens, *supra* note 12, at 955. For instance,

> Florida recently enacted a program whereby hospitals in the state would voluntarily take a blood sample from newborns, which would be given to the baby's parents in case the sample was ever needed to identify their child, such as in the case of a kidnapping. Florida State Legislator Bob Starks plans to go one step further: he has filed a bill that would require hospitals to participate in the child identification program, or "Chip."

Id.

"Rudolph Giuliani, Mayor of New York, stated in 1999 that he would have no objections to" a more extreme plan of "taking DNA samples from every infant and using them to create a comprehensive genetic database for use in forensic identification and other areas." The FBI disputes the feasibility of these plans because the cost is too high. *Id.* at 955–56.

221. *Id.*

222. *Id.* at 956; *see also* Quindlen, *supra* note 47, at 80 (stating that the cost of DNA analysis for a sample is now around $40).

223. Stevens, *supra* note 12, at 959.

224. *Boyd Testimony, supra* note 29.

225. Stevens, *supra* note 12, at 960.

226. *Id.* at 959.

227. *Id.*

228. *Id.* at 958.

tom line is that "DNA gives law enforcement the power to solve crimes that were previously unsolvable."[229] Our criminal justice system has only just begun to realize the benefits of database use.[230]

VIII. BROADER IMPLICATIONS: GENETICS AND CRIME

The discoveries from the Human Genome Project are already shaking the foundations of our legal system, particularly in the area of criminal law. In many ways we have already begun to create a "geneticized" criminal justice system.[231] For example, we already use DNA "fingerprinting" at trial. "[S]ome states have enacted sexual predatory statutes that require 'propensity hearings.'"[232] Given the pressures of cost and time that currently plague the criminal justice system, genetic explanations of violent behavior also fit conveniently with current ideologies about prison reform. "Disillusioned with the failure of past rehabilitation schemes and pressed to save money, criminologists are leaning toward the 'selective incapacitation' of prisoners instead of efforts to rehabilitate them."[233] Thus, "many jurisdictions have adopted a 'three strikes, you're out' approach to sentencing."[234] "Indirect genetic links between crime and conditions such as alcoholism and antisocial behaviors have been established, and genetic explanations" are currently "offered to exculpate the accused at trial."[235] The "concept of genetic disposition has been translated into 'the genetic defense' and used to define the limits of criminal responsibility and free will. Appearing to be scientifically grounded, and more specific than an insanity defense, the genetic defense is appealing in the courtroom."[236] "[T]he real question 'is not whether genetic evidence will ever be admitted into court, but when and under what kinds of circumstances.'"[237]

One particular circumstance that should pass constitutional muster is the "governmental sponsorship of research of the variations of particular alleles across races and the investigative use of

229. *Id.* at 960.

230. *See Boyd Testimony*, *supra* note 29.

231. Steven Friedland, *The Criminal Law Implications of the Human Genome Project: Reimagining a Genetically Oriented Criminal Justice System*, 86 KY. L.J. 303, 306 (1998).

232. Nelkin, *supra* note 137, at 61.

233. *Id.* at 62.

234. Friedland, *supra* note 231, at 306.

235. *Id.*

236. Nelkin, *supra* note 137, at 60–61.

237. Friedland, *supra* note 231, at 306.

alleles that are reasonably accurate indicators" of physical traits including race.[238]

> Two factors are crucial to such constitutionality: No group is singled out for special treatment, and no one is penalized because of hostility toward race. If the police make investigative use of racial information whenever that information is useful, then all racial groups are treated alike; none is stigmatized or disadvantaged in the enforcement of laws that apply with equal force to members of every race.[239]

Although the constitution does not foreclose these policy choices, there are still important policy choices to be made about this developing technology.[240]

"Then and now, hereditarian explanations of deviant behavior . . . are important in defining responsibility and locating blame for social problems. These explanations now appear in various institutional contexts."[241] Many perceive a problem with the broader issue of research justice for both genetic trait profiling and DNA databases. For example, DNA database collections of samples from criminals or soldiers might be seen as good resources by those interested in studying genetic factors involved in anti-social or aggressive behavior.[242] Our social experience has shown this is bad because studies often took on biases that mischaracterized and stigmatized groups of people disproportionately represented in the system being studied.[243] This type of genetic study misdirects attention from the "overwhelming social causes of the behaviors they purport to explain by encouraging a determinism that suggests that efforts at social reform are ultimately futile."[244] This would wrongfully focus our criminal justice system on the idea that a criminal is "an isolated being whose social environment is generally inconsequential" and "legally irrelevant to his or her criminal actions."[245] This belief "diverts

238. Imwinkelried & Kaye, *supra* note 82, at 449.

239. *Id.* at 449–50.

240. *Id.* at 451.

241. Nelkin, *supra* note 137, at 60–61.

242. Juengst, *supra* note 74, at 69.

243. *Id.*; *see also* Jonathan Beckwith, *The Genetics of Human Behavior: Lessons from the Human Genome Project*, *in* THE HUMAN GENOME PROJECT AND MINORITY COMMUNITIES: ETHICAL, SOCIAL, AND POLITICAL DILEMMAS, *supra* note 14, at 21, 37 (explaining that many researchers in the field are influenced by their preconceived notions and as a result, ignore possible environmental factors influencing results).

244. Juengst, *supra* note 74, at 70.

245. Robert M. Bohm, *Crime, Criminals and Crime Control Policy Myths*, *in* JUSTICE, CRIME & ETHICS 327, 335 (Michael Braswell et al. eds., 1991).

attention away from the structural elements in society that inevitably contribute to criminal behavior."[246] This misdirection is likely to have a more pronounced effect when it reinforces existing social policy inequities.[247]

Even if genetically derived physical traits are acceptable law enforcement tools, they constitute a mere slippery slope to mental profiling and overly simplistic genetics-based explanations of behavior. There is currently reason to believe that many of a person's mental traits and dispositions have a genetic foundation.[248] "Scientists have in fact isolated certain genes that indicate an increased susceptibility to certain diseases;" as well as evidence that "a person's IQ, emotional temperament, and certain other mental qualities have causal antecedents in his genetic structure."[249] However, "a series of headlines announcing the mapping of genes for such behaviors as schizophrenia, bipolar manic-depressive illness, alcoholism, homosexuality, risk taking, happiness, anxiety, and criminal behavior" failed to acknowledge the striking "retractions and contradictory studies that have appeared in the scientific literature."[250] The scientists in the field of genetics recognize the questionable nature of studies linking genetics to behaviors.[251]

In the future, instead of waiting for a criminal to express a pattern in order to create a mental profile, law enforcement officials might be able to create a mental profile more quickly by utilizing a DNA artifact left at a crime scene. However, "DNA analysis maps immutable, lifelong characteristics of an individual."[252] Although immutability is what makes DNA such an ideal identifier, it also creates a "specter of prejudice."[253] It would allow a suspect "to be placed into a discrete class, cut along lines defined by the most intimate and private facts: one's future physical and psychological health."[254] Experts now recognize that "certain conditions such as juvenile delinquency, personality disorders, and substance abuse have a significant effect on antisocial behavior, and thereby have an indirect effect on criminality."[255]

246. *Id.* at 336.
247. *See id.*
248. Miller, *supra* note 111, at 204.
249. *Id.*
250. Beckwith, *supra* note 243, at 28.
251. *Id.*
252. Hibbert, *supra* note 106, at 790.
253. *Id.* at 791.
254. *Id.*
255. Maureen P. Coffey, Note, *The Genetic Defense: Excuse or Explanation*, 35 WM. & MARY L. REV. 353, 376 (1993).

Scientists have linked these same disorders to a genetic origin.[256] Empirical evidence shows that "genetic coding for structural proteins and enzymes influences metabolic, hormonal, and other physiological processes."[257] Genetics thus may "directly affect the risk of an individual's manifestation of 'criminal' behavior in particular environments."[258]

Studies clearly show that heredity and genetics make a significant contribution to the development of antisocial or criminal behavior.[259] In an effort to pinpoint the specific origins of deviant behavior, researchers have attempted to identify relevant physiological processes and corresponding dysfunctions.[260] Studies have been conducted across fields such as neurology, psychophysiology, and endocrinology.[261] "Although the results have not yet provided conclusive evidence of clear and direct biological 'causes' of crime, considerable data has emerged to support the argument that genetics have a real and significant influence on the development and expression of human behavior."[262]

Nevertheless, scientists also recognize that criminality is a complex behavior involving the interaction of multiple risk factors.[263] People do not possess a single gene for crime.[264] Many studies purporting to demonstrate the genetic components of behavioral traits do not yet warrant the publicity accorded to them in the media. Although the gene mapping studies are becoming quite sophisticated, there is no convincing evidence yet for direct linkage of genes to human behaviors.[265] Because of the success in this area of study demonstrating the genetic components of behavioral traits, society should be ready to accurately interpret the implications of such a find.[266]

The HGP (Human Genome Project) so far "reveals unanticipated complexity in the relationship between genes and human traits."[267] Genetics research is not teaching us the lesson of "genetic fatalism—that the presence of a gene associated with some trait . . . means that the trait . . . is fixed and cannot be

256. *Id.*
257. *Id.*
258. *Id.* at 279.
259. *Id.*
260. *Id.*
261. *Id.*
262. *Id.*
263. *Id.* at 376.
264. *Id.*
265. Beckwith, *supra* note 243, at 28–29.
266. *Id.* at 29.
267. *Id.*

changed by environmental conditions."[268] Researchers now acknowledge that the genetic contribution to behavior may well be more subtle and elusive than the genetic contribution to physiology.[269] Environmental factors make enormous contributions to shaping behavior.[270] This does not mean that the findings have any less scientific value.[271] The heterogeneity and social construction of human behavior is now recognized as part of the challenge to this field.[272] There is a vast array of social and environmental forces that shape the difference in human behavior and psychology.[273] The genetic effect on those differences is both modest and difficult to track.[274]

Currently, a person's genetically ingrained traits, mental or physical, can be seen as a set of parameters that fix a background space of possibilities within which the person is free to create a unique character of his own free will.[275]

> Recent and impending advances in genetic science do not necessitate any transformation in our concept of personal identity or character into essentially genetic terms. Genetic traits, be they mental or physical in nature, are simply the raw material from which an individual creates a unique character through the operation of his own autonomous will.[276]

Legislatures and courts should resist pressure "to give DNA information special legal protection that derives from the misguided idea that DNA constitutes the sacred essence of an individual's personal identity."[277]

There are three reasons to guard against genetic misconceptions: history, social construction, and unwarranted media attention. Hitler and the Nazis' justification of their actions through genetic theories best exemplify the historical reasons to guard against misconceptions.[278] Genetics in the social science fields has had a dark history regardless of the validity of the studies

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268. *Id.*; *see also* Coffey, *supra* note 255, at 376.
269. Beckwith, *supra* note 243, at 28–29.
270. *Id.* at 29.
271. *Id.*
272. *Id.*
273. *Id.*
274. *Id.*
275. Miller, *supra* note 111, at 218.
276. *Id.* at 220.
277. *Id.*
278. Beckwith, *supra* note 243, at 22; *see also* ALLEN BUCHANAN ET AL., FROM CHANCE TO CHOICE: GENETICS AND JUSTICE 32, 40 (2000).

because the data was susceptible to abuse, misrepresentation, and misunderstandings.[279]

That dark history began to change with the development of recombinant DNA technology in the late 1970s. Researchers then began to identify and manipulate individual genes and genetic material. That technology became relevant to behavioral genetics as researchers discovered genetic markers for a variety of diseases and traits.[280] At the end of the 1980s and early 1990s, scientists discovered and identified genes and markers for a number of diseases with patterns in heredity.[281] Hoping to replicate the dramatic success of medical genetics, behavioral geneticists adopted the same methods.[282] Public sentiment has since shifted away from the popular and optimistic environmental explanations of human behavior.[283] The recent public obsession with genetic explanations has given this field of research a new credibility.[284]

Opponents, however, express the second reason to guard against genetic misconception: that "the search for genetic factors involves the 'medicalization' of social behavior [and] diverts attention and resources from the social and economic conditions largely responsible for crime."[285] Faulty genetic theories can inherently result in social divisiveness. Extending genetic predictions to behavior will frame "the way we think about individual success or failure and about the sources of social problems."[286] "[T]he fatalistic idea of genetic predisposition can also encourage passive attitudes toward social injustice and apathy concerning social problems—especially in societies preoccupied with cost containment in the social policy arena."[287] Such predictive explanations "provide supposedly science-based reasons to justify social policies and to preserve the status quo," while serving ideological agendas.[288] They "protect existing social categories and social policies while promising control of those who are defined as a threat to the social order."[289]

279. *See generally* Beckwith, *supra* note 243, at 22–23.

280. David Wasserman & Robert Wachbroit, *Introduction: Methods, Meanings, and Morals, in* GENETICS AND CRIMINAL BEHAVIOR 1, 10 (David Wasserman & Robert Wachbroit eds., 2001).

281. *Id.* at 10.

282. *Id.*

283. *Id.* at 2.

284. *Id.*

285. *Id.*

286. Nelkin, *supra* note 137, at 63.

287. *Id.* at 64.

288. *Id.*

289. *Id.*

This means of control directly affects the feelings of self-worth and confidence among people within the groups biologically labeled as inferior.[290] "Because many important behavioral and psychological categories are social in origin, they may not be amenable to genetic or biological explanation."[291] The new research analyzing genetic contributions to criminal behavior begins with the fact that legislators define crimes.[292] Police, prosecutors, judges, and juries then determine whether human behavior fits into the category of crime.[293] Thus, "the reality of crime is socially constructed."[294] Although most concede that genes do affect voluntary behavior, the difficulty is that social categories may not correspond with biological types.[295] As a society, we should not expect much in common psychologically or genetically between a child abuser, a pickpocket, a mob boss, and a political terrorist.[296] "It is unlikely that any genetic feature distinguishes the members of such an eclectic rogues' gallery from the general population, and even if one does, it is unlikely to have much explanatory value."[297]

Finally, the third reason why responsible scientists must guard against genetic misconceptions of determinism is that claims coming from geneticists have particular power today given the tremendous public attention to progress in this field.[298] Every day there is a story in the newspaper, on television, or over the radio concerning some aspect of genetic and genomic sciences. The importance of the HGP "is beginning to permeate the consciousness of the American public."[299] The media, how-

290. *Id.*

291. Wasserman & Wachbroit, *supra* note 280, at 12.

292. *Id.* at 13.

293. *Id.*; *see also* Bohm, *supra* note 245, at 328 (arguing that there is a lack of clarity as to what the concept of crime refers to). Historically, crime has been used to label an extraordinarily large and a seemingly unrelated number of actions and inactions. A legal definition is also problematic. The law is rather arbitrary about what kinds of phenomena are regarded as crime and has generally been expanded and contracted depending on the interests of the dominant groups in the social struggle. This is inevitable given the political nature of crime.

294. Bohm, *supra* note 245, at 327.

295. Wasserman & Wachbroit, *supra* note 280, at 13.

296. *Id.*

297. Wasserman & Wachbroit, *supra* note 280, at 13; *see* Bohm, *supra* note 245, at 328–33 (arguing that there is a socially unacceptable and generally unknown bias in including or excluding certain behavior as crime as well as a bias in the enforcement of the law. Thus, through crime myths like the definition of crime, the interests of the societal elites are served.).

298. Beckwith, *supra* note 243, at 22–23.

299. Jackson, *supra* note 15, at 35.

ever, is one of "the most important source[s] of common conceptions and myths of crime, criminals and crime control policies."[300] Intentions aside, there is no question that the mass media perpetuates false conceptions of crime to the general public. These myths serve elite interests by helping to secure and legitimate the social status quo with its gross disparities of wealth, privilege, and opportunity. They accomplish this by providing a scapegoat and by redirecting the defusing dissent.[301]

In the context of genetics, it is expedient to shift the blame to biology so that problems rest less with society than with individual predispositions. Claims about genetic predisposition are presented through the media to shift responsibility and locate blame, especially in the area of product addictions. "It is also convenient to attribute addiction, not to products but to the individuals who are predisposed."[302] For example, Gallo Wine is supporting research on alcoholism. "Gallo scientists have located a gene that produces a protein that, they claim, jams the signals warning a person to stop drinking."[303] Critics "note that genetic explanations are useful to the industry, locating responsibility for alcoholism to certain individuals" and implying "that others need not worry about how much they drink."[304] "Similarly, the tobacco industry has supported research on the molecular basis of the causes of lung cancer, hoping to sow doubt about the dangers of smoking in the larger population."[305] Finally, the defendants in some toxic tort cases are looking to shift the blame to plaintiffs through the redefinition of cancer as a genetic disease, which shifts the blame and responsibility away from industry and regulators.[306]

Despite its complexity and potential to explode our preexisting notions of genetic predisposition and personal identity, this new field of research can make significant contributions to our criminal justice system. It includes within it an evolutionary psychology: a way to predict and discover which behavioral patterns are most likely to emerge from human populations and why.[307] This is relevant to law, especially the criminal law,

300. Bohm, *supra* note 245, at 337.

301. *Id.* at 337–39.

302. Nelkin, *supra* note 137, at 62.

303. *Id.*

304. *Id.* at 62–63.

305. *Id.* at 63.

306. *Id.*

307. Owen D. Jones, *Law, Emotions, and Behavioral Biology*, 39 JURIMETRICS J. 283 (1999).

because law regulates behavior.[308] "[T]he effectiveness of various legal approaches to regulating behavior depends on the validity of the behavioral model on which law grounds these approaches."[309] In order to maximize effectiveness, law must integrate with other social sciences in focusing on the causes of behavior.[310] This is a more holistic approach that places human behavior within the context of human biology and evolutionary history.[311] It recognizes the practices of modern culture and explores "evolutionary influences on cooperation, competition, aggression, and sexuality—all of which are the subjects of law . . . ."[312]

This genetically focused approach provides the legal world with "information to improve our behavioral models, increase the efficacy of the cost-benefit analyses that underlie many of our policymaking judgments, and suggest ways in which regulatory strategies can be enhanced."[313] It "invites us to understand some of the complexities of human emotions, desires, and behaviors as influenced by a brain that has evolved to process information, and to correlate information patterns with subjectively perceived psychological states."[314]

Some legal scholars are beginning to incorporate and apply genetic behavioral principles to many topics relevant to the law including: aggression, risk assessment, relations between the sexes, and deceptions.[315] This new methodology discards outdated paradigms, because they are sterile and destructive, in order to integrate the social and life sciences to achieve a robust model of human behavior.[316] Biology may not dictate human behavior in any single individual, but the "shared components of human psychology nevertheless contribute testably and substantially to the average patterns exhibited across the entire human population—and thus within the scope of every legal regime."[317] Understanding this notion can help us to design a criminal justice system that more effectively regulates behaviors in a way that furthers our shared social values and goals.[318]

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308. *Id.* at 285.
309. *Id.*
310. *Id.* at 286.
311. *Id.* at 287.
312. *Id.*
313. *Id.*
314. *Id.*
315. *Id.* at 289.
316. *Id.*; *see also* Beckwith, *supra* note 243, at 31.
317. Jones, *supra* note 307, at 289.
318. *Id.*

IX. CONCLUSION

Criminal investigators and law enforcement agents should utilize the new scientific breakthroughs that give DNA labs the ability to identify physical traits including height, eye color, sex, and race from a trace of DNA material. This technology has the potential to solve uncountable cases without suspects and unidentified victims in which a sample of their DNA is available. The current nationwide crisis in the criminal justice system mandates the use of all available tools. Currently, hundreds of thousands of cases with DNA samples just like the current situation in Baton Rouge go unsolved each year due to lack of suspects and inadequate use of existing technology. With the use of genetic trait profiling and DNA databases, law enforcement could make a dent in those daunting numbers. Prosecutors already show a willingness to use creative methods involving existing technology to circumvent legal barriers in cold cases.

Although the debate surrounding "low tech" racial profiling is relevant, genetic trait profiling is sufficiently different. Although DNA-based physical profiling might raise a constitutional equal protection problem, it can pass constitutional muster because no group is singled out for special treatment and no one is penalized because of hostility toward a particular trait or race. Additionally, DNA analysis could serve as an antidote to racial profiling in that reliance on genetic information in crime scene samples could correct tendencies to pursue one group disproportionately. Genetic trait profiling follows from the recent trend in an emerging dialogue between the geneticists and the social scientists. An understanding of the relationship between genetics and criminal behavior can inform future policymaking and ensure a system of more effective laws.