DNA and Criminal Justice:

Public Opinion on a New Policy

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ABSTRACT

Genomics research will soon affect many aspects of our lives, but its political associations and implications are only beginning to develop. This paper explores one such aspect: biobanks for law enforcement purposes. All states collect genetic information from serious offenders, and some from malfeasants, arrestees or immigrants subject to deportation. DNA evidence and biobanks are frequently used to aid in prosecution and conviction and sometimes to exonerate those falsely convicted. Some elites and advocacy groups find forensic biobanking deeply troubling, but the public endorses it and politicians usually promote it.

Scholars, on the other hand, know little about the political dynamics behind support or opposition. We use a new survey of 4,200 American adults and a new module on the General Social Survey to investigate how the public understands and evaluates forensic databanks. We examine respondents' self-declared awareness of biobanks, evaluation of biobanks' social benefits and harms, views on funding and regulation, and willingness to contribute a DNA sample. We anticipate a positive relationship with scientific literacy, Republicanism, and self-interest, and a negative relationship with being African American. Some, but not all, of these hypotheses are borne out. Blacks (and sometimes Latinos) resist forensic biobanks more than whites, although majorities of all groups endorse them. Those with more genetics knowledge are more supportive of this new technology. Republicans present a mixed picture: they trust law enforcement officials in this arena and resist federal regulation – but they also oppose increased public funding. Finally, self-interest defined as susceptibility to crime has no discernible relationship to views on legal biobanks.

As a father, I can't thank you enough [for working to convict sexual predators.] . . . We also want to provide some support for things like DNA testing at the state levels. . . getting the databases set up. . . . [I]t's so important to every family across America and there are just too many horror stories that remind us that we're not doing enough. . . . We insist on justice.

--President Barack Obama (Gerstein 2010).

DNA collection and retention lacks privacy safeguards, and exacerbates existing racial inequalities in the criminal justice system. . . . [H]ow far are we all willing to go to allay people's fears [--] and whose freedoms, civil rights and liberties would governments be willing to sacrifice?

--(Byravan 2006): 29, 30

By raising issues of civil rights, i.e. being innocent until proven guilty, privacy, bodily integrity and the principle of proportionate measures -- . . . forensic DNA profiling practices are at the heart of the organization of national democracies.

--(Toom 2010): 390

In the mid-1980s, Los Angeles was gripped by the "Southside Slayer," who targeted young African-American women. But he retreated, and by 1990 the trail had gone cold. In 2002, when a teen runaway was killed with the same *modus operandi,* the Southside Slayer became known as the "Grim Sleeper." At first, capture again seemed unlikely -- the meticulous killer left little evidence, and even prominent media coverage and offered rewards yielded few leads. DNA from the crime scenes matched no one in California's offender database. Based on a new law permitting familial searches, however, the police searched the offender database for *close* rather than exact DNA matches; in 2010, they found one. The sample was from Christopher Franklin, recently convicted on a felony weapons charge. The police kept members of his immediate family under surveillance, and eventually collected discarded pizza crusts left by Franklin's father, Lonnie David Franklin Jr. DNA samples on the pizza matched the Grim Sleeper's DNA. Lonnie Franklin Jr. was arrested and charged with ten counts of murder and one of attempted murder. At least six other deaths have since been linked to Franklin.

The case against Lonnie Franklin Jr. was one of the first in the United States to use familial DNA matching. However, genetic forensics has become a routine part of major (and increasingly,

minor) criminal investigations in the United States over the past two decades.[3] It has been used to

convict or free defendants, reopen cold cases, and exonerate people who were falsely convicted.

Americans' enthusiasm has kept pace. To cite only a few representative examples, at least nine-tenths

of national samples consistently agree that the government should permit or require DNA tests of

people involved in the criminal justice system to determine guilt or innocence.[4] Almost as many favor

"a national DNA databank with DNA collected from all criminals" (Democratic Leadership Council

6/00). In 2006, two-thirds endorsed a law requiring a DNA sample from *all* adults; half supported

inclusion of children aged 5 to 18, and a third would include babies (Harris Interactive 2006; ibid 2009).

Actions track verbal endorsement; in 2004, Californians approved Proposition 69, the "DNA

Fingerprint, Unsolved Crime and Innocence Protection Act" with a 62 percent majority.[5] It is little

wonder that, regardless of his own views, President Obama endorsed state biobanks, federal

coordination of state biobanks, and additional federal funding in his interview with the host of

"America's Most Wanted."

　　　　Little is known, however, about the depth or contours of the public's views of this new

technology. Scholars lack robust frameworks for making sense of Americans' policy preferences, or

well-developed theories about the deeper meaning of forensic biobanks for democratic governance. To

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[3] We limit our analysis to the United States, although the issue is increasing in global salience. In 2007, for example, the
European Union countries agreed to share DNA information, thereby creating the world's largest genetic database (Traynor
2007). In 2008 the European Court of Human Rights ruled that Great Britain's practice of retaining DNA samples from
arrestees who were not convicted violated the rights to privacy laid down in the European Convention on Human Rights (*S.
and Marper v UK* ECHR 1581).
　　　　Familial matching has been used in several countries for some years. There are excellent public opinion surveys on
biobanks in the United Kingdom, and a developing academic literature and political discourse (e.g., (Sturgis and Allum
2004); (Levitt and Tomasini 2006); (Williams and Johnson 2008); (Hindmarsh and Prainsack 2010); (Van Camp and
Dierickx 2007); (Sturgis, Brunton-Smith and Fife-Schaw 2010)]. We will address these comparative and international
issues in future work.

[4] *Time*/CNN, 12/ 17-18/1998; PSRA/*Newsweek* Poll 6/00; Gallup/CNN/*USA Today* 3/00; Gallup 6/00; *Wall Street Journal*/
Harris Interactive 8/06;Harris Interactive 2009; GSS 2010, module on Genetics and Genomics. Unless otherwise noted,
survey results come from iPoll, Roper Center for Public Opinion Research.

[5] Neither public officials nor the media spent much time discussing the proposition, and there was no significant campaign
to shape voters' views. We found no polls on the proposition.

our knowledge, no political scientist has published on the politics of forensic biobanks.[6] Addressing these issues, we find in this paper that, overall, Americans endorse forensic biobanks, support federal funding of them, and trust actors in the criminal justice system to use DNA information wisely. Within that finding, we hypothesize that African Americans (and perhaps Hispanics and Asian Americans trust and support biobanking less than Anglos, and Democrats less than or Republicans. We further hypothesize that people with high levels of scientific knowledge will trust and endorse this new technology more than those with little knowledge, as will those especially vulnerable to crime. If confirmed, these conclusions may suggest that increased public knowledge about biobanks (for example via their increased widespread use and resulting media coverage) could result in more public support over time.

Our evidence comes from two new surveys. The first is the 2011 Survey on Genomics Knowledge, Attitudes, and Policy Views (GKAP), the largest and most comprehensive survey to date on public attitudes toward genomics-related issues. It includes approximately 4,200 U.S. adults, stratified by race and ethnicity, and was conducted online by Knowledge Networks. The survey asked thirteen questions about forensic biobanks, as well as others relevant to their study. We supplement GKAP with a new item on support for forensic biobanking in the 2010 General Social Survey (GSS), along with other relevant GSS questions.[7]

The paper proceeds as follows. We set the context through an overview of how DNA evidence is used in the criminal justice system. We then examine elite opinion on this issue, emphasizing the difficulty in categorizing public actors' views. Next, we develop our hypotheses and analyze the results of the GKAP and GSS surveys. Finally, we link the survey results back to the elite debates and

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[6] JSTOR yielded one item in political science or public policy and administration journals for the keyword "biobanks[s]"--a 1998 "Report to the European Commission on Ethical Aspects of Human Tissue Banking." The Social Science Research Network (SSRN.com) produced 23 items with the keyword "biobanks[s]." None appeared in a political science journal, and one was written by political scientists – our own earlier draft of this paper.

[7] The 2010 GSS module on genomics was developed by Gail Henderson, Jennifer Hochschild, and Eleanor Singer

point to questions that this analysis raises for political science and democratic governance. We conclude by noting the implications of these trends and hypotheses for the future of governments' use of biobanks for law enforcement purposes.

The Use of DNA Databases for Law Enforcement Purposes

A DNA sample is collected from the crime scene (from blood, semen, hair, cigarette butts or other discarded cells) or from an individual (for example, through a cheek swab). The number of short tandem repeats (STRs) of the base pairs in a DNA sequence is identified for each of the two alleles (gene variants) at thirteen specified loci across the 22 non-sex linked chromosomes (the sample is also typed for sex).[8] For the national database, the FBI accepts only data generated by the polymerase chain reaction (PCR) technique, and only from accredited and inspected laboratories. At the national level, the samples are identified by number (as well as collecting agency and lab doing the analysis) and have no identifying information about the individual.

Each state maintains an Offender Index, comprised of the samples taken from individuals. As of 2010, 47 states collect DNA from all those convicted of a felony (the other three collect DNA only from convicted sex offenders). Also as of 2010, 15 states collect DNA samples from people convicted of certain misdemeanors and 21 from certain arrestees. Many states include persons on probation or parole, juveniles, and/or immigrants subject to deportation (National Conference of State Legislatures 2010). These numbers are constantly changing, almost always to expand the relevant population. By January 2012, the FBI's National DNA Index System (NDIS) included about 10,500,000 samples. As of March 2012, New York requires a DNA sample from every misdemeanant (with a narrow exception for marijuana use); legislators in New Jersey, Washington, and elsewhere are seeking similar expansions. Laws and regulations about storing, using, and destroying DNA evidence vary

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[8] Mitochondrial DNA (mtDNA) and Y chromosome DNA (Y STR) can be saved in the FBI's database, but are searched only in relation to the missing person or unidentified human remains indices.

substantially across states, as do the transparency and formality of these rules (Rothstein and Talbott 2006).

Each state also maintains a Forensic Index, which holds samples from crime scenes with unknown contributors. Police seek matches for crime scene samples in their own local or state Offender Index, or in the FBI's NDIS, which enables searches outside the state or in cooperating countries, as well as searches for links to previously unconnected crimes. DNA profiles are kept confidential, and the states or other governments choose whether to follow up on information sent by the FBI.

The FBI can notify states of partial matches, or a state may follow up on partial matches within its own indices.[9] Several states (California, Oregon, Colorado, and Virginia) also permit intentional familial DNA searches -- as was done in the apprehension of Lonnie Franklin Jr. -- while Maryland and the District of Columbia prohibit them. As of November 2009, at least fifteen states permit analysts to tell law enforcement officials of partial matches, though in most cases the partial match must be discovered accidentally to be legally used to identify family members who might be of interest to the police. As that odd formulation suggests, partial, and especially familial, matching is the most substantively and politically contentious aspect of forensic biobanking.

Experts debate the accuracy of matches through DNA testing. Even exact matches are not foolproof: "all that can be said is that, so far as the test was able to determine, the two profiles were identical, but it is possible for more than one person to have the same profile across several loci. At any given locus, the percentage of people having DNA fragments of a given length, in terms of base pairs, is small but not zero" (Devlin 2006).   Probably a greater concern than false positives is the less rarefied issue of human error. The tests that did not reveal any DNA of the Duke University students accused of raping Crystal Mangum in the notorious 2006 lacrosse case *did* reveal DNA of the owner of

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[9] The FBI defines moderate stringency in a partial match between two samples as "a search that requires all alleles to match, but the target and candidate profiles can contain a different number of alleles." The FBI emphasizes, however, that a moderately stringent search between a crime scene sample and the offender index "should not be confused with attempting to search for similar but not matching profiles already stored within the National DNA database [i.e. familial matching] – a type of database searching the FBI does not conduct." The fact sheet then describes how a forensic scientist might search for a family match (Federal Bureau of Investigation Laboratory Services c. 2011).

the private laboratory conducting the tests -- that is, the sample was contaminated. Laboratories and police may mishandle DNA samples; samples can be mixed up or lost; expert witnesses may, intentionally or not, convey misleading information; individuals may suppress evidence; the count of STRs is as much an art as a science. [(Lynch et al. 2008); (Garrett and Neufeld 2009); (Cole and Aronson 2009)].

Nevertheless, proponents respond, courts must beware of permitting the best to be the enemy of the good. Judges permit challenges to improper handling and storage procedures. DNA samples from arrestees who are acquitted or never charged, and from felons whose convictions are overturned, must (or may, depending on the state) be expunged from databases. (It is unclear if this happens routinely, or ever.) The legal system has established practices for responding to misleading experts [(Herkenham 2006); (Scientific Working Group on DNA Analysis Methods Ad Hoc Committee on Partial Matches 2009)].The National Academy of Sciences' canonical report, *Strengthening Forensic Science*, concluded that "among existing forensic methods, only nuclear DNA analysis has been rigorously shown to have the capacity to consistently, and with a high degree of certainty, demonstrate a connection between an evidentiary sample and a specific individual or source" (Committee on Identifying the Needs of the Forensic Sciences Community and National Research Council 2009).

Some legal experts argue that forensic biobanks are, or could be under certain uses, unconstitutional (Murphy 2010). However, courts have consistently found the use of convicts' and crime scene DNA samples, as well as undirected trawls through DNA databases looking for matches (what Murphy calls "suspicionless searching"), to be constitutionally permissible under Fourth Amendment provisions for search and seizure.   In addition, in February 2012, the 9th Circuit Court of Appeals upheld California's law requiring collection of DNA samples from those arrested for felonies;

"DNA analysis is an extraordinarily effective tool for law enforcement to identify arrestees, solve past crimes, and exonerate innocent suspects," according to the decision.[10]

Forensic biobanks are most commonly used and widely known as a tool for prosecutors to seek conviction. That is presumably what, if anything, most Americans associate with DNA in the criminal justice system; 11.38 million people watched *CSI* on March 21, 2012, and it is has been one of the most popular television shows for years (TV by the Numbers 2012). But biobanks are also used for exoneration. Close to 300 people have been freed through retrials based on DNA analyses; a majority were poor, young, black men convicted of rape or other serious felonies [(Gross and al. 2004); (Garrett 2011)]. After losing a Supreme Court case on the issue in 2009, advocates have worked to ensure that states preserve biological evidence and guarantee the right of DNA testing to prisoners. Almost all states do provide such access to DNA testing, although with various conditions; the most recent to pass such a law was Massachusetts in February 2012. The Supreme Court ruled in 2011 that convicted prisoners may sue states under a civil rights law to obtain potentially exonerating DNA evidence, rather than being able to use only more restrictive habeas corpus suits (*Skinner v. Switzer*, 562 U.S. __ (2011).

Experts, Advocates, Politicians, and Cross-cutting Cleavages

Alliances around forensic databases are complex. Knowledgeable elites and advocacy groups sometimes line up unpredictably, so a public that knows little about this new and arcane arena does not hear a unified elite message (Zaller 1992), or even a unified message from elites with characteristics that they trust [(Berinsky 2007); (Abney and Hutcheson 1981); (Gay 2002); (Kuklinski and Hurley 1994)].

For example, roughly two-fifths of the DNA samples in NDIS are from African Americans, and perhaps as much as one-fifth from Latinos. Many observers therefore challenge "Jim Crow's database"

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[10] *Haskell v Harris*, __F.3d__ (9th Cir., 2012). The court did "emphasize that our decision deals solely with DNA extraction, processing, and analysis as it currently exists, and is enforced. We acknowledge that future developments in the law could alter the constitutionality of the DNA Act, as amended."

(Levine et al. 2008); genetic surveillance, or "guilt by genetic association" [(Forensic News Blog 2010). See also (Roberts 2011); (Ossario and Duster 2005); (Abu El-Haj 2007)].[11] As the third epigraph suggests, in this view forensic biobanks are intrinsically discriminatory, will be used in a biased manner by police and courts, and will ensure that the American criminal justice system punishes nonwhites even more excessively than it does now. More amorphously but more dangerously, "I am worried that the widespread collection and social investment in such information will provide an irresistible temptation to treat it *as if it does have such value*. And the temptation will be to construct correlations along lines that have social resonance – which is to say, especially in the realm of criminal justice in the U.S. today, along racial lines" (Cole 2007): 62, emphasis in original).

Nevertheless, not only President Obama but also his African American Attorney General, Eric Holder, endorses forensic biobanks. Holder required in 2010 that "the regular collection of DNA samples from federal arrestees and defendants must be a priority" (Holder 2010). He asserted that "DNA evidence is one of the most powerful tools available to the criminal justice system, and these new steps will ensure the department can use DNA to the greatest extent possible to solve crimes and ensure the guilty are convicted. . . . [and] keep communities safe" (Markon 2010). After Lonnie Franklin Jr. was arrested, California's black attorney general, Kamala Harris, provided funds to double the number of familial DNA searches for horrendous crimes and reduce the DNA backlog for other criminal investigations: "California is on the cutting edge of this in many ways. I think we are going to be a model for the country" (Dolan 2011). African Americans can therefore find passionate voices on both sides of this issue.

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[11] According to one calculation in 2006, assuming that the average person in the database has five living first degree relatives, using partial matches to identify offenders' relevant family members means that about 17 percent of the black population could be under surveillance (Greely et al. 2006). The disproportion would be even greater if Hispanics were separated from whites, which this calculation did not do, and it has probably grown in the succeeding years. Eventually, according to one attorney, "what you're gonna end up seeing is nearly the majority of the African American population being under genetic surveillance. If you do the math, that's where you end up" (Schorn 2007).

By another calculation, an even higher proportion of the Latino population will be caught up in familial matching procedures, given the larger size of Hispanic nuclear families and the increasing proportion of immigrants in forensic biobanks (Grimm 2007).

So can conservatives. Libertarians are queasy about forensic biobanks. As *The Economist* put it, "genetics may yet threaten privacy, kill autonomy, make society homogeneous and gut the concept of human nature" (*The Economist* 2002). Privacy is a crucial concern; what if the "junk DNA" used as loci for forensic markers is not in fact junk? "DNA samples can provide insights into personal family relationships, disease predisposition, physical attributes, and ancestry" [(Simoncelli 2006): 392; see also (Lazer 2004); (Joh 2006); Rothstein and Talbot 2006]. Civil libertarians worry further about misuse of evidence; giving so much information and power to unaccountable branches of remote governments is dangerous. Most simply, the director of information policy studies at the Cato Institute observed that "it's wrong to treat someone as guilty before they're convicted. It inverts the concept of innocent until proven guilty" [(McCullagh 2010); see also (Heyes 2012)].

But socially and religiously conservative leaders generally support "law and order" initiatives. More subtly, evangelical theology teaches adherents to "think through these complex issues from the perspective of stewardship, not personal ownership. . . . [Y]our body IS the business of your church community, and what you choose to do with your body is NOT a personal decision. Not only is it first and foremost under the jurisdiction of God, but what you do with your body impacts your entire community. It's not just about you" (Miller 2012), emphasis in original). So far as we know, there is no explicit evangelical or Catholic position on forensic biobanks. But the belief in stewardship, personal discipline, and social order makes plausible the expectation of strong support from conservative religious groups; at a minimum, it suggests a set of starting premises distinct from the libertarians'. It is no wonder, then that the bill in Colorado to permit DNA collection from arrestees "divided Republican senators" (Campbell 2011): 294).

Liberals' position on forensic biobanks is no clearer than conservatives'. Even setting aside the complexities of race, liberal elites are split. The New York Civil Liberties Union "denounced" New York's new, expansive DNA biobank law, declaring that the bill would

have a negligible impact on enhancing public safety but increase significantly the likelihood for

inefficiency, error and abuse in the collection and handling of forensic DNA. . . . Rather than

improving crime-fighting, this expansion simply creates a permanent class of usual suspects

whose DNA will be tested by police for the rest of their lives. . . . This deal is based more on

politics than a commitment to justice (New York Civil Liberties Union 2012).

But Democratic Governor Cuomo and the Democratic Speaker of the Assembly worked vigorously for

its passage. (A chief sponsor was a Republican, and the Senate's Republican Majority Leader also

supported it.) Maryland's bill to permit DNA collection from some arrestees "was pushed through

vigorously by [Democratic] Governor O'Malley with the support of the Democratic Party" (Campbell

2011: 299). The 2012 Massachusetts law permitting prisoners to request DNA evidence for forensic

testing that might entail a new trial passed unanimously in both the state's Senate and House.

Lawmaking in this arena is just as politically complicated at the national as at the state level.

The U.S. House of Representatives voted in 2010, 357 to 32, to provide grants to state governments

that mandated DNA collection from some arrestees. No Democrats opposed the bill; ten of the twelve

sponsors were Democrats. However, the bill was referred to the Democratically-controlled Judiciary

Committee in the Senate and has not been reported out.

The American public, in short, can find almost any position expressed by the kind of public

actor to whom they might look for cues on political or policy issues. That need not imply, *pace* John

Zaller, that their responses to public opinion surveys are mostly random statements arising from

conflicting considerations, although they may be. We can explore that question more fully with our

survey data.

Hypotheses

We begin with the argument furthest removed from political controversy. An extensive research

literature shows that knowledge of the nature of scientific inquiry and scientific facts is associated with

enthusiasm for science and science funding [(Shen 1975); (Bodmer 1985); (Miller 1987)].

Operationalizations vary, but the norm for knowledge is roughly the sophistication needed to

understand science articles in major newspapers (Miller 1998). Surveys generally implement the

concept of scientific literacy through questions about processes (e.g., the scientific method or

probability theory) and specific areas of knowledge (e.g., definitions of DNA or a molecule).

In recent years, however, the claim that knowledge is associated with enthusiasm for science

has been challenged. For one thing, the link itself is weak; despite minimal scientific literacy, "[f]or the

last 15 years, approximately 70 percent of US adults have reported that they are very interested in new

medical discoveries" and a plurality or majority of Americans consistently report enthusiasm about

science and trust in scientists despite low levels of actual knowledge (Miller 2004).[12] Scientific literacy

is also poorly linked to direct measures of policy views, such as endorsement of government funding or

other public support for research.   Even more problematically, opinions on scientific issues vary in

ways not captured by scientific literacy. One meta-analysis of two hundred articles found variance in

attitudes toward scientific topics among people with similar levels of scientific literacy (Allum et al.

2008)), while others even find a negative association between knowledge and support [(Evans and

Durant (1995).; see also (Brossard and Lewenstein 2009)]. The evidence on the scientific literacy

model is thus mixed.

So there are plausible grounds for expecting a positive, negative, or null relationship between

knowledge of genetics and support for forensic biobanks. As an entry point into the subject, we chose

to frame this issue in the most straightforward and conceptually powerful way:

H1, Scientific Literacy: Compared to those with little knowledge, individuals who know the

science of genetics or genomics are more aware of legal biobanks and more willing to

contribute their own DNA to one. The scientifically literate are more likely to endorse the

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[12] In every iteration of the GSS, between 40 and 50 percent of respondents express "a great deal" of trust in the scientific community, and almost all of the rest express "some" trust.

technology, trust public officials with its use, and support government funding. They also

endorse regulation of this new and complex endeavor.

An implication of H1 is that support for using legal biobanks will rise even higher, or become more solid, as the public becomes more aware of them through television shows, direct involvement with the criminal justice system, or media reports of their use.

The scientific literacy model is most persuasive in relatively noncontroversial arenas such as nanotechnology, astronomy, and genetic crop modification (which is contentious in Europe but not in the United States). As we have seen, however, American elites profoundly disagree over DNA biobanking, and it raises thorny issues of ethics and democratic governance. We therefore modify the naive scientific literacy theory by introducing a political hypothesis:

H2, Partisanship: Republicans and Democrats do not differ in their awareness of forensic

biobanks. But Republicans are more likely to endorse the technology, trust public officials with

its use, and support government funding. Republicans are less likely to endorse government

regulation. They report more willingness to contribute their own DNA to a forensic biobank.

If H2 is correct, support for forensic biobanks will divide further along partisan lines, albeit only within a context of strong overall public support and enthusiasm among politicians and public officials. The main visible effect of a confirmed H2 will therefore be the isolation of liberal Democrats.

Frequently in the United States, an issue with deep political and moral valences also has racial connotations – and so it is with forensic biobanks. In every year over the past several decades that the question has been asked on the GSS, African Americans have sought at least as much if not more protection from crime and a stronger criminal justice system than have whites; they are, after all, more likely to be victimized. But they also have much less trust in the police and the actual practices of the criminal justice system than whites do. In arithmetic terms, forensic biobanks are used more to convict than to exonerate, and black families are more subject to the consequences of familial searching than

are white families (Greely et al. 2006).[13] Furthermore, blacks have a much more complicated historical

relationship with scientific endeavors than do whites, given, for example, the history of the Tuskegee

syphilis experiment, the decades of using prisoners for medical research, and the perception that profits

from the use of Henrietta Lacks' DNA were stolen from her family [(Jones 1992); (Skloot 2010);

(Washington 2006).] Thus, again within the context of overall strong public support, we hypothesize:

> *H3, Black Group Protectiveness: Compared with members of other races and ethnicities,*
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> *African Americans are the most skeptical about the benefits of forensic biobanking, the most*
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> *mistrustful of its use, and the least willing to contribute their own DNA. They are the strongest*
>
> *proponents of federal regulation, and the weakest proponents of additional public funding.*
>
> *Controlling for education, blacks are more aware of biobanks in the legal system than will*
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> *whites.*

Cutting through all of the previous expectations is the fact that some people are, or feel

themselves to be, highly susceptible to crime. People living in high-crime neighborhoods, women or

the elderly, people with young children or health problems, or people living in densely populated poor

environments can be expected to be anxious about criminal victimization and supportive of a strong

criminal justice system. Therefore we hypothesize:

> *H4, Self-interest: Individuals who are or feel themselves to be susceptible to crime are more*
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> *likely than others to be aware of legal biobanking, to endorse the technology, to trust public*
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> *officials with its use, to support government funding, to oppose regulation, and to be willing to*
>
> *contribute their own DNA to a forensic biobank.*

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[13] African Americans and Hispanics could benefit from the fact that DNA samples are not themselves racially biased, whereas many elements of the conventional criminal justice system – police stops, arrests, eyewitness reports, police treatment and reports, quality of legal counsel, judges' rulings, juries' verdicts, drug laws, drug-free zones – may be. That fact may profoundly affect criminal justice in the long run, but it is not very salient in current public discourse about legal biobanks. (It could also, of course, be offset by racial biases in the collection, analysis, and use of DNA samples.)

Even familial matching could turn out to benefit black families, not only in the general sense of reducing their likelihood of being victimized by crime but also in the more particular sense of enabling many young black men to be freed from police and public suspicion, at least for crimes for which family members are not being sought. This effect – were it to occur -- could also be deeply important in the long run but is not salient in contemporary public discussions.

We turn now to testing these hypotheses.

Testing the Hypotheses through GKAP

The Survey on Genomics Knowledge, Attitudes, and Policy Views (GKAP) was taken online in May 2011 by 4,291 U.S. adults; 2,715 identified as Democrats, 1,364 as Republicans, and 158 as undecided or Independents.[14] The survey included 1143 non-Hispanic whites, and oversamples yielding 1,031 non-Hispanic African Americans, 337 non-Hispanic Asians, 636 non-Hispanic multiracials,[15] and 1,096 Hispanics. The latter could be interviewed in Spanish (n = 578) or English (n = 518). The sample also included 49 Hawaiian and Pacific Islanders.[16] GKAP required 15 to 20 minutes to complete. In addition to a range of topics related to genomics, it included standard demographic measures, religious affiliation and religiosity, and a battery of health-related questions. We have geo-coded the data for state, county, and zipcode of residence; see Appendix Table A1 for more information on the variables used in this paper.

Appendix Table A2 lists the substantive items about forensic biobanks. It also includes the paragraph of explanation about the collection of genetic information for law enforcement purposes that was provided before the battery of relevant questions. (Respondents could return to that explanation at any time.) One question is open-ended; after respondents reported their (un)willingness to donate a DNA sample to a forensic biobank, the next screen asked why and offered a space for comments. This query yielded responses from 80 percent of the respondents, almost evenly divided across the four

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14 These figures include people "leaning" Democrat or Republican.

[15] Defined as Non-Hispanics who identified with more than one racial group.

[16] The survey also included 16 respondents who identified as Native American *and* Hispanic; we treat them as Hispanic. A respondent could identity as Hispanic or not, and many Hispanics did not answer the separate race question. We therefore divided the sample into the six mutually exclusive groups listed in the text. Unless otherwise noted, "white," "black," or "Asian" includes only non-Hispanics.

substantive response categories; we use a few for illustrative purposes here, and will analyze them more systematically in a later paper.

Methods: Top-line results reveal the initial contours of the survey responses, and provide the most important information from the vantage point of advocates, policy makers, and politicians.[17] We therefore begin each section with summary statistics. They cannot, however, help us understand why groups differ in their views; for that we turn to regression techniques. Since the outcome variables are substantively ordered (i.e., they increase monotonically in valance) and mutually exclusive, we employ an ordered logit specification.

H1 (Scientific Literacy) posited that scientific literacy is associated with support for biobanks. In GKAP, we measure scientific literacy through items 2, 3, and 4 in Table A2. Fully 70 percent of respondents knew that DNA can be found in (almost) every human cell; 7 percent gave the wrong answer and 23 percent did not know. Just over two-fifths knew that more than half of a white person's genes are identical to those of a black person; one-fifth incorrectly chose half or less than half, and almost two-fifths did not venture an answer. On the most difficult question, not quite one-fifth knew that more than half of a human's genes are identical to those of a mouse; over half did not know, and almost three in ten gave a wrong answer. For some analyses, we also use respondents' self-reported knowledge about criminal biobanks as an indicator of scientific literacy (see Table 1). In a separate analysis of the 2010 GSS, we use one knowledge item about the location of DNA in human cells; 82 percent chose the correct answer ("in every cell").[18]

H2 (Partisanship) posited that Republicans favor biobanks; to test it, we include in all regressions a seven-point scale of partisanship, ranging from "Strong Democrat" to "Strong

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[17] Results for "Total" are weighted to reflect the U.S. population as a whole. Results from distinct racial or ethnic groups are weighted to reflect the portion of the U.S. population belonging to that group.

[18] The 2010 GSS includes three other knowledge items about genetics, which we will incorporate into revisions of this paper.

Republican." (Higher values correspond to stronger Republican affiliation.) The scale includes a median point for respondents identifying as undecided or Independent.

H3 (Black Group Protectiveness) posited that blacks are relatively hostile to legal biobanks; we test it by reporting regression results that include dummy variables for respondents' race or ethnicity, treating all categories as mutually exclusive.

Finally, H4 (Self-interest) posited that respondents who are especially susceptible to crime favor biobanks. To test it, we include the violent crime rate in the respondents' environment; column B of each regression model provides the results. More precisely, we matched respondents' county of residence to 2010 county-level violent crime data reported by police departments to the FBI as part of the Uniform Crime Reporting Program (http://www.fbi.gov/about-us/cjis/ucr/ucr). The data include murders, rapes, burglaries, and arsons in the roughly 3000 counties and county equivalents in the 50 states and the District of Columbia; they ran the gamut from 0 to approximately 18,000 violent crimes per county. The census bureau's 2010 population statistics enabled us to calculate the violent crime rate per 10,000 residents for each county.

In order to hold constant other factors that could influence attitudes toward criminal biobanks, we include as statistical controls respondents' age, gender, household size, education, income, geographic area (e.g., metropolitan area or not), region of the country, citizenship status, and access to the internet ; Appendix Table A1 describes them in more detail.

Awareness, Approval, and Willingness to Participate in Legal Biobanks: Table 1 shows that Americans claim considerable awareness of the use of genomics in law enforcement, perhaps due to *CSI* and its spinoffs. Nearly 20 percent report recent attention, the same as the proportion admitting ignorance. Results vary little by partisanship. More African Americans and multiracials than Asians or Hispanics are attentive to the topic; whites are, unusually for surveys, in the middle of the groups. Assuming that respondents are responding honestly, the American public is not deeply knowledgeable about forensic biobanks, but neither is it totally ignorant.

Table 1: How much have you heard or read about the collection of DNA from people convicted of a serious crime?, GKAP

	Nothing	*A little*	*Some*	*A lot*	*Refused*
All	20%	25%	34%	19%	2%
Democrats	19	25	34	21	1
Republicans	20	27	35	18	1
Whites	18	26	35	19	1
Blacks	21	23	30	24	2
Asians	23	22	38	14	3
Multiracials	20	18	36	24	3
Hispanics	26	26	31	15	2

Weighted responses. Because different numbers of whites, blacks, Hispanics, etc., were surveyed, we report row proportions. Racial and ethnic categories are mutually exclusive.

Table 2 shows approval levels. Twice as many respondents endorse as oppose DNA collection from convicted criminals; Democrats are slightly less supportive but few in either party see forensic biobanks as socially harmful. All people of color are less supportive than whites; among African Americans, ambivalence is as strong as enthusiasm. The correlation between attention and approval is a relatively low .22.

Table 2: Respondents' approval of DNA collection from people convicted of a felony, GKAP

	More harm than good to society	*Equal amounts of harm and good to society*	*More good than harm to society*	*Refused*
All	6%	31%	61%	3%
Democrats	6	33	60	2
Republicans	5	28	65	2
Whites	4	28	66	2
Blacks	9	45	43	3
Asians	6	36	55	3
Multiracials	3	32	62	3
Hispanics	11	34	50	5

See note to table 1

Providing one's own DNA to a forensic biobank is a tougher test of support. In 2004, only three percent were "absolutely" willing to provide their genetic information to police or the criminal justice system, compared with 42 percent willing to provide it to immediate family members

(respondents were equally unwilling to give carte blanche to scientific researchers or any other actor).

Another third would provide genetic information to the police if their permission was asked; that

proportion was higher for a family member or scientists but lower for pharmaceutical companies,

insurance companies, and employers (Henneman, Timmermans and Van der Wal 2004). Three years

later, only a third would "trust the police to keep your profile information private" (Human Genetics

Commission 2008).

As Table 3 shows, GKAP respondents are rather less enthusiastic about their own participation

than about that of people convicted of crimes. The correlation between the two items is .28, and the

correlation between awareness and willingness to contribute is slightly lower, at .22. Partisanship is

not associated with willingness to participate. Blacks again stand out for their relative hostility,

although half blacks say that they would or might contribute. Hispanics are as willing to participate as

whites, despite their lower levels of awareness and approval.

Table 3: Respondents' willingness to contribute DNA to databases collected for law enforcement purposes, GKAP

	Unwilling	*Somewhat unwilling*	*Somewhat willing*	*Willing*	*Refused*
All	23%	17%	28%	31%	2%
Democrats	22	16	29	33	1
Republicans	23	19	27	30	1
Whites	22	17	27	33	1
Blacks	34	15	27	22	2
Asians	11	25	33	28	3
Multiracials	21	18	31	29	2
Hispanics	19	14	32	32	3

See note to table 1

Respondents' explanations for their degree of willingness open small windows through the

frustratingly opaque surface of a survey. An older strongly Democratic black Baptist woman with no

knowledge of genomics wrote simply, "I believe in science and research and if it will in some way help

someone i am willing to participate." (All quotations are verbatim.) Another black woman, also

strongly Democratic and not knowledgeable about genomics, provided more detail: "Everyone knows

that a lot of innocent people have been set free because of this DNA testing. Numerous people have

been proved innocent on account of this new technology. It's a good instrument and tool for proving

innocence or guilt." A common theme was to note one's own innocence and therefore protection from

the dangers of DNA collection: "Porque si uno vive sin hacer mal a nadie entonces no importan

pruebas,y el que es culpable con huellas o sangre no tiene salida."[19]   Some even proposed a policy of

universal DNA donation, such as an older Jewish strong Democrat with considerable genomics

knowledge:

> I think that everyone should have a sample of their DNA on file. In fact, I think that it should be
>
> taken as soon as you are born. If a child is abducted, and found many years later, it would make
>
> it easier to absolutly be sure that this was the right one. If everyones DNA was on file, it would
>
> be easier to identify remains of an individual, if some tragedy struck. There are many reasons,
>
> besides just identifying a criminal, that having everyones DNA on file would be beneficial.

But as table 3 shows, about two fifths demurred or refused. A middle-aged weakly Democratic black

man who answered all three knowledge questions correctly explained why: "If it could be used to

exhonerate, it could be used to convict. This is a dangerous precedence and guilt or innocence should

be decided on the preponderance of the evidence, not DNA alone---I'm afraid law enforcement would

take the easy way out and look for those already convicted as opposed to conducting a proper

investigation." Some Hispanics gave essentially the same reason: "Me preocuparia la seguridad de mi

privacidad y de proveer una muestra con fines criminales sin tener yo ningun crimen al cual tenga que

responder!" – as did some whites: "To many corrupt people in the justice system. If they have samples,

they can easily set an innocent person up for a crime they didn't commit. I don't trust the judicial

---

[19] Mid-adult white Hispanic man, with no religion and correct answers on two of the three DNA knowledge items.
Translation: "Because if someone lives their life without harming anyone, then the test doesn't matter, and the guilty man
with fingerprints or blood has no escape."

system. Better to have the guilty walk than an innocent framed."[20]   Promoting scientific progress

versus not trusting officials in the criminal justice system: that appears to be the tension underlying

many Americans' willingness or lack thereof to participate in a technology that they strongly endorse

for those convicted of a serious crime.

Regression Results: Table 4 presents regression results for these valence questions.   In these and

subsequent analyses, individuals with higher values reported being *most familiar* with this technology,

saw the *most* good, or were *most willing* to contribute their DNA. The regression results are revealing:

- H1, Scientific Literacy, receives strong support. With a few exceptions (possibly as a

  consequence of the smaller sample size when crime data are included), people who

  answered any of the knowledge questions correctly were aware of and approved of forensic

  biobanks, and would contribute to them, all at a statistically significant level. Awareness of

  forensic biobanks, in turn, is statistically and substantively associated with greater approval

  and more willingness to contribute.

- H2, Partisanship, receives no support.

- H3, Black Racial Protectiveness, is fairly strongly supported. Compared with whites, blacks

  are not more aware of legal biobanks. But even with controls their lower levels of approval

  and greater unwillingness to contribute persist. Note that the pattern of results for Hispanics

  and Asian Americans resembles that of blacks more than of whites, although the

  coefficients are generally smaller.

- H4, Self-interest, receives no support. Neither crime rate in the respondent's county,

  household size (a crude proxy for children in the household), or residence in a metro area

  have a statistical or substantive relationship to views of forensic biobanks. Perhaps the fact

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[20] First quote is from a young Pentecostal white Latino. Translation: "I would worry about the security of my privacy and of providing a sample for criminal means without my having a single crime for which I have to answer." Second quote is from a mid-adult white woman, who is a political Independent and a Protestant.

that men approve less and are less willing to contribute than women can be interpreted as a

self-interest argument, but the connection is loose.

Other results are intriguing. Southerners are more aware, supportive, and participatory than others.

Age and income are statistically but not substantively significant. The less one attends religious

services, the less one is aware, supportive, or participatory; relatedly, secular respondents are also less

aware. Education has no impact once questions about genetics knowledge are included. In short, the

pattern so far is that knowledgeable, religious, southern white men are favorable toward forensic

biobanks, while their opposites are not.

Table 4: Awareness, Approval, and Willingness to Contribute to Forensic Biobanks, GKAP
(weighted ordered logit regression coefficients. Statistically significant results are in boldface.)

	Aware (A)	*Aware (B)*	*Approve (A)*	*Approve (B)*	*Would contribute (A)*	*Would contribute B)*
Black	0.12 (0.11)	0.12 (0.14)	**-0.53 (0.12)***	**-0.58 (0.15)***	**-0.53 (0.12)***	**-0.53 (0.14)***
Hispanic	-0.05 (0.11)	0.02 (0.14)	**-0.29 (0.12)***	**-0.34 (0.16)***	**-0.29 (0.12)***	0.17 (0.14)
Asian American	-0.05 (0.14)	-0.28 (0.19)	**-0.36 (0.16)***	**-0.54 (0.21)***	**-0.36 (0.16)***	0.02 (0.18)
Multiracial	0.1 (0.28)	0.1 (0.32)	-0.03 (0.32)	0.01 (0.37)	-0.03 (0.32)	-0.06 (0.31)
Native Hawaiian/Pacific Islander	0.24 (0.62)	0.11 (0.88)	-0.06 (0.66)	0.08 (0.96)	-0.06 (0.66)	0.17 (0.77)
Male	-0.02 (0.06)	-0.07 (0.07)	**-0.24 (0.07)***	-0.14 (0.09)	**-0.24 (0.07)***	**-0.18 (0.07)***
Age	**0.01 (0)***	**0.01 (0)***	**0.02 (0)***	**0.02 (0)***	**0.02 (0)***	**0.01 (0)***
Partisanship	-0.03 (0.02)	-0.03 (0.02)	0.01 (0.02)	0.01 (0.02)	0.01 (0.02)	-0.01 (0.02)
Income	**-0.02 (0.01)***	-0.01 (0.01)	**0.02 (0.01)***	0.02 (0.01)	**0.02 (0.01)***	0.01 (0.01)
Married	**-0.24 (0.07)***	**-0.16 (0.08)***	-0.05 (0.08)	-0.1 (0.1)	-0.05 (0.08)	**-0.29 (0.08)***
Education	-0.02 (0.02)	-0.02 (0.02)	0.02 (0.02)	0.03 (0.02)	0.02 (0.02)	-0.01 (0.02)
Household Size	0 (0.02)	-0.03 (0.03)	0.03 (0.02)	0.04 (0.03)	0.03 (0.02)	0.02 (0.03)
Employed	-0.05	-0.02	**0.17**	0.02	**0.17**	0.06

	(0.06)	(0.08)	**(0.08)***	(0.1)	**(0.08)***	(0.08)
Metro Area	0.08 (0.08)	-0.04 (0.1)	0.01 (0.09)	-0.06 (0.11)	0.01 (0.09)	-0.11 (0.1)
Internet Access	0.07 (0.07)	0.03 (0.09)	0.1 (0.09)	0.03 (0.11)	0.1 (0.09)	**0.3 (0.09)***
Citizen	**0.36 (0.14)***	**0.46 (0.17)***	-0.26 (0.16)	-0.13 (0.19)	-0.26 (0.16)	**-0.33 (0.17)***
South	**0.19 (0.06)***	**0.16 (0.08)***	**0.19 (0.07)***	**0.23 (0.09)***	**0.19 (0.07)***	0.12 (0.08)
Catholic	-0.05 (0.07)	-0.01 (0.09)	0.11 (0.09)	0.19 (0.11)	0.11 (0.09)	-0.08 (0.09)
Non-religious	**-0.35 (0.1)***	**-0.47 (0.12)***	-0.04 (0.11)	0 (0.14)	-0.04 (0.11)	0.12 (0.12)
Religious Attendance	**-0.08 (0.02)***	**-0.1 (0.03)***	**-0.08 (0.02)***	**-0.1 (0.03)***	**-0.08 (0.02)***	0.02 (0.03)
Knowledge #1 Correct (DNA)	**0.82 (0.07)***	**0.88 (0.09)***	**0.54 (0.08)***	**0.7 (0.1)***	**0.54 (0.08)***	0.12 (0.09)
Knowledge #2 Correct (Mouse genes)	**0.40 (0.08)***	**0.34 (0.11)***	**0.27 (0.11)***	0.05 (0.13)	**0.27 (0.11)***	0.04 (0.11)
Knowledge #3 Correct (Black/white genes)	**0.19 (0.07)***	0.11 (0.09)	**0.47 (0.08)***	**0.49 (0.1)***	**0.47 (0.08)***	-0.04 (0.09)
Crime Rate per 10,000 Residents		0 (0)		0 (0)		0 (0)
Biobank Awareness			**0.71 (0.1)***	**0.69 (0.12)***	**0.71 (0.1)***	**0.81 (0.1)***
N	4091	2646	4021	2597	4021	2625
Residual Deviance	10790.4	6889.7	6109	3907.5	6109	6955.7

All models include fixed effects for race, with non-Hispanic whites comprising the baseline group. Standard errors are reported in parentheses.
* significant at the 5% level.

We now shift the focus to policy views. Since use of DNA for law enforcement depends on government funding and regulation, the next set of analyses explores public opinion on these issues (see questions 6 and 7 in Table A2). Table 5 provides summary statistics. The results show very strong overall support for both increased funding and regulation; the correlation between the two policy items is a high .58. Unlike many political elites, on this issue Americans see no trade-off between government support and control; they are keen to use this technology while remaining wary of it getting out of control.

Republicans are slightly less eager than Democrats to use public funds and are slightly less supportive of regulation. That pattern may reflect conservatives' general hostility to "big government" overcoming support for law and order. Republicans' responses suggest the flavor of those reactions:

- "makes no sense unless your suspected of something. big brother trying to control to much when they caant even pay their bills" – a mid-adult white Baptist who answered two of the knowledge questions correctly;

- "The system has been proven to be a fraud. Israeli scientists have shown they can make up DNA evidence" – a mid-adult Hispanic non-Christian who answered all three knowledge items correctly;

- "God giving right to refuze any invasion of my personal privacy" – mid-adult Hispanic with no religion and one correct answer to the knowledge question.

Asians and Hispanics support increased funding slightly more than do blacks and whites, while blacks and Hispanics support increased regulation slightly more than the other groups. Within a context of strong support for both policies, in short, blacks lean toward more control and fewer resources, Hispanics want both, and whites are relatively less enthusiastic about both.

Table 5: Views on public policies toward use of DNA in the criminal justice system, GKAP

A. *Government funding to enable more extensive use*

	Strongly oppose	Somewhat oppose	Somewhat support	Strongly support	Refused
All	5	8	45	40	2
Democrats	4	7	45	43	2
Republicans	6	9	46	37	1
Whites	5	7	46	39	2
Blacks	5	10	45	39	3
Asians	3	9	42	44	2
Multiracials	5	10	43	41	1
Hispanics	4	8	40	45	3

B. *Government regulation*

	Strongly oppose	Somewhat oppose	Somewhat support	Strongly support	Refused

All	6	11	43	38	2
Democrats	5	9	44	40	2
Republicans	7	14	43	35	1
Whites	6	12	44	36	2
Blacks	5	9	42	41	3
Asians	4	15	43	36	3
Multiracials	4	12	47	36	1
Hispanics	5	9	40	43	4

See note to Table 1

Table 6 shows the regression results for policy views, again controlling for standard

demographic variables as well as political beliefs and geographic dispersion.

Table 6 : Views on public policies toward use of DNA in the criminal justice system, GKAP
(weighted ordered logit regression coefficients. Statistically significant results are in boldface.)

	Funding (A)	*Funding (B)*	*Regulation (A)*	*Regulation (B)*
Black	-0.06 (0.12)	-0.18 (0.15)	**0.23 (0.11)***	0.17 (0.15)
Hispanic	**0.32 (0.12)***	**0.37 (0.15)***	**0.29 (0.11)***	**0.31 (0.15)***
Asian American	0.22 (0.16)	0.27 (0.21)	-0.03 (0.15)	-0.21 (0.19)
Multiracial	-0.13 (0.3)	-0.1 (0.34)	-0.05 (0.28)	-0.14 (0.32)
Native Hawaiian/Pacific Islander	-0.02 (0.61)	-0.1 (0.84)	0.02 (0.6)	-0.15 (0.8)
Male	**-0.15 (0.06)***	**-0.26 (0.08)***	-0.07 (0.06)	**-0.16 (0.08)***
Age	**0.01 (0)***	**0.01 (0)***	**0.01 (0)***	**0.01 (0)***
Partisanship	**-0.06 (0.02)***	**-0.06 (0.02)***	**-0.06 (0.02)***	**-0.06 (0.02)***
Income	0 (0.01)	-0.02 (0.01)	-0.02 (0.01)	**-0.03 (0.01)***
Married	0.03 (0.07)	0.07 (0.09)	0.02 (0.07)	0.04 (0.09)
Education	**-0.04 (0.02)***	-0.04 (0.02)	0 (0.02)	0.01 (0.02)
Household Size	0.01 (0.02)	0.05 (0.03)	0.01 (0.02)	0.05 (0.03)
Employed	0.04 (0.07)	-0.1 (0.09)	0.11 (0.07)	0 (0.09)
Metro Area	0.03	0	-0.03	-0.01

	(0.09)	(0.1)	(0.08)	(0.1)
Internet Access	**0.29** **(0.08)***	0.15 (0.1)	**0.21** **(0.08)***	0.16 (0.1)
Citizen	-0.22 (0.15)	-0.06 (0.19)	**-0.5** **(0.15)***	**-0.36** **(0.18)***
South	**0.15** **(0.07)***	**0.24** **(0.08)***	**0.21** **(0.06)***	0.15 (0.08)
Catholic	0.09 (0.08)	-0.03 (0.1)	0.08 (0.08)	-0.06 (0.1)
Non-Religious	0.17 (0.1)	-0.02 (0.13)	-0.14 (0.1)	**-0.27** **(0.13)***
Religious Attendance	-0.02 (0.02)	**-0.09** **(0.03)***	**-0.06** **(0.02)***	**-0.12** **(0.03)***
Knowledge #1 Correct (DNA)	**0.36** **(0.08)***	**0.48** **(0.1)***	**0.40** **(0.07)***	**0.41** **(0.09)***
Knowledge #2 Correct (mouse genes)	-0.06 (0.09)	**-0.36** **(0.11)***	0.17 (0.09)	0.02 (0.11)
Knowledge #3 Correct (black/white genes)	**0.37** **(0.08)***	**0.35** **(0.1)***	**0.18** **(0.07)***	0.17 (0.09)
Self-reported Biobanks Knowledge	**1.51** **(0.09)***	**1.54** **(0.11)***	**1.00** **(0.08)***	**0.99** **(0.1)***
Crime Rate per 10,000 Residents		0 (0)		0 (0)
N	4054	2623	4041	2613
Residual Variance	8198.1	5255	8942.3	5694.5

See note to table 4.

The analysis shows:

- Strong support for H1, Scientific Literacy. Correct answers to the two easier questions about genetics are associated with support for both public funding and regulation of forensic biobanks; in addition, awareness generates huge coefficients. But we also see a puzzling and fascinating result for the most difficult knowledge question about the shared genes between humans and mice: it is associated with opposition to government funding, at least when crime rates are controlled. This may be a statistical fluke. Alternatively, it may indicate a U-shaped effect of knowledge, in accord with the literature that challenges the simple association between scientific literacy and support for science. That is, as our discussion of elites' concerns suggests, perhaps people with the greatest knowledge about genetics are cynical or mistrustful of forensic

biobanks. We plan to explore this point further, but the result suggests caution about full adoption of H1.

- A reversal of H2, Partisanship. Although the top-line results (table 5) show only small partisan differences, once we include controls, Republicans are significantly less likely to support funding and regulation of forensic biobanks. This result strengthens our suggestion above that the ideology of small government overrides Republicans' usual commitment to policies and practices to strengthen social order.

- Support for H3, Black Racial Protectiveness. Compared with whites, African Americans endorse greater regulation but not greater funding. As in the top-line results, even with controls Latinos endorse both more funding and more regulation of forensic biobanks; this result also warrants further careful exploration.

- No support for H4, Self-interest. Neither crime rates, household size, nor metropolitan residence have any relationship to policy views. Men want less funding and less regulation than women, which again suggests a self-interest explanation. But other differences could explain the effect of gender (e.g. women's ethic of care for victims), so we do not (yet) claim support for H4.

As with table 4, the analysis of policy views reveals other intriguing results. Age remains statistically but not substantively important; income and education play little role. People with easy internet access endorse government involvement, while noncitizens oppose regulation (perhaps due to states' policy of collecting DNA samples from immigrants subject to deportation). The non-religious, and those who attend religious services infrequently or never, oppose funding and regulation, which accords with their lack of awareness and disapproval. The role of religion in views of forensic biobanks warrants closer investigation.

The final GKAP analysis in this paper[21] explores respondents' trust in public officials in this arena (see questions 11 and 12 in Table A2). Table 7 provides initial summary statistics. The results show that Americans have strong though not overwhelming trust in both police officers and judges and juries in this arena; the correlation between the two trust items is a high .72. That result accords sensibly with respondents' support for more public funding, though it can be interpreted as contradicting their equally strong support for more regulation.

More Republicans than Democrats express strong confidence in police officers, but beyond that, partisan differences are minimal. Although a majority of African Americans trust both sets of actors, they are clearly the most mistrustful of police (we write this during the week of increasing protest over the failure to arrest the killer of Trayvon Martin) and of judges and juries; that is the first clear signal that forensic biobanks could prove to be politically volatile. As so often in public opinion surveys, Latinos fall between blacks and whites on these questions. Note, finally, that this is the first set of items on which multiracials resemble people of color more than whites.

Table 7: Trust in public officials regarding use of DNA in criminal justice system, GKAP

A. Police Officers

	Not at all	*A little*	*Some*	*A lot*	*Refused*
All	10	17	46	24	3
Democrats	10	21	47	21	2
Republicans	9	13	47	29	2
Whites	9	14	47	27	3
Blacks	17	29	40	12	3
Asians	8	23	45	23	2
Multiracials	11	23	44	20	2
Hispanics	10	21	47	19	4

B. Judges and Juries

	Not at all	*A little*	*Some*	*A lot*	*Refused*
All	7	14	47	29	3
Democrats	7	16	47	28	2
Republicans	7	12	49	31	2

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[21] In later work we will explore the religious and moral dimensions of views on forensic biobanks (questions 15A and 15B in Table A1), and expectations for political parties' support (questions 13 and 14 in Table A1). We will also link views on forensic biobanks to views in GKAP on other genomics issues, such as medical research and biobanking.

Whites	6	12	48	32	2
Blacks	1	22	46	18	3
Asians	4	17	47	31	1
Multiracials	6	19	48	24	3
Hispanics	7	17	46	27	4

See note to Table 1

Table 8 shows the regression results.

Table 8: Trust in public officials regarding use of DNA in criminal justice system, GKAP
(weighted ordered logit regression coefficients. Statistically significant results are in boldface. Higher values of the outcome variable are associated with increased trust.)

	Police officers (A)	Police officers (B)	Judges and juries (A)	Judges and juries (B)
Black	**-0.74** **(0.11)***	**-0.79** **(0.14)***	**-0.51** **(0.11)***	**-0.62** **(0.14)***
Hispanic	-0.1 (0.11)	-0.1 (0.14)	-0.01 (0.11)	-0.03 (0.15)
Asian American	-0.16 (0.15)	-0.24 (0.2)	-0.05 (0.15)	-0.06 (0.2)
Multiracial	-0.44 (0.28)	-0.43 (0.32)	-0.32 (0.28)	-0.33 (0.32)
Native Hawaiian/Pacific Islander	-0.47 (0.62)	0.26 (0.84)	-0.89 (0.56)	-0.71 (0.79)
Male	**-0.15** **(0.06)***	-0.05 (0.08)	**-0.21** **(0.06)***	-0.14 (0.08)
Age	**0.01** **(0)***	**0.01** **(0)***	**0.01** **(0)***	**0.01** **(0)***
Partisanship	**0.05** **(0.02)***	0.03 (0.02)	0.02 (0.02)	0.01 (0.02)
Income	0 (0.01)	0.01 (0.01)	**0.02** **(0.01)***	0.02 (0.01)
Married	0.01 (0.07)	-0.04 (0.09)	-0.02 (0.07)	-0.04 (0.09)
Education	-0.01 (0.02)	**-0.04** **(0.02)***	-0.01 (0.02)	-0.02 (0.02)
Household Size	-0.02 (0.02)	0.01 (0.03)	-0.04 (0.02)	0 (0.03)
Employed	-0.02 (0.07)	-0.04 (0.08)	0.06 (0.07)	-0.03 (0.08)
Metro Area	**0.28** **(0.08)***	0.12 (0.1)	**0.21** **(0.08)***	0.05 (0.1)
Internet Access	**0.25** **(0.08)***	0.12 (0.1)	0.12 (0.08)	-0.03 (0.1)
Citizen	-0.2 (0.14)	-0.21 (0.17)	-0.23 (0.14)	-0.25 (0.18)

South	0.03	-0.03	0.01	0.01
	(0.06)	(0.08)	(0.06)	(0.08)
Catholic	-0.07	-0.1	0.04	0
	(0.08)	(0.1)	(0.08)	(0.10)
Non-Religious	**-0.36**	**-0.71**	-0.13	**-0.49**
	(0.1)*	**(0.13)***	(0.1)	**(0.13)***
Religious Attendance	0.01	**-0.07**	-0.02	**-0.1**
	(0.02)	**(0.03)***	(0.02)	**(0.03)***
Knowledge #1 Correct (DNA)	**0.33**	**0.52**	**0.39**	**0.59**
	(0.07)*	**(0.09)***	**(0.08)***	**(0.09)***
Knowledge #2 Correct (mouse genes)	0.17	-0.03	0.09	-0.05
	(0.09)	(0.11)	(0.09)	(0.11)
Knowledge #3 Correct (black/white genes)	**0.29**	**0.46**	**0.29**	**0.38**
	(0.07)*	**(0.09)***	**(0.07)***	**(0.09)***
Self-reported Biobanks Knowledge	**0.32**	**0.35**	**0.56**	**0.57**
	(0.08)*	**(0.1)***	**(0.08)***	**(0.1)***
Crime Rate per 10,000 Residents		0 (0)		0 (0)
N	4033	2606	4036	2614
Residual Variance	9666.9	6105	9284.4	5897.9

See note to table 4.

The results of this analysis mostly reinforce the patterns already shown. That is:

- H1, Scientific Literacy, again receives strong support. Respondents who correctly answered the two easier knowledge questions were much more likely to trust both sets of public officials, as were people who reported awareness of forensic biobanks. Trust and the most difficult knowledge question again showed no association, however, which strengthens the possibility of a U-shaped relationship between knowledge and support. Perhaps those who know the most about genetics also know enough to lack confidence in people working with forensic biobanks.

- H2, Partisanship, receives weak support. Even with an array of controls, Republicans trust the police in this arena more than do Democrats; there is no difference, however, in trust for judges and juries. That may reflect Democrats' greater confidence in judicial than street-level authority, or Democrats may have focused especially on juries and have more confidence in fellow citizens.

- H3, Black Racial Protectiveness, is strongly supported. With controls, blacks are even more likely than they appeared in the descriptive statistics to mistrust police officers as well as judges and juries. Unlike in some of the earlier analyses, Latinos do not differ from whites.

- H4, Self-interest, receives no support with regard to crime rates or household size. There is a suggestion of support in the fact that respondents living in metropolitan areas and women trust both sets of public officials more than do rural residents or men, respectively – but these are indirect measures of self-interest with regard to crime.

Consideration of the other variables yields similar patterns to those found earlier. Once again, age is statistically significant but substantively trivial (that is the result in 14 out of 14 regression analyses). Income and education remain surprisingly unimportant. Unlike in the previous analyses, living in the South is not associated with trust. But similar to the previous analyses, low religious attendance or secularism is related to lack of confidence in both sets of public officials.

GKAP, then, shows both clear results and persistent puzzles. The old literature on scientific literacy is confirmed, with the intriguing possible exception of skepticism among those with unusual knowledge about genetics. Republicans favor forensic biobanking more than Democrats, but not public funding for its development. Although a majority of blacks endorse the various aspects of forensic biobanking, in relative terms that group is the most apprehensive or hostile. Latinos swing between whites' and blacks' views; other racial or ethnic groups show no distinct profile. Variables that we have not yet fully considered – especially gender, residence in the south, and religion or religiosity – call for further investigation. Finally, our measures of self-interest have no impact, whether because the measures are too crude or because, as in other policy domains, self-interest is surprisingly unimportant except in particular circumstances [(Kinder and Kieweit 1981); (Kinder 1998); (Moe 2001)]. We turn one more time to that question for the final empirical analysis.

Testing the Hypotheses through GSS

The 2010 GSS has one item on forensic biobanking: "Please indicate how much you favor or oppose [the] uses of genetic information. . . [t]o determine a person's guilt or innocence of a crime."[22] However, it offers a wealth of possible independent variables, including two that tap into subjective attitudes about crime and fear of crime: "Is there any area right around here - that is, within a mile - where you would be afraid to walk alone at night?" and "Do you happen to have in your home (or garage) any guns or revolvers?" We use these items to further test H4, Self-interest.

Table 9 offers summary statistics of responses to the forensic biobanking question (descriptive statistics for fear of crime and gun ownership are in Table A3):

Table 9: Support for Using Genetic Information to Determine Guilt or Innocence, 2010 GSS

	Strongly Oppose	Somewhat Oppose	Neither	Somewhat Favor	Strongly Favor	Not Sure
All	3%	2%	5%	20%	68%	1%
Democrats	3	2	5	19	69	1
Republicans	3	2	3	22	70	1
Whites	3	1	3	21	70	1
Blacks	5	2	7	19	65	2
Hispanics	2	2	11	17	65	3
Other	0	5	7	24	60	5

Unweighted. Because different numbers of whites, blacks, Hispanics, etc., were surveyed, we report row proportions. Racial and ethnic categories are mutually exclusive.

The most noteworthy finding is that the results in table 9 resemble those in GKAP's broad approval item (table 2). That is reassuring since the two surveys used different questions and response categories, different sampling procedures, and different survey modes; the substantive context in which this question appeared also varied greatly across the two surveys. Nevertheless, only 5 percent of GSS respondents oppose using genetic information in the legal arena, comparable to the 6 percent of GKAP respondents for whom forensic biobanks would do more harm than good. Almost seven-tenths of GSS respondents strongly favor this technology, compared with three-fifths of GKAP respondents who see more good than harm in forensic biobanks. It is hard to determine if "somewhat favor" + "neither" is

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[22] Response categories are on a five-point scale from "Strongly Oppose" to "Strongly Favor," with an additional possible response of "Not Sure." In all, 1555 adult respondents answered the question, including 1107 whites, 219 African Americans, 167 Hispanics, and 62 "Other." There were 756 Democrats (including leaners), 518 Republicans (including leaners), and 795 Independents.

similar to "equal amounts of harm and good," but if both sets of answers are thought of as the middle of a continuum, they too are similar.

We see no partisan differences in the GSS item (there were small ones in GKAP). Blacks and Latinos are slightly less favorable than whites in the GSS; group differences were stronger in GKAP but in the same direction. Overall, the descriptive statistics for the GSS and GKAP surveys concur.

Regression Methods: We use the same methodology as before. Note, however, that the useable GSS sample is small (N= 341) due to the GSS's complex (a.k.a. byzantine) sampling procedure for each relevant variable. To the degree possible, we replicated the GKAP analyses, using variables that are close proxies of the GKAP variables.

Results: Table 10 presents the regression results. Model A excludes both fear of walking alone at night and gun ownership; model B includes fear; and model C includes both variables. Since one can own a gun for hunting rather than for criminal deterrence, we thought it important to examine fear of crime separately.

Table 10: Support for use of DNA evidence to determine a person's guilt or innocence of a crime, 2010 GSS
(Unweighted ordered logit regression coefficients. Statistically significant results are in boldface. Higher values of the outcome variable are associated with increased support.)

	A: excludes fear and gun	B: includes fear	C: includes fear and gun
Black	-0.28 (0.46)	-0.31 (0.47)	-0.33 (0.47)
Hispanic	-0.72 (0.42)	-0.74 (0.44)	-0.85 (0.45)
Other	0.23 (0.56)	0.20 (0.56)	0.12 (0.57)
Male	-0.25 (0.26)	-0.26 (0.27)	-0.24 (0.27)
Age	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)
Partisanship	0.01 (0.06)	0.01 (0.07)	0.02 (0.07)
Income	-0.05 (0.07)	-0.05 (0.07)	-0.04 (0.07)
Married	-0.35 (0.28)	-0.37 (0.29)	-0.29 (0.29)

Education	-0.03 (0.05)	-0.03 (0.05)	-0.04 (0.05)
Household Size	-0.01 (0.09)	0.02 (0.1)	0.01 (0.1)
Internet Access	0.02 (0.35)	0.06 (0.35)	0.05 (0.35)
South	-0.13 (0.28)	-0.12 (0.28)	-0.06 (0.28)
Catholic	-0.17 (0.32)	-0.14 (0.32)	-0.1 (0.32)
Non-Religious	-0.17 (0.4)	-0.13 (0.41)	-0.13 (0.41)
Religious Attendance	-0.1 (0.16)	-0.09 (0.16)	-0.1 (0.16)
Knowledge Correct (DNA)	**1.01 (0.33)***	**0.99 (0.34)***	**1.07 (0.34)***
Fear of Walking in Neighborhood	--	-0.04 (0.29)	-0.02 (0.29)
Owns Gun	--	--	-0.40 (0.28)
N	341	338	338
Residual Deviance	581.4	574.4	572.4

Respondents who were "not sure" were dropped from the analysis.

In part due to the small sample size, almost no results show statistical or substantive significance. The clear exception is knowledge – once again, H1, Scientific Literacy, receives strong support. H2, Partisanship, receives no support; this is presumably not an issue of sample size since the coefficients are so small. With regard to H3, Black Group Protectiveness, there are no statistically significant differences between whites and other racial or ethnic groups. Substantively, however the large negative coefficients for blacks and Hispanics accord with the results in GKAP analyses. H4, Self-interest, once again receives no support; we find no significant effects associated with either fear of crime or gun ownership. If anything, given the negative coefficients in models B and C, gun owners (and possibly those who fear crime) are *less* likely to support the use of DNA evidence for criminal investigations.

Conclusion

More research is needed. It always is, of course, but perhaps especially in this arena where, to our knowledge, we are the first political scientists to venture. We see several pathways to further investigation.

First, each hypothesis warrants more testing. We can use the three additional knowledge questions in the GSS, for more examination of H1, Scientific Literacy. In particular, we will explore the hint in GKAP that the small minority of highly knowledgeable respondents are more skeptical of forensic biobanks than are fairly knowledgeable respondents – as the scholarly discourse on the subject would suggest. For H2, Partisanship, we will substitute liberal/conservative ideology for partisanship, and test various cut points of partisanship (e.g. dropping leaners, analyzing only those who voted in 2008, analyzing only strong partisans, and so on). GSS has a rich array of attitudinal and demographic variables that will enable more fine-grained explication of racial and ethnic differences in views of forensic genomics; examples include incorporating questions about in trust in science, views of the criminal justice system, and concern about victimization or excessive police activity. We are reasonably confident that even with further analysis, we will find both that a majority of blacks endorse forensic biobanks and that as a group, blacks are also more concerned about them than are other Americans. Hispanics, in contrast, present a mixed profile that we do not yet clearly understand. Finally, we plan to link the geocoded data in GKAP (and possibly in GSS) to other contextual variables in order to more fully test H4, Self-interest – although neither the results in this paper nor the scholarly literature give us much reason to expect different outcomes.

The GKAP survey enables us to develop these hypotheses in a different direction, since it includes many items on other aspects of genomic science. How do views about forensic biobanks relate, for example, to views about biobanking for medical and scientific research? How, if at all, are religious or moral convictions related to views on forensic biobanking? Do genetic determinists hold different attitudes and policy preferences from respondents who see more impact from environment or

individual choices on people's behavior? What will the open-ended items reveal behind the bland front presented by survey responses? And so on.

Second, this research agenda will benefit from as well as contributing to the development of important strands of political science literature. Most generally, mixed messages from elites and the fact that this is a new policy arena allow us to examine the coherence or lack thereof of public opinion. Scholarship on sociotropic attitudes prepares us for failure to confirm H4; if nonetheless we do find effects of self-interest, that will be an important modification. The complex (confused?) literature on scientific literacy will underpin the investigation of whether the very knowledgeable differ in important ways from the fairly knowledgeable; if confirmed, that finding will contribute to reducing the confusion. The media framing literature will be crucial in making sense of mixed responses to forensic biobanks; headlines such as "Texas Victims Hope for Justice amid Rape Kit Backlog" and "More DNA Samples? Bill Goes Too Far,"[23] to pick two almost at random, suggest a huge role for framing in this new and complicated policy arena. The extensive literature on African Americans' involvement with the criminal justice system, both through disproportionate arrest and conviction and disproportionate victimization, provides context for explicating blacks' majority support for and relative skepticism about forensic biobanks. The fact that the parallel literature on Hispanics' involvement with the criminal justice system is thinner, and that on Asian Americans is virtually nonexistent, indicates the value of also focusing on those groups in this research.

Forensic biobanks offer a particularly interesting arena for studying partisan polarization. Scholars as well as journalists have, for obvious reasons, focused on its growth over the past decade (for example, (McCarty, Poole and Rosenthal 2008); skepticism mostly takes the form of claiming that ordinary citizens are not politically polarized even if elites are [(DiMaggio, Evans and Bryson 1996); Jacobson]. But speeches, bill sponsorship, and votes on legislation show that elites are not polarized by

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[23] From respectively, CBS Dallas/Fort Worth, March 19, 2012 and PressOfAtlanticCity.com, March 26, 2012

partisanship on this issue. Perhaps we are seeing the beginning of a new era of politicians' shared focus on criminal justice as in the late 1960s and 1970s, with or without racial undertones (Weaver forthcoming). And even the racial undertones are complicated at the elite level, now as then. Then, Representative Charles Rangel co-sponsored the now notorious legislative distinction in penalties for sale of crack or powder cocaine, and New York's black elite encouraged the stiff drug laws promoted by Governor Rockefeller in the late 1960s (Fortner 2011). Now, at least some African American political officials -- from the president on down -- endorse forensic biobanks.

The substantive impact of legal biobanks over the next few decades remains unclear and deeply contested. Many fear a new era of genetic Jim Crow, or more generally, the transformation of individuals into beings that are publicly known and controlled by the state: "agents of power like the police, public prosecutor, and judge are, since the introduction of forensic DNA profiling in criminal justice systems, advancing further into personal spheres, thereby rendering the personal into public objects" (Toom 2012): 153. In contrast, some seek increased collection of DNA samples in order to enable more exonerations of the falsely convicted: "because DNA is *not* routinely collected and analyzed when other crimes [other than rape or murder] occur – assault, robbery, or non-violent property or drug crimes – when innocent people are incarcerated for those crimes they seldom have any avenue for seeking exoneration" (Smith and Hattery 2011): 77, emphasis in original). While some predict increasing surveillance, others predict decreasing crime and fewer arrests: "a 50% (approximately one standard deviation) increase in the size of an average DNA database [in a given state] would result in a 13.5% decrease in murders, a 27.2% decrease in rapes, a 12.2% decrease in aggravated assaults, and a 22.7% decrease in vehicle thefts. . . . [Furthermore,] the probability of arresting a suspect in new cases falls significantly as database size increases, for all types of offenses except rape" (Doleac 2011): 4). Our research program cannot speak directly to these or other wildly disparate predictions of the impact of DNA biobanks. But this research does have the inestimable

value of providing a baseline at the early stages of policy development that reveals not only how many and which kind of Americans hold particular views, but also why they do so.

In the end, forensic biobanks raise deep questions of democratic governance. Innocent unless proven guilty is a core constitutional commitment; as state officials trawl millions of DNA samples looking for partial or complete matches to a forensic sample, do they violate that right? So far, the courts have said no, with regard to samples from those convicted of a crime; courts are split on what counts as unreasonable search and seizure for arrestee samples. The technology also raises a different privacy issue: as genomic science advances, the 13 loci used for counting STRs may turn out to be important for human genetic development. How should a democratic polity deal with millions of pieces of information about individuals that no one wants it to have? That question becomes especially urgent when one considers the racial and ethnic imbalance in the biobanks; is the solution to bank DNA samples from all residents of the United States?

Another question for democratic governance: as exonerations increase, should they be understood as an essential small scale corrective in a criminal justice system that inevitably has flaws but is basically just -- or do they force the question of whether courts systematically malfunction? Finally, who are the appropriate decision-makers on this issue -- citizens with little education in the science behind biobanking, no experience of it, and arguably shallow or incoherent views, or elite experts? The statement from one respondent, "Get your swabs out of my face" is the tip of a very large iceberg.

Appendix

Table A1: GKAP Control Variables

Variable	Description of variable	Minimum	Maximum	Median/Mode
Income	Discrete numerical	Less than $5,000	$175,000 or more	$50,000 to $59,999
Age	Discrete numerical	18 years	97 years	48 years
Gender	Dichotomous categorical	0 = Male	1 = Female	
Education	Discrete numerical	No formal education	Professional or doctorate degree	High school graduate
Household Size	Discrete numerical	1 person	14 people	2.9 people
Work Status	Dichotomous categorical	0 = Not working	1 = Working	
Metro Area	Dichotomous categorical	0 = Lives in non-metro area	1 = Lives in metro area	
Married	Dichotomous categorical	0 = Not married (includes living with partner, and separated)	1 = Married	
Citizen	Dichotomous categorical	0 = Not U.S. citizen	1 = U.S citizen	
Partisanship	Scaled categorical	-3 = Strong Democrat	3 = Strong Republican	0 = Undecided/ Independent

Table A2: GKAP Key Questions
(Respondents could click to the next screen without answering a given question.)

Question	Answer Categories
1.Over the past few months, how much, if anything, have you heard or read about issues having to do with genes or genetics?	A great deal; Quite a lot; Some; Not very much: None
2.On another subject, based on what you know, would you say that DNA can be found in every cell in the human body or only in specific organs and cells in the human body	In every cell in the human body; Only in specific organs and cells in the human body; Don't know enough to say
3.Based on what you know, would you say that more than half, about half, or less than half of a human being's genes are identical to those of a mouse?*	More than half; About half; Less than half; Don't know enough to say
4.Based on what you know, would you say that more than half, about half, or less than half of a white person's genes are identical to those of a black person?*	More than half; About half; Less than half; Don't know enough to say

5.How much, if anything, have you heard or read about the collection of DNA samples from people convicted of a serious crime for purposes of criminal investigations?**	A lot; Some; A little; Nothing
6.Do you support or oppose government *funding* to enable more extensive use of DNA samples in the criminal justice system?	Strongly/Somewhat support Somewhat/Strongly oppose
7.Do you support or oppose government *regulation* of the use of DNA samples in the criminal justice system?	Strongly/Somewhat support Somewhat/Strongly oppose
8.Would you be willing or unwilling to contribute a DNA sample, for example by a swab from your mouth, for use in current or future investigations to determine a person's guilt or innocence of a particular crime?	Willing; Somewhat willing Somewhat unwilling; Unwilling
9.Why would/ wouldn't you be willing to?	Open-ended
10.On another subject, do you think that the use of DNA samples collected from people convicted of a serious crime for law enforcement is likely to do ... ?	More good than harm to society; Equal amounts of harm and good to society; More harm than good to society
11.How much, if at all, do you trust that police offers will act for the public good in overseeing the use of DNA samples collected from people convicted of a serious crime for law enforcement?	A lot; Some; A little; Not at all
12.How much, if at all, do you trust that judges and juries will act for the public good in developing the use of DNA samples collected from people convicted of a serious crime for law enforcement?	A lot; Some; A little; Not at all
13.Which major political party do you think will do more to support government *funding* for the use of DNA samples collected from people convicted of a serious crime for law enforcement?	Republican Party; Democratic Party; Both political parties; Neither political party
14.Which major political party do you think will do more to support government *regulation* of the use of DNA samples collected from people convicted of a serious crime for law enforcement?	Republican Party; Democratic Party; Both political parties; Neither political party
SPLIT SAMPLE, with random assignment to A or B: 15A. Does the use of DNA samples collected from people convicted of a serious crime for law enforcement...?	It fits within my religious beliefs ;It conflicts with my religious beliefs; It has nothing to do with my religious beliefs; I do not have religious beliefs
OR 15B. Does the use of DNA samples collected from people convicted of a serious crime for law enforcement...?	It fits within my moral values; It conflicts with my moral values; It has nothing to do with my moral values; I don't think in terms of moral values

*The two items were randomly rotated.

** Question was preceded with: "The federal government and almost all states require collection of a DNA sample from all people convicted of a serious crime. The samples are stored and may be used in

future cases to try to determine a person's guilt or innocence of a particular crime." The respondent could return to the screen with that information at any point.

Table A3: Fear of walking alone at night near home, and gun or revolver ownership, 2010 GSS

| | *Fear of walking alone* | | *Gun ownership* | | |
	Afraid	*Not afraid*	*Yes*	*No*	*Refused*
All	34%	66%	34%	64%	2%
Democrats	36	64	25	74	1
Republicans	30	70	48	49	3
Whites	30	70	41	56	2
Blacks	42	58	19	80	1
Hispanics	45	55	13	86	1
Other	32	68	13	84	2

N = 3,201 for fear (unweighted); N = 3,208 for gun ownership (unweighted)

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